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Beyond the Impossible: Examining Alternative Meat Product Consumption in Austria

Alexandra S. Early
School of Public and International Affairs, North Carolina State University

Abstract

Environmental innovations are critical in shaping people's daily habits and resource consumption. These mechanisms aim to mitigate the harm done to the environment due to climate change and other anthropogenic activities. Previous research has postulated how governmental policies, business ventures, as well as a level of cultural acceptance can be advantageous for both environmental and human health. This paper articulates how alternative meat products are especially beneficial for the environment compared to their traditional animal meat counterparts by examining current trends in Austria. Austria in particular has adapted alternative meat products to fit the needs of their current population. Based on the present case study, incorporating meaningful adjustments to one's diet (i.e., consuming alternative meat products rather than animal meat products) can have a lasting, positive effect on ecosystems and sustainable practices. Literature in the future should focus on social norms and projected trends associated with animal meat consumption internationally.

Introduction

Based on global trends of animal meat consumption, action should be taken on a variety of platforms to preserve the environment for future generations. Today's factory farming industry is intended to maximize yield with little respect for animal welfare and long-term environmental costs. The United States Environmental Protection Agency reported that animal-based agriculture is the largest source of methane emissions in the U.S. (Environmental Protection Agency, 2023). Ruminant livestock species, such as cows, produce methane which contributes to climate change (Johnson & Johnson, 1995). Methane, among other greenhouse gasses, are dangerous when emitted into the atmosphere in excess and can cause extremely catastrophic consequences. Alternative meat products have been proposed as an option to alleviate the stress caused to the environment due to human behaviors. Additionally, surface and groundwater are routinely exposed to nitrogen and phosphorus because of animal manure runoff which is also dangerous for environmental and human health (*Inventory of U.S. greenhouse gas emissions*, 2023). The implementation of innovative environmental systems is necessary to mitigate human caused damage to the environment in a sustainable yet meaningful manner (O'Brien et al., 2011).

Environmental innovations are defined as mechanisms that decrease human dependence on natural resources (especially fossil fuels) and reduce the number of dangerous substances released into ecosystems (O'Brien et al., 2011). Although there are existing barriers that impede on the equity of environmental innovations internationally (Karakaya et al., 2014), technological advances can assist individuals in gaining affordable access to such systems in the future. Environmental innovations have become instrumental in business practices, policy initiatives, and academic realms. Some popularized commodities include renewable energy sources (e.g., solar, wind, geothermal, and nuclear), electric or hybrid cars, compostable or edible food packaging and utensils, and sustainable textile materials for clothing. Some products that have recently gained notoriety are alternative meat products, such as Impossible Foods and Beyond Meat in the U.S. These foods aim to replicate the sensory qualities of animal meat products (Fiorentini et al., 2020), but do not negatively impact the environment. Sensory science is a broad field that encompasses a variety of food attributes, including consumer acceptance, taste, smell, marketing, and other characteristics (Fiorentini et al., 2020). Much of the literature on alternative meat products has primarily focused on the social acceptability of switching from animal meat products to alternative meat substitutes. Researchers have reached a consensus that if these alternative meat products were to be more socially accepted, there would be overwhelmingly positive impacts on the environment. Austria is one country that has exemplified a moderate level of social and culinary acceptance of alternative meat products, leading to a reduction of the population's dependence on animal meat products (beef in particular).

The Present Study

In this paper, I will explore how legislative, business, and cultural domains support alternative meat products as a sustainable food source, and especially the consumption and perception of alternative meat products in Austria. This paper also evaluates the impact of alternative meat products on the environment. Furthermore, there remains a lack of knowledge as to how alternative meat products are adopted in the legislative, business, and cultural spheres. More research must be conducted to better understand how different environmental innovations operate as well as how these innovations shape national economies following their emergence. Although many are hesitant or unwilling to consume some alternative meat products (Fiorentini et al., 2020), people should be made aware of the vast array of benefits that these food options offer regarding the well-being of individuals and the environment.

Literature Review

Role of Government

There is a plethora of actors in the realm of environmental politics. Such actors include governments, non-governmental organizations, intergovernmental organizations, government agencies, lobbyists, the media, and businesses. Governmental institutions operate with the goals of fulfilling their nation's interests, maintaining their international reputation, and ensuring that future generations of their population have a rudimentary level of security and resources (Chasek et al., 2017). Innovations are particularly important in facilitating greater, collective objectives because they encourage a sense of community among different international players and foster the general idea of environmental protection (*Eco-innovation*, 2013). Moreover, governmental actors are crucial in the creation of environmental innovations because they are responsible for granting intellectual property rights, providing funding for research, and establishing tax incentives for individual product owners. For example, most member nations of the European Union now provide some sort of tax benefits for drivers of electric vehicles (Racz et al., 2015). Hence, governments are vital in the dissemination and cultural acceptance of environment innovations to their population.

Impact of Industry

There is considerable overlap between government and industry actors with respect to global environmental policy and the acceptance of innovations, such as in the case of alternative meat products. For instance, it is crucial that companies are held accountable for environmental goals that governmental organizations set forth to minimize resource consumption (O'Brien et al., 2011). On a macro level, a company can receive monetary incentives (that are proportional to its size) if it properly demonstrates positive environmental efforts (O'Brien et al., 2011). Environmental innovations are especially advantageous for the business

sector because they increase competition among companies (*Eco-innovation*, 2013). This competition inevitably leads to higher-quality products. Material efficiency is one specific method that emerging companies utilize to maintain a competitive edge (*Eco-innovation*, 2013). Similar to governments, businesses seek to convey a positive image and preserve their self-interests. Consumers may feel more trusting of a company if they know that the company values environmental sustainability. Environmental innovations establish novel ventures, increase the availability of technology, and influence economic policies, all of which impact the environment, and can be seen through the example of alternative meat consumption in Austria.

Case Study: Alternative Meat Products in Austria

Austria has previously shown a deep-rooted level of acceptance towards a variety of environmental innovations. Since 2013, Austria has increasingly relied on sustainable practices such as aquaculture (*Annual Livestock*, 2023). Additionally, the country has a high degree of food related self-sufficiency of animal products (e.g., milk and cheese) compared to other EU countries (*Annual Livestock*, 2023). From 2013 to 2019, the country significantly decreased its reliance on bovine animals, which are also especially harmful for the environment (*Annual Livestock*, 2020). Examining the acceptance of environmental innovations in Austria sheds light on how other nations' populations can accept alternative meat products in the future.

Alternative meat products are environmental innovations that have been proposed as an option to alleviate the effects of climate change and environmental damage. These substitutes have gained public attention in recent decades because technology and scientific developments have allowed these foods to mimic the sensory qualities of animal meat products (Fiorentini et al., 2020). Alternative meat products currently on the market include Impossible Foods (Khan et al., 2019) and Beyond Meat (Heller & Keoleian, 2018). Although these are U.S. based companies, their products are available internationally. Heller and Keoleian (2018) found that to make a Beyond Meat patty requires 99% less water, 93% less land, and 90% less greenhouse gas emissions than a typical beef patty to manufacture. In line with these findings, consuming one pound of Impossible Food's Impossible Burger instead of consuming one pound of animal meat lowers one's carbon footprint by the carbon dioxide equivalent of driving 36.4 miles in an automobile (Khan et al., 2019). Even fast-food restaurants such as Burger King, McDonald's, and KFC provide plant-based burger and nugget options internationally (Andreani et al., 2023). Some Austrian specific alternative meat companies include Vegini, Vegavita, and Fermify. This demonstrates that each country has different alternative meat products that have the potential to be socially accepted following their introduction. Therefore, a decrease in the level of reliance on animal meat products would positively impact the well-being

of the environment and individuals (Heller & Keoleian, 2018; Khan et al., 2019).

Austria has especially demonstrated a notable increase in the sale of plant-based meats, milks, and yogurts (*Plant-based foods in Europe*, 2020). This is interesting to consider because animal meat is a principal feature of Austrian cuisine. Some of the most popular Austrian dishes are wiener schnitzel, frittatensuppe, and sausage, all of which traditionally include animal meat (Raicic, 2023). This highlights a contradiction between the increase in sales of alternative meat products and the fact that traditionally consumed dishes in Austria are cooked using animal meat. Although this relationship exists, it is vital to examine why Austrians are more likely to purchase alternative meat products now than they were even a decade ago. The mainstream adoption of alternative meat products in Austria could be due in part to the fact that companies such as Vegini, Vegavita, and Fermify sell and market their uniquely Austrian products that are generally beloved by the population. Austrian alternative meat prodcuts created by company like Vegini very closely resemble the sensory and flavor qualities of their animal meat counterparts. Some of Vegini's most popular products include vegan bratwurst, sausages, burgers, and schnitzel, which are already well liked foods by the Austrian population. In the last few years, Austria has also become increasingly more transparent with information to their citizens through policy initiatives. This could also relate to why citizens are less likely to consume animal meat products than they were before. Hence, tailoring alternative meat products to the specific population could be essential for other countries in assuring that people socially accept such food options.

Furthermore, from an economic perspective, as people buy more of these alternative meat products, the price will decrease overtime. From October of 2018 to October of 2020, there was a 49% increase in plant-based food sales in Austria (*Plant-based foods in Europe*, 2020). This growth highlights that people enjoy these types of products and illustrates how the business sector has been impacted by the eating habits of individuals. For example, plant-based meals, such as schnitzel, goulash, and stir-fries, have had a substantial growth in sale value in Austria because the traditional versions of these dishes are highly regarded as noted previously (*Plant-based foods in Europe*, 2020). Beyond Meat also sells sausages, meatballs, and chicken tenders, which further shows how industries adapt to the needs of their customers and sustain their companies. Grocery stores and markets in Austria also provide alternative meat products at a reasonable price compared to other countries (*Plant-based foods in Europe*, 2020). The number of plant-based milks and yogurts purchased by consumers in Austria has increased dramatically, especially over the past two years (*Plant-based foods in Europe*, 2020). Business tactics that market a nations' delicacies to the population are one method in which companies can gather support for the adoption of alternative meat products.

In terms of an academic consensus on alternative meat products, scholars generally emphasize that such foods are beneficial in reducing people's carbon footprint and can also support human health. Much of the current research on alternative meat products focuses on its sensory qualities. As noted by Fiorentini and colleagues (2020), these qualities make it possible to market these food products to consumers who regularly eat animal meat products as well. One area of current research revolves around social perceptions and misconceptions related to alternative meat products. Individuals who typically consume animal products are less likely to purchase alternative meat products because the sensory qualities associated with alternative meat products are slightly different from those of animal meat products (Fiorentini et al., 2020). A common notion is that in order to eat alternative meat products, one should be a vegan, vegetarian, or pescatarian, but this is simply untrue. Even if an individual who consumes animal meat products reduces their beef consumption by eight ounces per week with an alternative meat substitute, the person would save around 44.5 gallons of water (Heller & Keoleian, 2018). Although individuals can make changes to their daily habits, much of the responsibility for the production of meat and the farming industry should be placed on larger, systemic practices that damage the environment.

Additionally, there is social stigma associated with "lab-grown" or cultured foods but alternative meat products are more beneficial for one's physical well-being than meals prepared using traditional animal meat. Beyond Burger patties, for example, contain 35% less saturated fat than beef burgers and are an excellent source of protein (Heller & Keoleian, 2018). Study findings suggest that switching from animal meat products to alternative ones even a few times a week will have advantageous effects both on human and environmental welfare (Heller & Keoleian, 2018). Given this, business tactics and governmental policies are excellent ways in which social support can be gathered for alternative meat products.

Finally, from an environmental perspective, some outcomes related to increasingly relying on alternative meat products would be a reduction in the amount of water and land use as well as a reduction in methane emissions. While there are discrepancies in the amount of methane scientists believe to be produced by cattle internationally, it is known that ruminant animals are a substantial contributor to the release of these chemicals into the atmosphere (Johnson & Johnson, 1995), which are dangerous for human and environmental health. Cattle animals also require large amounts of land and water to survive, so a market demand for other options would eventually lead to less land degradation and water usage. Decreased levels of methane and animal excrements would also help to preserve the environment and increase sustainable practices. As seen through Austria's trends related to alternative meat consumption, other countries can adapt these practices to harbor support for these foods that will be relied upon even more so in the future.

Conclusion

In conclusion, environmental innovations can be implemented and socially accepted based on support boosted by political, business, and academic spheres. These areas of society heavily influence all aspects of human existence. Research has shown that environmental innovations can create lasting, salient change and should be adopted by the international community. The example of alternative meat consumption trends in Austria demonstrates that even seemingly inconsequential adjustments (i.e., eating some plant-based foods throughout one's week) can positively impact humanity and greater ecosystems. There is an academic consensus that environmental innovations will be increasingly adopted by the public in a variety of ways in the coming decades, including (but not limited to) different methods of transportation, foods, architecture designs, and waste management systems.

Austria is utilizing environmental innovations such as alternative meat products in an effective manner, which not only appeals to consumers, but also positively impacts the planet. Intergovernmental organizations like the UN and the EU have taken steps to make data and scientific publications more available in an effort to communicate such findings in a digestible way for individuals. Governments should continue to educate citizens by providing information, access to technology, and monetary incentives that assist people in making meaningful contributions to the environment. Emphasizing the importance of manageable changes while holding influential corporations accountable for what they release into the atmosphere will support humanity in the long term.

Due to advances in policy, business, and research, outcomes such as increased environmental performance, pollution reduction, and competitiveness among businesses have led to tangible changes in Austria and throughout the global community. Technology has progressed enough that environment innovations can be relatively affordable, and their sales have steadily increased annually (Racz et al., 2015). These advances will create sustainable changes that result in the reduction of greenhouse gas emissions. Policies have adapted accordingly to the mainstream usage of other environmental innovations such as with hybrid and electric vehicles. Many nations now offer incentives including rebates and tax benefits for purchasing hybrid and electric cars (Racz et al., 2015) that may initially cost more to purchase than standard modes of transportation (Guo & Kontou, 2021). Today there is also social status associated with owning and driving hybrid and electric cars. Political, business, and social changes will further the implementation of environmental innovations and eventually lead to the widespread usage of these systems in the future.

Future Directions

Scholarly work examines the influence that governmental and nongovernmental actors have on the creation and implementation of environmental innovations. But criticism in this field is worth noting. One

area of future research has been suggested by Oh and colleagues (2016) is that conceptual ambiguity exists (i.e., a lack of a consensus concerning definitions of innovation and sustainability) and has led to inconsistencies in literature (Ritala & Almpanopoulou, 2017). Thus, future work should attempt to eliminate inconsistencies that exist in the definitions of terms across different disciplines. Another aspect of research focused on these concepts is that new sustainability-related technological systems are primarily profit driven (Ritala & Almpanopoulou, 2017). Thus, private actors play a prominent role in popularizing devices and making them successful. Future research related to environmental innovations could focus on how inexpensive, simple products used in the global south for example, can limit people's environmental impact (O'Brien, et al., 2011).

Additionally, future research should consider other social factors that influence the consumption of alternative meat products in other countries. One facet that could be studied is how gender norms influence animal meat consumption habits as well as people's willingness to become a vegetarian or vegan. This is rooted in the idea that masculinity and animal meat consumption are often associated with one another in conjunction with holistic views of self-awareness (De Backer et al., 2020).

Lastly, another area of research interest could be the impact that plant-based diets have on human bodies in addition to the environment. There are health benefits related to consuming plant-based foods (Barnard et al., 2019), and many athletes today chose this lifestyle. In addition, companies may continue to shift their focus and be influenced by customer demands for alternative meat products. Based on this knowledge, alternative meat products can have lasting, positive effects on human and environmental health.

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