



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Economia agro-alimentare / Food Economy

An International Journal on Agricultural and Food Systems

Vol. 25, Iss. 2, Art. 2, pp. 115-134 - ISSN 1126-1668 - ISSNe 1972-4802

DOI: 10.3280/ecag2023oa14828



Financing for sustainable food systems: The role of the vending sector

Alberto Bertossi^{*a}, Stefania Troiano^a, Francesco Marangon^a

^a University of Udine, Italy

Abstract

The agribusiness sector needs substantial funding to initiate an ecological transition involving healthy diets and the creation of local circuits and linkages. One sector that has yet to be studied from this perspective is vending, whose importance is confirmed by its profits, especially in Italy. At present, the vending sector cannot be considered sustainable as it rarely contributes to the development of healthy diets and local economies with low environmental impact. There are cases of products with suitable characteristics that can push the sector towards more sustainable dynamics, but such products often do not achieve the success they deserve for various socioeconomic reasons. Access to financial investment or alternative modes of financing could help small and medium-sized enterprises in the sector overcome these difficulties.

Article info

Type:

Article

Submitted:

27/10/2022

Accepted:

08/05/2022

Available online:

08/09/2023

JEL codes:

Q01; I00; F0

Keywords:

Vending
Financing
Sustainable
development
Healthy diets
Local development

Managing Editor:

Lucia Briamonte,
Biagio Pecorino,
Angelo Frascarelli

* *Corresponding author:* Alberto Bertossi - Department of Economics and Statistics - University of Udine - Via Tomadini 30 - Udine, Italy. E-mail: alberto.bertossi@uniud.it.

Introduction

The Covid-19 pandemic has disrupted food systems worldwide, affecting food security and the nutrition of rural and urban populations and challenging the resilience of the global food system (Clapp & Moseley, 2020; Nemes *et al.*, 2021). The severe blow inflicted on the entire food sector by the pandemic, along with the climate change crisis, exposed the need to develop food systems that are healthier, more sustainable, equitable and resilient (Bakalis *et al.*, 2020; Steiner *et al.*, 2020). Moreover, their effects made it essential to create stronger policies designed to increase economic funding and to make access to such funding easier for food companies (Rockström *et al.*, 2020; Steiner *et al.*, 2020). The goal is to help such enterprises in the transition from ‘old way’ business models towards more sustainable ones that are capable of reducing the high social and environmental burden associated with supply chains, in line with current international agreements (i.e. Agenda 2030) and European strategies (i.e. From Farm to Fork) (European Commission, 2020). The total amount of investment required each year for the transformation of food systems by 2030 is estimated to be \$300-350 bn (Steiner *et al.*, 2020; The Food and Land Use Coalition, 2019), which is divided into 10 key aspects: healthy diets, productive and regenerative agriculture, protecting and restoring nature, healthy and productive oceans, diversifying the protein supply, reducing food loss and waste, local loops and linkages, harnessing the digital revolution, stronger rural livelihoods and gender and demography (The Food and Land Use Coalition, 2019).

The healthy diets dimension plays a key role in the ecological transformation of our society by 2030. Thus far, current food systems (geared towards the production and consumption of high-quantity, affordable foods that are of low nutritional value) have resulted in huge hidden costs, especially with regard to human health. Indeed, they are a major cause of malnutrition and health diseases, in particular obesity (Abdeen *et al.*, 2017; FAO, 2018; Guyomard *et al.*, 2012; Hall, 2018; NCD Risk Factor Collaboration, 2016), cardiovascular diseases, diabetes and cancers (Danaei *et al.*, 2014; Pearson-Stuttard *et al.*, 2018; Wang *et al.*, 2011). A simulation performed in 2011 revealed that if there had not been a prompt change in the growth rate of such healthy diseases, the combined medical costs associated with their treatment would have increased by \$48-66 bn/year in the USA and £1.9-2 bn/year in the UK by 2030 (Wang *et al.*, 2011). Incoherent policies and guidelines, current marketing strategies and public investment decisions have been the main drivers of the high consumption of unhealthy foods (The Food and Land Use Coalition, 2019).

Shifting to human and planetary health diets requires annual investments equal to nearly \$30 bn, which can, in turn, lead to nearly \$2 tn of annual

business opportunities (The Food and Land Use Coalition, 2019). Such investments are fundamental to 1) orient people's diets towards more protective food, limiting the consumption of unhealthy and ultra-processed food high in salt, sugar or saturated fats; 2) support small and medium-sized enterprises in adopting business activities that prioritise the availability, desirability and quality of safe and nutritious food; 3) redirect public finance towards healthy foods, while discouraging at the same time the production and consumption of unhealthy food through taxes and fiscal transfers; 4) stimulate innovation to harness the power of business and orient it towards nutritious and sustainable food product lines thanks to access to investments; and 5) promote behavioural change through new marketing strategies guaranteeing better visibility for healthy and nutritious foods (The Food and Land Use Coalition, 2019).

Another dimension to consider regarding the ecological transformation of our society is building local loops and linkages. According to the Ellen McArthur Foundation (2019), 80% of all food will be consumed in cities by 2050. Nowadays, the production of food intended for cities is highly linear, with huge environmental and social impacts mainly caused by conventional farming practices that prefer quantity over quality (Ellen McArthur Foundation, 2019). Moreover, such production is usually located beyond regional or national boundaries, generating additional environmental impacts in terms of greenhouse gas (GHG) emissions during transportation. Despite the proliferation of initiatives, there are still major barriers to overcome to initiate such a transformation, including the absence of local sourcing strategies by major retailers, the shortage of infrastructure and logistic investments (The Food and Land Use Coalition, 2019), the low level of economic and financial autonomy of farmers (Pereira *et al.*, 2018) and a lack of political support (Živković *et al.*, 2022).

The annual economic investment required to transition towards strong, efficient and local sustainable food economies amounts to nearly \$10 bn, which can, in turn, lead to nearly \$215 bn of annual business opportunities by 2030 (The Food and Land Use Coalition, 2019). Expanding local supply will mean shorter distribution networks, resulting in a decrease in the related GHG emissions (Enjolras & Aubert, 2018); the wider and faster availability of nutritious food to help tackle obesity and undernutrition (The Food and Land Use Coalition, 2019); economic gains from the lower transport costs of shorter supply chains, direct sourcing from local farmers and the creation of new jobs through product innovation (Galli & Brunori, 2013); food security by reducing import dependency on raw materials grown at the global level (The Food and Land Use Coalition, 2019); and the promotion of a closer relationship between producers and consumers (Enjolras & Aubert, 2018).

To prepare food systems for a sustainable transition, it is imperative to identify those industrial sectors that have significant negative social and environmental impacts and then redesign them and adapt them to sustainability principles. One such sector that ought to be reconsidered and redesigned for the future is vending. Thus far, research studies that discuss how to transform the vending sector based on sustainability principles are quite scarce. Therefore, the aim of the present study is to fill this research gap by considering ‘healthy diets’ and ‘building local loops and linkages’ as future possible development perspectives for the Italian sector, which is the largest market among the European member states. This study is organised as follows: 1) an introduction to the role of vending in our daily lives, its economic importance at the European and Italian levels and the reasons why it cannot be considered a sustainable sector; 2) the presentation of an Italian case study about a local healthy sweet snack as an alternative to traditional vending food and a discussion of the main barriers that the promotion and sale of this sustainable snack currently face; and 3) discussion and conclusions regarding what alternative financial model, along with policy commitments, can be used to guarantee that sustainable snacks developed specifically for the vending sector obtain the success they deserve.

1. The vending sector

The vending sector is nested within the food supply chain, and its role is to provide low-cost food and beverages for immediate consumption. Although other retail services exist (e.g. supermarkets, grocery stores, coffee shops), vending has two unique characteristics: it is widespread in cities within public (e.g. universities, hospitals), private (e.g. companies, offices) and hybrid (e.g. malls, gyms) spaces, and it provides – through vending machines – quick and easy access to different types of food and beverages while meeting consumer needs. Since its global spread during the 1960s and 1970s, the vending sector has owed its success to its ability to exploit certain social dynamics. For example, vending machines are not merely a way to supply food and beverages, but they also serve as meeting places for people to exchange ideas while taking breaks from working or studying. When humans work or study intensely for a long time, their brains require about 12% more energy than usual to do the extra work, and carbohydrates (especially sugar) are their quickest source of energy (Peters, 2019). This is why many feel an irresistible desire for sweets on such occasions, and vending machines often present the nearest solution. Another situation in which people often use vending services is when they are bored. Boredom is powerful enough to encourage people to have a snack when they are not otherwise able to occupy their minds (Braden

et al., 2018; Koball *et al.*, 2012). This is why vending machines are always placed close to spaces such as waiting rooms, airports or hospitals. Last but not least, vending machines are a convenience, as they allow people to find a wide variety of foods and drinks without having to remember to bring them from home.

The European and Italian markets

The ability of the vending sector to reach any geographic region while providing people with what they want when they want it has created considerable economic gains. It is estimated that the total revenue of this sector in Europe reached €17 bn in 2019 (EVA, 2020). Sales of hot beverages represented the driving force, accounting for nearly €11 bn of revenue (62.5% of the total), followed by cold beverages (22%), snacks (12.5%) and food (3%) (EVA, 2021). Overall, in less than 10 years (2011–2019), the European market significantly expanded its offering within a higher number of public and private sites, increasing, in turn, its revenues by 21%. However, the entire sector has been heavily affected by the Covid-19 crisis owing to the closure of sales channels, with significant falls in both the number of vends and profits. In 2020, the total European revenue of the vending sector is estimated to have dropped by 30% (VendingMarketWatch, 2021) compared to the 2019 figures.

Italy is the largest vending market among the European member states, with more than 800,000 vending machines across all its regions. According to a market analysis, the total revenue of the sector in 2019 reached nearly €2 bn, with nearly 5 bn products sold. As in all other European states, the Italian market was also highly affected by the Covid-19 crisis in 2020, with drops in both consumption and revenue of 30.4% and 31.95%, respectively. Nevertheless, recent economic data show a slight, albeit slow, recovery of the sector due to the effects of the Covid-19 crisis, which is, above all, linked to new habits of use of the environments most closely linked to the sector, such as schools, hospitals and offices. Indeed, despite still being substantially lower than the 2019 figures, in 2021, the total revenue (€1.4 bn) and consumption (more than 3.5 bn) increased at rates of +12% and +10%, respectively, compared to the 2020 situation. Similar to in the pre-pandemic situation, hot beverages represented the largest market share in 2021, equal to 68% of the entire revenue (nearly €950 million), with coffee being the most consumed product (more than 2 bn consumptions). Cold beverages (i.e. mineral water, soda, tea, energy drinks, juices) comprised the second most consumed product category, sharing 18% of the market, with a total revenue of almost €250 million. Finally, the third most

consumed product category was sweet and salty snacks, sharing 14% of the market, with a total revenue of nearly €200 million.

A still unsustainable sector

Financing for sustainable food systems: the role of the vending sector

Despite the slow economic recovery, the Covid-19 crisis highlighted how static and fragile the vending industry is in the face of large-scale imbalances. This event has led the industry's major associations to think about how they can transform it and make it agile in view of future challenges. A topic that has recently emerged in Europe (EVA, 2021a, 2021b) and Italy is the greater attention being paid to business aspects related to sustainability, particularly to human health and the environment. The actual vending sector cannot be considered sustainable for two main reasons. The first one is linked to the type of products sold and the second one to its supply chain.

Since the 1960s and 1970s, people have considered vending machines as one of the symbols of modern consumerism as well as one of the possible contributors to unhealthy eating habits and, consequently, the increase in diseases (Segrave, 2002). This accusation was supported in subsequent years by well-established nutritional and clinical evidence of 1) the very low nutritional profile of the foods and beverages sold (i.e. high in energy, saturated fat or trans fats, sodium and/or added sugars and low in fibre and/or vitamins) (Byrd-Bredbenner *et al.*, 2012; Faris *et al.*, 2021; Grech *et al.*, 2017; Rahi *et al.*, 2022) and 2) a possible relationship between the consumption of such products and the risk of developing overweight and obesity (Bertéus Forslund *et al.*, 2005; Fox *et al.*, 2009; Ludwig *et al.*, 2001; Malik *et al.*, 2006; Minaker *et al.*, 2011; Raposo *et al.*, 2018). A recent study also revealed a significant lack of sustainable food products within vending machines (Bertossi *et al.*, 2022), that is, food products that are not only 'nutritionally adequate, safe and healthy' but also 'protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable, while optimizing natural and human resources'.

Despite such evidence, over the years, companies have had to constantly source huge quantities of such junk foods and make them quickly available to meet the exponential increase in demand. The production of massive quantities requires huge amounts of raw materials grown mainly in developing countries, where working conditions are often inadequate to provide people with a decent lifestyle (this is the case, for example, for four main raw materials used in vending products, i.e. cocoa, sugar, coffee and

tea) (ILO, 2017, 2020b, 2020a; Whoriskey & Siegel, 2019) and intensive cultivation techniques are used, causing the degradation of natural systems. Along the food supply chain, agriculture is responsible for GHG emissions, land use, imbalances in the soil carbon cycle and the eutrophication of oceans and freshwaters (Amundson *et al.*, 2015; Crippa *et al.*, 2021; Notarnicola *et al.*, 2017; Ritchie & Roser, 2020). The environmental impacts associated with the remaining supply chain phases (i.e. industrial processing, transportation, packaging, retail, use and end of life), although considerably lower (Notarnicola *et al.*, 2017), are equal to 18% of the total emissions of the entire system (Ritchie & Roser, 2020).

2. Learning from the past to shape the future

Evidence of the high degree of unhealthiness of food products sold in vending machines was (and still is) the main driving force behind several types of interventions that aim to encourage consumers to make nourishing choices, the most common of which concerns the replacement of unhealthy products with healthier solutions (Gorton *et al.*, 2010; Grech & Allman-Farinelli, 2015; Griffiths *et al.*, 2020; Yan *et al.*, 2019), sometimes combined with the use of promotional signs (e.g. labels) (Hua *et al.*, 2017; Rosi *et al.*, 2017; Viana *et al.*, 2018). On the other hand, in terms of the environmental unsustainability of the sector, only one research study aimed to develop a supply chain that was shorter than the existing one (Pereira *et al.*, 2018).

To the best of the authors' knowledge, research papers that discuss the development of food products that are both healthy and environmentally sustainable are still lacking. In the next section, we will briefly present what can be considered an example of a sustainable snack developed specifically for the vending industry as testimony to the existence of sector initiatives to attain a sustainable transition based on the dimensions of 'healthy diets' and 'building local loops and linkages'. Moreover, we will present the main obstacles that the snack has faced since its introduction and that other similar food products could encounter as well.

The Italian 'SCUISÎT' snack

'Raw materials and pastry know-how on the one hand, quality automatic distribution on the other, interconnect, showing love for the territory, respect for values, genuine and authentic taste and attention to the green economy. From this base comes the precious and delicious content of the SCUISÎT snack, thus expressing the synthesis of Friulian excellence'. This

is how the Friulian vending company presents its new snack on its webpage¹. ‘SCUISÎT’ is a sweet Italian snack launched in 2022 and developed in Friuli-Venezia Giulia, a region located in the northeast of Italy. It is the result of a collaboration between two local actors: a vending company and a chocolate shop. Respect and love for the Earth and the surrounding environment, a sense of belonging, collaboration and the will to serve the local community with seriousness and quality are the commitments shared between them. SCUISÎT is different from other traditional products not only because of the name it bears, which is obligatorily Friulian, but also because of the choice of top-quality local raw materials: in fact, it is made with wheat flour, hazelnuts, gianduia and cocoa cream exclusively produced and processed within the region. The sustainability of the snack also goes beyond its ingredients; by purchasing it, consumers can support a local association that helps patients suffering from eating disorders and their families.

Overall, SCUISÎT represents an attempt to create a regenerative local value chain in line with circular economy principles that will have a positive impact on the environment. In parallel, it endeavours to support the social community with a sweet product made using seasonal raw materials, with 50% fair trade cocoa beans and only natural ingredients.

Despite its features, since its introduction, SCUISÎT has not received the success it deserves. Below we will provide four possible (but not conclusive) reasons by referring to the existing literature.

The first reason is linked to both impulsive needs (e.g. hunger or the desire for something sweet) (Cheval *et al.*, 2017; Hoffmann *et al.*, 2019) and the ‘fear of novelties’ (also called neophobia) (Rabadán & Bernabéu, 2021). The majority of consumers purchase food from vending machines because of hunger (Ng *et al.*, 2019). Hunger can generally motivate food-seeking behaviour and unhealthy food consumption through its direct effect of wanting for food (Cheval *et al.*, 2017), while hindering consumers from choosing sustainable products due to its influence on taste evaluation and a preference for specific foods (Hoffmann *et al.*, 2019). Moreover, consumers often rely on their past experiences when making food selections (Ogundijo *et al.*, 2021). Therefore, it is possible that when consumers face vending machines in a state of hunger or ‘craving- for-sweets’, they tend to choose the ‘conventional’ and ‘unhealthy’ products they already know will satisfy their cravings over a new product, even if the new product (in this case, SCUISÎT) is perceived as healthier and more sustainable.

The second possible reason, which is linked to the first one, regards marketing and promotion. The influential effect of brand logos, product

1. <https://cda.it/projects/arriva-scuisit-la-nuova-mirinde-furlane-al-distributore-automatico>.

advertisements and shelf placement on food and beverage consumption is quite well known in the literature (Boyland *et al.*, 2016; Chandon & Wansink, 2012; L. Harris *et al.*, 2020). In their work, L. Harris *et al.* (2020) found that the products of major companies received significantly more in-store marketing support, including displays and price promotions, than the products of minor companies. The same strategy can be observed within vending machines; that is, famous (and generally unhealthy) food products are present in higher quantities (Byrd-Bredbenner *et al.*, 2012; Faris *et al.*, 2021; Grech *et al.*, 2017; Rahi *et al.*, 2022) and are generally more visible compared to healthier and sustainable options. However, SCUISÎT is currently only sold by the vending company responsible for its development and production, and it is very likely that this company has positioned it within its vending machines in a way that makes it highly visible to consumers. Therefore, it is possible that the real reason for its lack of success concerns the high costs associated with its promotion rather than its visibility. The success of famous unhealthy food products generally derives from expensive advertisement campaigns financed by international companies with certain amounts of money (Potvin Kent *et al.*, 2022). For example, in Canada alone, it was estimated that nearly \$492.9 million of the \$628.6 million food and beverage advertising expenditures in 2019 was spent on ‘unhealthy’ food advertising (Potvin Kent *et al.*, 2022). Small food companies usually do not have enough money to finance large advertising campaigns, which leads to the failure to promote their products to consumers.

The third reason is linked to SCUISÎT’s price, which is quite high compared to that of an average snack. The cost of foods and beverages is one of the main drivers of food selection (Ogundijo *et al.*, 2021). Generally, healthier food products have higher costs compared to unhealthy solutions (Darmon & Drewnowski, 2015), and this trend has been observed for vending products as well (Ng *et al.*, 2019; Shi *et al.*, 2018). Regarding consumer behaviour, the scientific literature has very divergent ideas on the topic (Dolgoplova & Teuber, 2018); some authors have demonstrated how consumers tend to restrain themselves from purchasing and paying more for healthy and sustainable products, while other scholars obtained contradictory evidence. In terms of the vending sector, price manipulation strategies are common (Bos *et al.*, 2018; Grech & Allman-Farinelli, 2015), and most authors agree that consumers express higher willingness to purchase more healthy and sustainable products if their prices are lowered (Grech & Allman-Farinelli, 2015; Ng *et al.*, 2019).

The fourth reason concerns the difficulties in managing new local supply chains. A short supply chain can be defined as ‘a supply chain involving a limited number of economic operators, committed to co-operation, local economic development, and close geographical and social relations between

producers, processors and consumers' (Regulation (EU) No 1305/2013). Despite being simpler compared to a traditional chain, hidden complexities exist for short supply chains. In their work, Pereira *et al.* (2018) analysed a case study on a local supply chain of fresh milk sold at vending machines. The aim of their research was to evaluate whether the milk supply chain through vending machines had lower environmental impacts compared to traditional supermarket supply chains. Despite the shorter supply chain achieving 45% lower environmental impacts compared to traditional ones, the initiative did not work for many socioeconomic reasons, such as the farmers' lack of processing and marketing capacities, the difficulty of networking and collaborating with other key stakeholders, the necessity of raising consumer awareness of the benefits of pasteurised milk and the limited range of dairy products offered. Other reasons were found by Živković *et al.* (2022), who reported that the main problems small food producers face when trying to implement a short food supply chain are 1) the lack of knowledge and expertise to deal with regulatory issues, 2) insufficient policy support at the EU level and 3) unfavourable subsidy policy.

3. Discussion

SCUISÎT demonstrates how, even in complex and uncertain times, it is possible to contribute to the creation of environmental and social value through local collaboration and the sharing of a common dream. It is likewise an ambitious attempt to contribute to revolutionising the vending sector and orienting it towards more sustainable business models. However, some socioeconomic barriers can hinder vending from completely transitioning towards new patterns by selling healthy and local food products, such as SCUISÎT. Such products generally possess higher prices compared to the average (and consumers usually restrain themselves from purchasing them), they have to compete with more traditional and famous snacks usually preferred by consumers, they are produced by small and medium-sized enterprises without enough money to finance strong advertising campaigns to promote them to potential consumers and they are the result of local partnerships, which could become difficult to manage. All these obstacles could be overcome through both financial investments along the entire supply chain and the development of strong institutional policies.

As discussed previously, nearly \$30 bn of annual investments are needed to encourage consumers to choose more protective foods by employing new marketing strategies that guarantee better promotion and by motivating SMEs to invest in new business models and orient them towards nutritious and

sustainable food product lines (The Food and Land Use Coalition, 2019). An additional \$10 bn would be needed to expand and strengthen local supply chains, with huge environmental and social benefits (Enjolras & Aubert, 2018; Galli & Brunori, 2013; The Food and Land Use Coalition, 2019). In this context, the Italian PNRR (National Recovery and Resilience Plan) will allocate €1.2 bn for the development of sustainable agri-food supply chains by 2026². In particular, such a plan aims to finance those business activities committed to making food production and processing more sustainable and develop a marketing, promotion and research programme for sustainable products. However, alternative ways should also be defined since access to finance can be a key obstacle for SMEs involved in collaborative short food supply chains (Kneafsey *et al.*, 2015). In their work, Behrendt *et al.* (2022) proposed community-based financial models involving citizens and consumers as potential ways to address both sustainable food production and consumption. The authors discussed the role of proximity in fostering community investments in local activities and markets. Proximity refers to ‘being close’ and comprises both geographical and non-geographical dimensions. Therefore, it seems that consumers and citizens who feel close to a certain local food activity will be more willing to invest in such an activity and pay more for food products owing to the establishment of trust and the presence of shared values. Apart from financial considerations, community financing can also serve as a marketing tool, helping to build or intensify customer relationships. This financial model can be considered an alternative to traditional models, which are too focused on the maximisation of profits (Stephens *et al.*, 2019). The positive effects that can derive from such models have been discussed by Stephens *et al.* (2019), who stated that they can help increase prosperity, build adaptive capacity, increase social capital and foster innovation in rural communities where local food activities are common. Such financial models could also help small and medium- sized vending enterprises (which constitute the majority of this type of activity in Italy) to scale their business models and contribute to the sustainable development of their surrounding contexts through sustainable food products. Moreover, they could help sustainable snacks obtain the success they deserve.

A strategy based only on financial interventions, however, risks being ineffective without adequate institutional commitment to give sustainable food greater visibility and access. As for vending, green public procurement (GPP) plays a key role. GPP is an important tool in the context of sustainable food consumption and production through which public authorities are encouraged to integrate various sustainability criteria into their tenders

2. www.italiadomani.gov.it/content/sogei-ng/it/it/Interventi/investimenti/sviluppo-logistica-per-i-settori-agroalimentare-pesca-e-acquacoltura-silvicoltura-floricoltura-e-vivaismo.html.

and select suppliers whose food offerings show greater compliance with these criteria. Despite the criteria having been updated in 2019 (European Commission, 2019), most products found in vending machines today have nutritional and production characteristics that are not in line with European guidelines. Although there may be numerous explanations for this fact, one certainly crucial element is the lack of an institutional policy oriented towards sustainable development. Such a policy is defined by an organisation's mission, vision, objectives and operational strategies. Without a clear policy, any institution (e.g. a university) will have serious difficulties in identifying a sustainable plan, an operational strategy and the necessary interventions to achieve a sustainable development condition (Blanco-Portela *et al.*, 2017), including making proper use of GPP (Cheng *et al.*, 2018). Several studies in the literature have shown how the creation of institutional policies geared towards improving consumers' health has led to a sharp decrease in unhealthy products found inside vending machines in various locations. For example, in their work, Blake *et al.* (2021) discuss the effects of a university policy called the "Deakin Food Charter", which was created with the goal of providing healthy, nutritious and sustainable foods that could meet both the needs of the university community and the commercial needs of the vendor, while at the same time creating as stimulating an environment as possible for the adoption of new lifestyles. In the two years of monitoring, the adoption of such an inclusive and integrated policy has brought several benefits, both nutritional and economic. But the most important point is that such commitment on the part of Deakin University has motivated the service manager not only to adapt to the new university policy but also to improve it and implement the interventions made on campus in other contexts as well. This shows how important it is to create clear, ambitious and inclusive policies, which can also have positive effects in relationships with service providers. However, the commitment to sustainable development should concern not only institutions but also the vending companies themselves. Therefore, for the society of the future, vending companies should reconsider their position as mere passive suppliers of food and beverages, become more proactive and actively collaborate with local institutions in developing policies and interventions that 1) provide an enabling environment for learning healthy preferences; 2) overcome barriers that prevent the expression of healthy preferences; 3) encourage people to re-evaluate their existing unhealthy preferences; and 4) stimulate a positive food systems response (Hawkes *et al.*, 2015).

Conclusions

Financing and policies are key aspects for initiating the necessary ecological transition of the entire agri-food industry. Although all the sectors that are part of the agri-food chain should be included in development plans and programmes, there are still some that do not receive the attention they deserve. The vending sector falls into this group, and little is still known about its dynamics and how it could contribute to sustainable development, despite it being a staple in the daily lives of many of us. Most academic research focuses on how to steer consumers towards buying healthier products, and only one study discusses the development of a local short supply chain market as an alternative to traditional ones. However, virtuous examples exist of companies that are constantly engaged in the sustainable development of the sector. This study discussed SCUISÎT, which represents an attempt to create a regenerative local value chain in line with the principles of the circular economy with a positive impact on regional development. This impact concerns not only environmental aspects (reduction of GHG associated with transport), but also economic (development of partnerships and business collaborations), social (creation of new jobs), and nutritional (development and consumption of healthier products). The SCUISÎT case also shows how even a largely ignored sector, such as vending, can play its part. Circularity, health, and wellness are three of the main topics included within the European Vending and Coffee Service Association's strategy for building a strong, innovative, and sustainable vending sector (EVA, 2021b). What are missing, however, are both a concrete commitment and a set of tools that can help this sector realise its new sustainable potential. SMEs in the sector often struggle to create local and circular supply chains associated with the sale of healthy and sustainable products, as access to the substantial funding required is complex. Nonetheless, Italy is undertaking to create development programs in line with European directives that can help businesses cope with these difficulties.

As previously discussed, this article aims to initiate a discussion on this issue, bringing to light several problems to be addressed and the potential to be cultivated in the future. Unfortunately, its originality is, at the same time, its main limitation, as it prevents a comprehensive and definitive discussion. Future academic research could use this study as a starting point to demonstrate the importance and effectiveness of different types of financing and policies and how the vending industry can use them to transform itself towards more sustainable dimensions. At the policy level, on the other hand, more effort is needed both in not neglecting parts of the food supply chain with great potential and in creating innovative financing programmes, also for those SMEs that are embedded in local contexts and represent a point of reference for the community.

References

- Abdeen, Z.A., Wolfgang Ahrens, Ajlouni, K., Akhtaeva, N., Al-Hazzaa, H.M., Al-Othman, A.R., Al Buhairan, F., Al Dhukair, S., Ali, M.M., Ali, O., Alkerwi, A., Alvarez-Pedrerol, M., Amarapurkar, D.N., Amouyel, P., Amuzu, A., Anderssen, S.A., Andrade, D.S., Ångquist, L.H., Anjana, R.M., ... Ezzati, M. (2017). Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: A pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. *The Lancet*, 390(10113), 2627-2642. doi: 10.1016/S0140-6736(17)32129-3.
- Amundson, R., Berhe, A.A., Hopmans, J.W., Olson, C., Sztein, A.E., & Sparks, D.L. (2015). Soil and human security in the 21st century. *Science*, 348(6235), 1261071. doi: 10.1126/science.1261071.
- Bakalis, S., Valdramidis, V.P., Argyropoulos, D., Ahrne, L., Chen, J., Cullen, P.J., Cummins, E., Datta, A.K., Emmanouilidis, C., Foster, T., Fryer, P.J., Gouseti, O., Hospido, A., Knoerzer, K., LeBail, A., Marangoni, A.G., Rao, P., Schlüter, O.K., Taoukis, P., ... Van Impe, J.F.M. (2020). Perspectives from CO+RE: How Covid-19 changed our food systems and food security paradigms. *Current Research in Food Science*, 3, 166-172. doi: 10.1016/j.crfs.2020.05.003.
- Behrendt, G., Peter, S., Sterly, S., & Häring, A.M. (2022). Community financing for sustainable food and farming: A proximity perspective. *Agriculture and Human Values*, 39(3), 1063-1075. doi: 10.1007/s10460-022-10304-7.
- Bertéus Forslund, H., Torgerson, J.S., Sjöström, L., & Lindroos, A.K. (2005). Snacking frequency in relation to energy intake and food choices in obese men and women compared to a reference population. *International Journal of Obesity*, 29(6), 711-719. doi: 10.1038/sj.ijo.0802950.
- Bertossi, A., Troiano, S., & Marangon, F. (2022). Where is sustainability? An assessment of vending products. *Rivista di Studi sulla Sostenibilità*, 1, 155-180. doi: 10.3280/RISS2022-001010.
- Blake, M.R., Peeters, A., Livaditis, C., & Cameron, A.J. (2021). Favorable Commercial and Health Behavior Impacts of a Healthy Vending Policy at an Australian University. *Journal of the Academy of Nutrition and Dietetics*, 121(11), 2201-2209.e14. doi: 10.1016/j.jand.2021.04.013.
- Blanco-Portela, N., Benayas, J., Pertierra, L.R., & Lozano, R. (2017). Towards the integration of sustainability in Higher Education Institutions: A review of drivers of and barriers to organisational change and their comparison against those found of companies. *Journal of Cleaner Production*, 166, 563-578. doi: 10.1016/j.jclepro.2017.07.252.
- Bos, C., van der Lans, I.A., van Kleef, E., & van Trijp, H.C.M. (2018). Promoting healthy choices from vending machines: Effectiveness and consumer evaluations of four types of interventions. *Food Policy*, 79, 247-255. doi: 10.1016/j.foodpol.2018.07.001.
- Boyland, E.J., Nolan, S., Kelly, B., Tudur-Smith, C., Jones, A., Halford, J.C., & Robinson, E. (2016). Advertising as a cue to consume: A systematic review and meta-analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults. *American Journal of Clinical Nutrition*, 103(2), 519-533. doi: 10.3945/ajcn.115.120022.

- Braden, A., Musher-Eizenman, D., Watford, T., & Emley, E. (2018). Eating when depressed, anxious, bored, or happy: Are emotional eating types associated with unique psychological and physical health correlates? *Appetite*, 125, 410-417. doi: 10.1016/j.appet.2018.02.022.
- Byrd-Bredbenner, C., Johnson, M., Quick, V.M., Walsh, J., Greene, G.W., Hoerr, S., Colby, S.M., Kattelman, K.K., Phillips, B.W., Kidd, T., & Horacek, T.M. (2012). Sweet and salty. An assessment of the snacks and beverages sold in vending machines on US post-secondary institution campuses. *Appetite*, 58(3), 1143-1151. doi: 10.1016/j.appet.2012.02.055.
- Chandon, P., & Wansink, B. (2012). Does food marketing need to make us fat? A review and solutions. *Nutrition Reviews*, 70(10), 571-593. doi: 10.1111/j.1753-4887.2012.00518.x.
- Cheng, W., Appolloni, A., D'Amato, A., & Zhu, Q. (2018). Green Public Procurement, missing concepts and future trends – A critical review. *Journal of Cleaner Production*, 176, 770-784. doi: 10.1016/j.jclepro.2017.12.027.
- Cheval, B., Audrin, C., Sarrazin, P., & Pelletier, L. (2017). When hunger does (or doesn't) increase unhealthy and healthy food consumption through food wanting: The distinctive role of impulsive approach tendencies toward healthy food. *Appetite*, 116, 99-107. doi: 10.1016/j.appet.2017.04.028.
- Clapp, J., & Moseley, W. (2020). This food crisis is different: Covid-19 and the fragility of the neoliberal food security order. *The Journal of Peasant Studies*, 47(7), 1393-1417. doi: 10.1080/03066150.2020.1823838.
- Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F.N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, 2(3), 198-209. doi: 10.1038/s43016-021-00225-9.
- Danaei, G., Lu, Y., Singh, G., Carnahan, E., & Majid, E. (2014). Cardiovascular disease, chronic kidney disease, and diabetes mortality burden of cardiometabolic risk factors from 1980 to 2010: A comparative risk assessment. *The Lancet Diabetes & Endocrinology*, 2(8), 634-647. doi: 10.1016/S2213-8587(14)70102-0.
- Darmon, N., & Drewnowski, A. (2015). Contribution of food prices and diet cost to socioeconomic disparities in diet quality and health: A systematic review and analysis. *Nutrition Reviews*, 73(10), 643-660. doi: 10.1093/nutrit/nuv027.
- Dolgoplova, I., & Teuber, R. (2018). Consumers' Willingness to Pay for Health Benefits in Food Products: A Meta-Analysis. *Applied Economic Perspectives and Policy*, 40(2), 333-352. doi: 10.1093/aep/pxp036.
- Ellen McArthur Foundation (2019). *Cities and Circular Economy for Food*. -- <https://ellenmacarthurfoundation.org/cities-and-circular-economy-for-food>.
- Enjolras, G., & Aubert, M. (2018). Short food supply chains and the issue of sustainability: A case study of French fruit producers. *International Journal of Retail & Distribution Management*, 46(2), 194-209. doi: 10.1108/IJRDM-08-2016-0132.
- European Commission (2019). *EU GPP Criteria for food, catering services and vending machines*. -- [https://ec.europa.eu/environment/gpp/pdf/190927_EU_GPP_criteria_for_food_and_catering_services_SWD_\(2019\)_366_final.pdf](https://ec.europa.eu/environment/gpp/pdf/190927_EU_GPP_criteria_for_food_and_catering_services_SWD_(2019)_366_final.pdf).
- European Commission (2020). *Farm to Fork strategy: For a fair, healthy and environmentally-friendly food system*. -- https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy_en#Strategy.

- EVA (2020). EVA Report: Vending Market growth to be offset by Covid-19 impact. *The European Vending & Coffee Service Association*. -- www.vending-europe.eu/eva-report-vending-market-growth-to-be-offset-by-covid-19-impact.
- EVA (2021a). *EVA Market Report on European OCS & Vending*. -- www.vending-europe.eu/activities/market-information.
- EVA (2021b). *Building a strong, Innovative, and sustainable vending & coffee service sector*. European Vending and Coffee Service Association. -- www.vending-europe.eu/wp-content/uploads/2021/04/EVA-EU-Manifesto.pdf.
- FAO (2018). *Future of food and agriculture: Alternative pathways to 2050*. FOOD & AGRICULTURE ORG. -- www.fao.org/3/I8429EN/i8429en.pdf.
- Faris, M.E., Al-Bakheit, A., Hasan, H., Cheikh Ismail, L., Jahrami, H., Rajab, D., Afra Almashgouni, A., Alshehhi, A., Aljabry, A., Aljarwan, M., Alnaqbi, M., & Obaid, R.S. (2021). Assessment of nutritional quality of snacks and beverages sold in university vending machines: A qualitative assessment. *British Food Journal, ahead-of-print*(ahead-of-print). doi: 10.1108/BFJ-07-2020-0601.
- Fox, M.K., Dodd, A.H., Wilson, A., & Gleason, P.M. (2009). Association between School Food Environment and Practices and Body Mass Index of US Public School Children. *Journal of the American Dietetic Association, 109*(2), S108-S117. doi: 10.1016/j.jada.2008.10.065.
- Galli, F., & Brunori, G. (2013). *Short Food Supply Chains as drivers of sustainable development. Evidence Document. Document developed in the framework of the FP7 project FOODLINKS (GA No. 265287)*.
- Gorton, D., Carter, J., Cvjetan, B., & Mhurchu, C.N. (2010). Healthier vending machines in workplaces: Both possible and effective. *The New Zeland Medical Journal, 123*(1311), 10.
- Grech, A., & Allman-Farinelli, M. (2015). A systematic literature review of nutrition interventions in vending machines that encourage consumers to make healthier choices: Efficacy of vending machine interventions. *Obesity Reviews, 16*(12), 1030-1041. doi: 10.1111/obr.12311.
- Grech, A., Hebden, L., Roy, R., & Allman-Farinelli, M. (2017). Are products sold in university vending machines nutritionally poor? A food environment audit: Nutritionally poor university vending machines. *Nutrition & Dietetics, 74*(2), 185-190. doi: 10.1111/1747-0080.12332.
- Griffiths, M.L., Powell, E., Usher, L., Boivin, J., & Bott, L. (2020). The health benefits and cost-effectiveness of complete healthy vending. *PLOS ONE, 15*(9), e0239483. doi: 10.1371/journal.pone.0239483.
- Guyomard, H., Darcy-Vrillon, B., Esnouf, C., Marin, M., Russel, M., & Guillou, M. (2012). Eating patterns and food systems: Critical knowledge requirements for policy design and implementation. *Agriculture & Food Security, 1*(1), 13. doi: 10.1186/2048-7010-1-13.
- Hall, K.D. (2018). Did the Food Environment Cause the Obesity Epidemic? *Obesity, 26*(1), 11-13. doi: 10.1002/oby.22073.
- Hawkes, C., Smith, T.G., Jewell, J., Wardle, J., Hammond, R.A., Friel, S., Thow, A.M., & Kain, J. (2015). Smart food policies for obesity prevention. *The Lancet, 385*(9985), 2410-2421. doi: 10.1016/S0140-6736(14)61745-1.

- Hoffmann, S., Mai, R., Lasarov, W., Krause, J.S., & Schmidt, U. (2019). Hungry bellies have no ears. How and why hunger inhibits sustainable consumption. *Ecological Economics*, 160, 96-104. doi: 10.1016/j.ecolecon.2019.02.007.
- Hua, S.V., Kimmel, L., Van Emmenes, M., Taherian, R., Remer, G., Millman, A., & Ickovics, J.R. (2017). Health Promotion and Healthier Products Increase Vending Purchases: A Randomized Factorial Trial. *Journal of the Academy of Nutrition and Dietetics*, 117(7), 1057-1065. doi: 10.1016/j.jand.2016.12.006.
- ILO (2017). *Child labour in the primary production of sugarcane*. -- www.ilo.org/ipecc/Informationresources/WCMS_IPEC_PUB_29635/lang-en/index.htm.
- ILO (2020a). *Wages and working conditions in the coffee sector: The case of Costa Rica, Ethiopia, India, Indonesia and Viet Nam*. -- www.ilo.org/global/topics/wages/projects/WCMS_765134/lang-en/index.htm.
- ILO (2020b). *Wages and working conditions in the tea sector: The case of India, Indonesia and Viet Nam*. -- www.ilo.org/travail/areasofwork/wages-and-income/WCMS_765135/lang-en/index.htm.
- Kneafsey, M., et al. (2015). *EIP-Agri Focus Group. Innovative short food supply chain management. Final report*. European Commission. -- <https://ec.europa.eu/eip/agriculture/en/publications/eip-agri-focus-group-innovative-short-food-supply>.
- Koball, A.M., Meers, M.R., Storfer-Isser, A., Domoff, S.E., & Musher-Eizenman, D.R. (2012). Eating when bored: Revision of the Emotional Eating Scale with a focus on boredom. *Health Psychology*, 31(4), 521-524. doi: 10.1037/a0025893.
- Harris, L., Webb, V., Sacco S.J., & Pomeranz, J.L. (2020). Marketing to Children in Supermarkets: An Opportunity for Public Policy to Improve Children's Diets. *International Journal of Environmental Research and Public Health*, 17(4), 1284. doi: 10.3390/ijerph17041284.
- Leal Filho, W., Pallant, E., Enete, A., Richter, B., & Brandli, L.L. (2018). Planning and implementing sustainability in higher education institutions: An overview of the difficulties and potentials. *International Journal of Sustainable Development & World Ecology*, 25(8), 713-721. doi: 10.1080/13504509.2018.1461707.
- Ludwig, D.S., Peterson, K.E., & Gortmaker, S.L. (2001). Relation between consumption of sugar-sweetened drinks and childhood obesity: A prospective, observational analysis. *The Lancet*, 357(9255), 505-508. doi: 10.1016/S0140-6736(00)04041-1.
- Malik, V.S., Schulze, M.B., & Hu, F.B. (2006). Intake of sugar-sweetened beverages and weight gain: A systematic review1-3. *American Journal of Clinical Nutrition*, 84(2), 274-288. doi: 10.1093/ajcn/84.1.274.
- Minaker, L.M., Storey, K.E., Raine, K.D., Spence, J.C., Forbes, L.E., Plotnikoff, R.C., & McCargar, L.J. (2011). Associations between the perceived presence of vending machines and food and beverage logos in schools and adolescents' diet and weight status. *Public Health Nutrition*, 14(8), 1350-1356. doi: 10.1017/S1368980011000449.
- NCD Risk Factor Collaboration (2016). Trends in adult body-mass index in 200 countries from 1975 to 2014: A pooled analysis of 1698 population-based measurement studies with 19.2 million participants. *The Lancet*, 387(10026), 1377-1396. doi: 10.1016/S0140-6736(16)30054-X.

- Nemes, G., Chiffolleau, Y., Zollet, S., Collison, M., Benedek, Z., Colantuono, F., Dulsrud, A., Fiore, M., Holtkamp, C., Kim, T.-Y., Korzun, M., Mesa-Manzano, R., Reckinger, R., Ruiz-Martínez, I., Smith, K., Tamura, N., Viteri, M.L., & Orbán, É. (2021). The impact of Covid-19 on alternative and local food systems and the potential for the sustainability transition: Insights from 13 countries. *Sustainable Production and Consumption*, 28, 591-599. doi: 10.1016/j.spc.2021.06.022.
- Ng, K.W., Sangster, J., & Priestly, J. (2019). Assessing the availability, price, nutritional value and consumer views about foods and beverages from vending machines across university campuses in regional New South Wales, Australia. *Health Promotion Journal of Australia*, 30(1), 76-82. doi: 10.1002/hpja.34.
- Notarnicola, B., Tassielli, G., Renzulli, P.A., Castellani, V., & Sala, S. (2017). Environmental impacts of food consumption in Europe. *Journal of Cleaner Production*, 140, 753-765. doi: 10.1016/j.jclepro.2016.06.080.
- Ogundijo, D.A., Tas, A.A., & Onarinde, B.A. (2021). Factors influencing the perception and decision-making process of consumers on the choice of healthier foods in the United Kingdom: A systematic review using narrative synthesis. *International Journal of Food Science + Technology*. doi: 10.1111/ijfs.15478.
- Pearson-Stuttard, J., Zhou, B., Kontis, V., Bentham, J., Gunter, M.J., & Ezzati, M. (2018). Worldwide burden of cancer attributable to diabetes and high body-mass index: A comparative risk assessment. *The Lancet Diabetes & Endocrinology*, 6(6), e6-e15. doi: 10.1016/S2213-8587(18)30150-5.
- Pereira, Á., Villanueva-Rey, P., Vence, X., Moreira, M.T., & Feijóo, G. (2018). Fresh milk supply through vending machines: Consumption patterns and associated environmental impacts. *Sustainable Production and Consumption*, 15, 119-130. doi: 10.1016/j.spc.2018.05.003.
- Peters, A. (2019). Why Do We Crave Sweets When We're Stressed? *Scientific American*. -- www.scientificamerican.com/article/why-do-we-crave-sweets-when-were-stressed.
- Potvin Kent, M., Pauzé, E., Bagnato, M., Guimarães, J.S., Pinto, A., Remedios, L., Pritchard, M., L'Abbé, M.R., Mulligan, C., Vergeer, L., & Weippert, M. (2022). Food and beverage advertising expenditures in Canada in 2016 and 2019 across media. *BMC Public Health*, 22(1), 1458. doi: 10.1186/s12889-022-13823-4.
- Rabadán, A., & Bernabéu, R. (2021). A systematic review of studies using the Food Neophobia Scale: Conclusions from thirty years of studies. *Food Quality and Preference*, 93, 104241. doi: 10.1016/j.foodqual.2021.104241.
- Rahi, B., Kawtharani, F.B., Hassan, A.M., & Hassan, H.F. (2022). Assessment of the nutritional value of vending machine products and associated purchasing behavior in Lebanese universities. *British Food Journal*. doi: 10.1108/BFJ-08-2021-0887.
- Raposo, A., Pérez, E., Sanjuán, E., Saavedra, P., Millán, R., & Carrascosa, C. (2018). Vending machines and university students' consumption trends. *J. Food Nutr. Res.*, 57, 12.
- Ritchie, H., & Roser, M. (2020). Environmental Impacts of Food Production. *OurWorldInData.org*. -- <https://ourworldindata.org/environmental-impacts-of-food?country=#citation>.
- Rockström, J., Edenhofer, O., Gaertner, J., & DeClerck, F. (2020). Planet-proofing the global food system. *Nature Food*, 1(1), 3-5. doi: 10.1038/s43016-019-0010-4.

- Rosi, A., Zerbini, C., Pellegrini, N., Scazzina, F., Brighenti, F., & Lugli, G. (2017). How to improve food choices through vending machines: The importance of healthy food availability and consumers' awareness. *Food Quality and Preference*, 62, 262-269. doi: 10.1016/j.foodqual.2017.05.008.
- Segrave, K. (2002). *Vending Machines – An American Social History*. McFarland Publishing.
- Shi, Y., Grech, A.L., & Allman-Farinelli, M. (2018). Changes in the nutritional quality of products sold in university vending machines since implementation of the health star rating in 2014; an environmental audit. *BMC Public Health*, 18(1), 1255. doi: 10.1186/s12889-018-6177-z.
- Steiner, A. et al. (2020). *Actions to transform food systems under climate change*. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).
- Stephens, P., Knezevic, I., & Best, L. (2019). Community financing for sustainable food systems: The case of FarmWorks Investment Co-operative. *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation*, 6(3), 60-87. doi: 10.15353/cfs-rcea.v6i3.353
- The Food and Land Use Coalition (2019). *Growing Better: Ten Critical Transitions to Transform Food and Land Use*. -- www.unsdsn.org/growing-better-ten-critical-transitions-to-transform-food-and-land-use.
- VendingMarketWatch (2021). *New European Vending Association market report shows industry's 2020 revenue down 31% across continent*. -- www.vendingmarketwatch.com/management/associations/news/21246396/new-european-vending-association-market-report-shows-industrys-2020-revenue-down-31-across-continent.
- Viana, J., Leonard, S.A., Kitay, B., Ansel, D., Angelis, P., & Slusser, W. (2018). Healthier vending machines in a university setting: Effective and financially sustainable. *Appetite*, 121, 263-267. doi: 10.1016/j.appet.2017.11.094.
- Wang, Y.C., McPherson, K., Marsh, T., Gortmaker, S.L., & Brown, M. (2011). Health and economic burden of the projected obesity trends in the USA and the UK. *The Lancet*, 378(9793), 815-825. doi: 10.1016/S0140-6736(11)60814-3.
- Whoriskey, P., & Siegel, R. (2019). Cocoa's child laborers. *The Washington Post*. -- www.washingtonpost.com/graphics/2019/business/hershey-nestle-mars-chocolate-child-labor-west-africa.
- Yan, S., Pappas, A., Yuan, M.D., Vafiadis, D., & Carson, J.A. (2019). Evaluating Healthy Vending at the American Heart Association National Center: A Pilot Study. *American Journal of Health Promotion*, 33(6), 928-932. doi: 10.1177/0890117119837787.
- Živković, L., Pešić, M.B., Schebesta, H., & Nedović, V.A. (2022). Exploring regulatory obstacles to the development of short food supply chains: Empirical evidence from selected european countries. *International Journal of Food Studies*, 11(2), SI138-SI150. doi: 10.7455/ijfs/11.SI.2022.a2.

Alberto Bertossi

Department of Economics and Statistics, University of Udine, Italy
Via Tomadini 30/a - 33100 Udine, Italy

E-mail: alberto.bertossi@uniud.it

Holds a degree in Environmental Sciences (Milan, a.y. 2015/2016) and got a Doctoral Degree Economics and management of innovation (Udine, 2022). Post doc researcher at the University of Udine since 2022. His main research topic regards the sustainability of vending sector.

Stefania Troiano

Department of Economics and Statistics, University of Udine, Italy
Via Tomadini 30/a - 33100 Udine, Italy

Tel: +39 0432 24 92 21 - E-mail: stefania.troiano@uniud.it

Holds a degree in Economics (Udine, a.y. 1993-94) and got a Doctoral Degree Rural Economy in Central Eastern Europe Countries (Venice, 2001). Assistant Professor of Agricultural Economics and Rural Appraisal at the University of Udine since 2006 and Associate Professor since 2016. She conducts research in various agro-environmental fields mainly concerning issues related to the evolution of the agribusiness and rural system and to environmental economics.

Francesco Marangon

Department of Economics and Statistics, University of Udine, Italy
Via Tomadini 30/a - 33100 Udine, Italy

Tel. +39 0432 24 92 17 - E-mail: marangon@uniud.it

Holds a degree in Economics (Trieste, 1985). Researcher of Agricultural Economics and Rural Appraisal at the University of Udine since 1990, Associate Professor since 1992 and Full Professor since 2000. Current research interests include: monetary valuation of environment, farm and agricultural economics, agricultural and agri-environmental policy, multicriteria methods in farm management and spatial planning, sustainable food consumption, rural and nature tourism.