

The Human Perspective in Consumer Ethics and Animal Welfare Issues: Envisioning a Future for Change

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Abstract: Animal welfare has been a subject of interest for the European Union since the 1970s, with the definition of animal protection guidelines during international transport, on farms and for slaughter. However, the Legislator's concern found its highest expression in the Animal Welfare Protocol of the Treaty of Amsterdam, where animals are defined as sentient beings, therefore worthy of attention in the policies developed by the European Union and its Member States. Nowadays, the interpretation of the animal welfare concept as an element that contributes to increasing profitability is also integrated by respect for the animal's feelings and, consequently, the related different biological manifestations. Food scandals and diseases, on the one hand, and the emergence of a new approach to consumer ethics, on the other, have also strongly sensitized the European population about the importance of protecting animal welfare. Based on the above considerations, this study provides a framework to understand whether animal welfare should merely be considered as a product of EU strategies dedicated to the economic and competitive performance of agricultural and agro-industrial enterprises or whether it can also be assessed as a useful tool to minimize the environmental impact, through breeding practices and food habits, and therefore encourage more sustainable development.

Keywords: Animal welfare, sustainability, food diet, food consumption.

INTRODUCTION

The agro-food sector has considerably changed in the past twenty years. On the one hand, technological innovations have allowed the development of phenomena that have increased the ability to create value such as, for example, globalization. On the other hand, anthropic activities, also linked to the need to support this development, led to climate changes requiring the achievement of new balances between human beings and the environment.

The relationship between human species and related activities triggers a series of consequences on the planet that can be summarized in surplus consumption of resources, leading to negative externalities such as environmental pollution (water, terrestrial and atmospheric), increase in global warming and extinction of living species.

In this context, the agro-food sector assumes an active role since the production dynamics related to it, mainly agriculture and livestock, are indicated as water-consuming activities and producers of direct pollutants of soil (nitrogen and phosphorus), of water systems (demand for biochemical oxygen and solid suspensions) and air (biogas and nitrogen oxides) [1,2]. The need for these resources and the processes

of industrialization, and urbanization, together with the increase in mobility, lead to reduction and degradation of agricultural land up to its desertification [3,4].

At the same time, the United Nations identified several objectives for sustainable development involving different areas such as economic, social, and environmental issues. Indeed, careful management of resources can allow the achievement of diverse goals such as protection of the ecosystem, reduction of climate change activities, and supply of food for the most fragile communities.

Moving from these aspects, operators in the agro-food sector have recently started wondering about the interpretation of the meaning of sustainable development in carrying out their processes, and they have tried to provide some answers. This perception is further amplified by a diversified approach expressed towards animal welfare, a phenomenon in evolution and of increasingly widespread interest.

This paper aims at providing a framework to understand whether animal welfare should be merely considered as a product of EU strategies dedicated to the economic and competitive performance of agricultural and agro-industrial enterprises, or else whether it can be assessed as a useful tool to minimize the environmental impact, through breeding practices and food habits, and therefore encourage a more sustainable development.

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SUSTAINABILITY IN THE AGRO-FOOD SECTOR

Generally, when we talk about sustainability we connect to the concept of economic development initially identified by the Brundtland Report, i.e. the possibility of creating an economic development path for the world economy that meets the current generation's needs without compromising the opportunities for future generations to satisfy their needs [5]. This definition was further explored considering the legacy of previous generations to future ones through the distinction between weak sustainability and strong sustainability. In the first case, the generation's capital is a legacy from the previous generation, consisting of a "natural" part and a "manufactured" part (sum of physical, human, and intellectual capital). This bequest has to be kept intact in its overall quantity for the next generation, but it is possible to compensate for any natural capital losses with an equal physical capital increase. In this case, therefore, perfect substitutability between "manufactured" capital and "natural" capital is assumed. In the second case, activity is sustainable only if it guarantees constancy of natural capital over the generations, as the possibility of replacing it is not considered. Therefore, activities producing unknown effects should be reduced in such a way as not to cause a reduction in natural capital below a pre-established minimum safety threshold.

Subsequently, the three sustainability pillars were incorporated in a revised definition of "sustainable development": *"a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development — economic development, social development, and environmental protection — at local, national, regional and global levels"* [6]. Development is therefore defined as sustainable if it is capable of generating situations of substantial equilibrium amongst economic, social, and environmental issues [7].

However, in order to pursue environmental, social and economic objectives, there is a need to combine them with institutional ones, through the intervention of public bodies in support of social equity and adequate management and redistribution of resources.

In the agro-food sector, the meaning of the term "sustainability" can be identified in various quality variations. The use of the term "quality", in fact, is quite widespread and can take on different values and meanings, depending on the context and objectivity of

assessments, to the point of being deprived of its essence if not carefully coded.

The International Organization for Standardization (ISO) has provided a first shared definition indicating quality as the *"level to which a set of intrinsic characteristics meets the requirements"*. The term "intrinsic" refers to the presence of characterizing elements within something understood as a good, service, process or activity but also as a person, organization or system. The word "level" implies a different degree of satisfaction with all the intrinsic characteristics among the parties concerned. Finally, the term "requirement" means *"a requirement or expectation that can be expressed, generally implicit or mandatory"*. However, it is good to underline that this definition aims at satisfying requirements without a need for achievement of absolute excellence, which is also a tendency towards utopia [8].

In the agro-food sector, Peri [9] proposed a model that identifies the quality requirements relevant for food products. Quality requirements can be divided into five categories:

- product requirements, which concern food safety and hygiene-food protection, product compliance, nutritional principles, sensory aspects;
- psychological requirements, which involve the production context and the ethics of actions;
- guarantee requirements, which imply an intervention of third parties (product and / or system certifications) or institutions (traceability);
- product-packaging system requirements, which concern aspects relating to marketing (information on the label), identity and functionality of the product (packaging);
- product-market system requirements, indicating the availability of products and their market value.

In particular, the second group of requirements mainly satisfies needs that can be defined as cultural, psychological, and ethical: in this case, it is particularly important to stress aspects such as origin and source, tradition and link with the territory, respect for the environment and biodiversity protection, responding to a purely emotional need and in any case far from a careful evaluation of the intrinsic characteristics of the

product. The ethical and production context requirements, therefore, satisfy a series of needs that however cannot be measured in analytical terms.

The issues related to animal welfare fall into this context: compliance with the rules in this area is required by several consumers who actually seek products that can guarantee respect for animals and their protection throughout the various breeding phases [10]. However, this is difficult to guarantee; therefore, animal welfare issues have to be supported by mandatory or even voluntary rules aiming at the fulfillment of the guarantee requirements, i.e. certification and traceability.

Sustainability and Animal Welfare

Animal welfare is widely discussed in industrialized countries. After the Second World War, the need to guarantee minimum levels of food supply oriented the agricultural policies of the European countries first, and subsequently the European Union, towards crop specialization, process mechanization and productivity improvement, relegating territorial aspects such as biodiversity, culture, tradition, to a secondary role. The Common Agricultural Policy Review 2007-2013 affirmed the importance of moving from a primary activity oriented to gaining large quantities of agricultural products (without considering the actual market needs) to one oriented to the pursuit of multifunctional objectives such as safeguarding the environment and improving the landscape. This change in the direction of agricultural policy was caused by the various transformations which took place globally over the past few decades, in the commercial (e.g. globalization, technological innovation, growth in food consumption), environmental (e.g. climate change, land grabbing, resource depletion), health and farm animal welfare (Faw) standards. These goals were further implemented in the 2014-2020 Common Agricultural Policy and in the new one [11,12].

The Brundtland report [5] showed that economic growth, and therefore all anthropogenic activities, generate negative environmental effects. Some researches still confirm this trend, e.g. [4,13]; the present orientation seems to pursue economic growth combined with conservation of natural resources, integrating the concept of sustainable development and, in recent times, of circular economy.

In order to integrate these concepts, the need for change in consumption models is evidenced, since

they condition both product design dynamics and the ways products are consumed.

In high per capita income countries, changes in consumption patterns occur constantly, as indicated by [14] referring to the sixth evolutionary stage of food society, oriented towards qualitative replacement when a generalized level of satiety is reached. This level is open to a possible strategy of increasing food expenditure without increasing food production and therefore absorption of resources.

Nowadays this replacement has taken place and continues through possible responses to consumer expectations often conveyed by legislation, advertising, or marketing, but also as a result of technological and food innovation.

The qualitative substitution triggered by tradition as well as by innovation in the agro-food sector, especially if used and implemented compulsively, almost seems oriented to the satisfaction of economic interests rather than to the maintenance or achievement of a virtuous goal [15], as e.g. reduction of environmental impact. It is sufficient to think of the cleverness of past generations in managing any type of asset to understand that sustainable development or, even more, circular economy are concepts that refer to a rather recent past and were completely forgotten in a time shorter than average human life.

In order to reduce anthropic pressure on the planet, more careful management of consumption seems to be the first way to move human interests from conventional products to others within the same category that are less harmful to the environment: this would imply reducing consumption of certain categories of particularly energy-consuming products and, more generally, decisively reducing global consumption [16-18].

Foodstuffs that can be defined as sustainable from an environmental point of view often tend to be more expensive than similar conventional products, as e.g. in the case of organic eggs, likely to have less impact on the environment but with a market value more than double compared to battery eggs. The high price of so-called sustainable products tends to exclude lower-middle-income groups and in fact limit product attractiveness [19,20]. On top of this, sometimes the scarce diffusion of these products and the limited subject knowledge about them among consumers further reduce their potential success [21-24].

The increase in world population is supported by an intensification of agricultural land productivity and usable agricultural areas, which find an outlet in deforestation and a limit in urbanization, up to a general degradation of agricultural land, sometimes subject to desertification. Agricultural activities absorb large quantities of resources and are a direct source of pollution. In particular, animal breeding contributes both to soil pollution (for example, in the spreading of sewage and zootechnical waste which is not always controlled) and in greenhouse gases emission (for example, in the production of natural biogas from cattle). Indeed, it was ascertained that consumption of meat, dairy products and eggs tends to increase globally, causing an increase in the pressure on the environment mainly due to animal breeding [25,26].

In this context, countries with high per capita income developed different strategies to stem the surplus of resources consumed in the food sector: an example is the European quality system concerning the organic production method, which also involves animal breeding [27,28]. In these countries, a rapidly evolving mandatory regulation aimed at improving the quality of life of farm animals through ad hoc legislation on their well-being has been reached [29-31].

Achieving the triple bottom line requires the development of skills in terms of institutional sustainability, i.e. the fourth declination of the term. Many governments moved in this direction by developing a series of useful rules to regulate and, if possible, improve the attitude of human beings towards animals. The European Union prescribes strict production requirements (or minimum production requirements) which EU producers must comply with. The production requirements are aimed at ensuring protection of public health, guaranteeing consumer safety and accepting civil society demands on issues related to environment, animal welfare and workplace safety.

Animal welfare is included among the production requirements to complete the extensive food safety regulation that led to the introduction of the HACCP system, the concept of traceability, the institution of the European Food Safety Authority (EFSA) and the Rapid Alert System for Food and Feed (RASFF).

Over time, the concept of animal welfare has undergone substantial changes. The initial interpretation, understanding animal welfare as a set of external factors contributing to an increase in animal

profitability, has to be considered outdated in favor of a broader and more structured meaning, aimed at considering animal feelings and, consequently, the evolution of ethics as to consumption of food products, thus further emphasizing the importance of farm animal welfare. Indeed, consumers are increasingly looking for healthy foods obtained with breeding methods that respect animals' physical and mental needs [32]. At the same time, producers and distributors use animal welfare as a marketing lever aimed at promoting corporate image and product differentiation [33-35]. The strategy developed by the EU is based on four pillars:

- Definition of priorities. Identification and evaluation of potential threats and objectives of the European strategy.
- Implementation of the regulatory framework. The regulatory framework must move towards a single horizontal regulation, simplified and aligned with international standards, thus eliminating the lack of homogeneity relating to the export of food products of animal origin.
- Risk prevention, control and crisis management. Prevention is a key element in the field of safety and must be supported by funds to finance and promote biosecurity measures within farms and guidelines that take into consideration the peculiarities of the different types of farm and species. There is also a clear need for a more effective control system on incoming goods at customs and for an improvement of the control and intervention system for emergency management in order to reduce intervention times while maintaining efficiency.
- Science, innovation and research. The EU has set itself the goal of strengthening collaboration between European agencies and national bodies, and of expanding the skills of laboratories for risk assessment and disease diagnosis.

Animal welfare has been a subject of interest for the European Union since the 1970s; the Protocol on the protection and welfare of animals in the Treaty of Amsterdam defined the main aspects about this theme, which subsequently became an integral part of the Treaty on the Functioning of the European Union. In fact, article 13 of the current Treaty for the first time defines animals as beings which are sentient and

therefore deserve attention in the policies developed by the European Union and the Member States.

In the last decade, the European Union intervened with intense regulatory activity in order to guarantee the overall health of animals and provide adequate care for their psychophysical and ethological conditions. In particular, the European Legislator regulated aspects concerning animal welfare in the breeding, transport and slaughtering phases, in addition to specific provisions on testing cosmetics on animals, non-cruel methods of capture, ban on dog and cat fur marketing and on trade in seal products.

Directive 98/58/EC regulates the first phase, i.e. that of breeding, and provides common rules relating to the protection of animals bred or kept for the production of foodstuffs, wool, skin or fur or for other agricultural purposes, with the exception of animals living in the wild or destined to participate in competitions and exhibitions, experimental animals or laboratory animals and invertebrate animals. In addition, Member States have to ensure the breeding and keeping conditions of animals in compliance with the Directive and, in particular, they have to meet the requirements prescribed for staff, such as daily checks, keeping a register of medical treatments, freedom of movement for animals, characteristics of buildings and premises, automatic and mechanical systems essential for animal welfare, feeding, mutilations and breeding procedures.

The second phase regulates animal welfare in transport, by EC Regulation no. 1/2005 which involves all interested parties including transporters, transport organizers, drivers, keepers of transported animals and animals themselves. This Regulation provides for strict technical rules relating to transport and related equipment, long-distance travel, conditions and age of the gear.

The third phase concerns slaughtering; it is regulated by EC Regulation no. 1099/2009 which applies in the case of slaughtering farm animals, emergency slaughtering and slaughtering carried out in a fight against contagious diseases. This regulatory provision imposes the obligation to identify an animal welfare officer, who has to supervise compliance with the regulation and sets the standardized operating procedures to be applied in order to minimize animal pain, anxiety and/or suffering at this stage. Thanks to the scientific progress made in this area, appropriate stunning methods are foreseen before the actual slaughtering, with the exception for ritual slaughter

which refers to Directive 93/119/EC in compliance with religious requirements.

There are also rules on how to communicate to consumers the presence of production processes in favor of farm animal health. In particular, reference is made to the so-called “production labels” identifying “products that have followed a production specification or certain production provisions aimed at making the life of farmed animals less artificial and more generally oriented to reduce the impact on the environment” [22, 36-38]. The rules relating to organic agriculture and, in particular, on laying hen farms are an example: the compulsory alphanumeric code to ensure traceability affixed to the egg shell also enables to identify the type of farming method, which is then directly specified on the product packaging.

In addition to the provisions by the European Legislator, it is possible to find on the market products made following principles which are basically the same, but spring from technical standards by private entities; an example are the numerous national and international initiatives to protect different marine species with specialized capture methods aimed at one species while protecting the others, such as selective tuna fishing, that reduces the risk of catching dolphins and/or sharks by mistake [39,40].

For over forty years, the European Union has promoted animal welfare with rules that are currently the most stringent in the world. In line with the “Farm to Fork” strategy for more sustainable agriculture, the European Commission is now considering the implementation of a review of animal welfare regulations, particularly during transport [41,42].

The outcome of the European Commission's public consultation on the adequacy of current EU animal welfare legislation, which ended on 21 January 2022, provided useful guidance on the steps the Commission will have to take by 2023 according to the “Farm to Fork” strategy, in order to review current EU legislation. Almost 60,000 people responded to the consultation [31].

Among the main results, the overwhelming majority of respondents (92%) believe that the current EU legislation on animal welfare does not guarantee adequate and uniform protection of all animal species that need it. The majority (65%) of respondents felt that they were not sufficiently informed about the conditions under which animals are kept in the EU. Finally, 90% of

respondents believe that an EU label for animal welfare would be a useful tool to provide consumers with information on animal husbandry conditions.

Food Diets and Sustainability

As highlighted above, production activities are, by definition, energy-intensive. The different phases of the agro-food chain also belong to this category. Activities such as production of feed, seeds and synthetic products and their use; cultivating and harvesting agricultural products; animal breeding, husbandry and slaughtering; processing and conditioning; logistics and distribution and therefore consumption, including waste and rubbish, all require the use of resources and generate, directly or indirectly, a series of environmental effects such as, for example, the production of climate-changing gases. Indeed, many studies have highlighted an important involvement of production processes of the agro-food sector in greenhouse gas emissions, with reference both to the type of product obtained [43] and the distance between production and consumption areas [44-46].

In particular, in the case of conventional or catch production, animal breeding tends to have a higher environmental pressure than production of vegetable origin. In fact, the production process concerning animal breeding has a marked impact on the various environmental indicators for the same quantity of "final product" obtained, as demonstrated by the data contained in Table 1. This case, however, shows that data focus on the different environmental pressures generated by production processes, without considering the nutritional value associated with each individual food proposed: an equally important aspect, but secondary for the present contribution.

At the same time, vegetables obtained from intensive cultivation require production processes that tend to be more energy-intensive than those for similar products of biological origin which, conversely, reduce the imbalance between resource consumption and energy content of the final food obtained [47]. This consideration is supported by data relating to the environmental impacts generated by similar products obtained with different production methods. An

Table 1: Environmental Indicators Deriving from the Production/Capture of 1 kg of some Products of Animal Origin and from the Conventional Production of Certain Vegetable Products

	Global warming (g CO _{2e} /kg)	Acidification (g SO _{2e} /kg)	Nutrient enrichment (g NO _{2e} /kg)	Land use (m ² year/kg)
ANIMAL BREEDING				
Pig	2250	40	214	6.8
Cattle	11600	117	988	18
Chicken	1860	34.2	149	3.6
CROPS PRODUCTION				
Wheat	710	5.3	65	1.5
Barley	650	5.8	57	2.0
Oat	570	6.0	33	2.3
Rape seed	1510	11.8	149	3.5

Source: <http://www.lcafood.dk/> accessed on 5 April 2022.

Table 2: Environmental Indicators Deriving from the Production of 1 kg of some Vegetable Products Obtained from Conventional and Organic Production

CROPS PRODUCTION	Global Warming (g CO _{2e} /kg)		Land Use (m ² year/kg)	
	Conventional	Organic	Conventional	Organic
Wheat	710	280	1.5	2.2
Barley	650	400	2.0	3.2
Oat	570	390	2.3	3.3
Rape seed	1510	950	3.5	5.68

Source: <http://www.lcafood.dk/> accessed on 5 April 2022.

example of this are the performances obtained from the organic production of wheat, barley, oats, rapeseed, which, despite a greater use of land for the quantities produced, show a lower value in terms of greenhouse gas emissions (Table 2).

Moresi and Valentini [48] underline the environmental load of the various food products and highlight how the choice of a diet to follow can also significantly affect environmental pressure. A diet geared towards a reduction of food of animal origin can lead to important environmental benefits. In particular, the so-called Mediterranean type diet, characterized by prevalent consumption of vegetable products with reduced protein intake from meats, could promote sustainable lifestyles with a favorable impact on health and the environment [49]. Indeed, diets with reduced consumption of products of animal origin, such as vegan or vegetarian, seem to produce positive effects both in terms of health and environmental aspects. Recommendations and prevention programs promote increasing the consumption of vegetables and fruits to 5-9 servings daily. Low consumption of vegetables and fruit is one of the most important risk factors for the development of diet-related diseases in developed countries [50,51].

De Boer and Aiking [52] show how farm animal welfare issues can be used as potential consumer market tools, on the basis of the "Three Rs" rule, i.e. Replacement, Reduction, and Refinement, oriented to eat less and better meat.

In high per capita income countries, many consumers are moving towards more sustainable consumption patterns. The reasons that lead to this change can be ethical e.g. animal welfare, environmental e.g. pressure by intensive breeding, and/or health-related e.g. reduced intake of saturated fat [53-57].

Rivero et Lee [58] highlight that in livestock systems animal welfare is a central pillar of sustainability, but due to its complex nature in practice welfare indicators are mostly limited to nutritional, environmental, and health aspects that are often negative, rather than investigating more complex "behavioral" indicators for ruminants. Pasture is considered a natural environment more conducive to developing greater animal welfare. However, consumers need to understand that implementing such manufacturing systems with higher Faw standards can result in higher costs for producers and consumers.

Several studies focus on consumers' intention to buy Faw products, highlighting the related willingness to pay (WTP). Results show that some consumer segments are strongly interested in the issue of animal welfare and are willing to pay a higher price [59-64]. Frey and Pirscher [65] analyzed the impact of ethical attitudes on willingness to pay for the improvement of farm animal welfare in Germany. Achabou [66] highlighted the interactions between animal welfare, a component of sustainable development, and luxury. Results show that a group of consumers places a high perceived value on luxury food products that adopt Faw practices.

Furthermore, some studies investigated consumers' attitudes towards the welfare of farm animals with a multi-dimensional approach linked, for example, to ethnicity, agri-food culture, ethics, purchasing power and beliefs [67-71].

As consumers pay more and more attention to the welfare of farm animals and its relationship with production methods, it is necessary to develop labeling models with truthful information trying to reduce the information asymmetry [72,73]. Important tools for food policy are private standards for animal health and welfare (AHW) and quality assurance (QA) programs. The application and supervision of these tools could help in providing consumers with more relevant information guarantees [74].

CONCLUSION

The current way of life seems to be unsustainable, and anthropic activities directly or indirectly create an increasing share of the impacts generating negative effects on the environment. In this context, animal welfare is a prerequisite for food product quality, useful for large food companies to safeguard the inherent characteristics of the food they produce and to meet consumers' safety requirements. In addition, it can be a useful element to define purchasing choices and eating habits of each individual consumer as well as being considered an expression of respect of the environment.

The meat production cycle and intensive farms give rise to several technical and economic inefficiencies and have various impacts on the environment, such as greenhouse gas emissions or soil pollution deriving from waste disposal. Transition from conventional production methods to alternative methods could guarantee a reduction of the anthropic pressure on the

Planet deriving from food production [75]. Diet change, with a transition from a diet with robust meat consumption to one characterized by the prevalent presence of foods of plant origin, could further contribute to a containment of the negative incidence of man on Earth.

The results of a Eurobarometer study show that citizens attach great importance to animal welfare and wish to receive more information on the conditions under which farm animals are treated. Furthermore, EU citizens declare that they are willing to pay more for products that respect animal welfare [76].

To conclude, a development of initiatives dedicated to consumer education and training, for example in terms of spreading the concept of circular economy and of moving from an intensive agricultural system to an extensive and organic one, should be useful to improve the human approach to nature and resource management on the Planet. In this sense, managers and corporations, with the support of institutional bodies, should define new tools to communicate more sustainable processes for obtaining meat and other animal origin products.

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