



# Sustainable school food procurement: What factors do affect the introduction and the increase of organic food?

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## ABSTRACT

Public School Food Procurements (PSFPs) are recognized as drivers of food and nutrition security. In the last decade, researchers and institutions have focused on designing sustainable school food procurements that include organic food. This study examines the public food procurement system in 524 of the 1554 municipalities of Lombardy in Northern Italy. A Zero-Inflated Negative Binomial model is used to explore the factors affecting the initial adoption and the increase of organic food in PSFP at the regional level. Four sets of factors are investigated, including territorial indicators, market constraints, PSFP's management and governance and concern for local and certified origin products. The results show that the initial introduction of organic food correlates with higher population density and bigger farms in the area and strongly depends on pressure from municipal administrations and canteen committee for environmental sustainability and youth health. However, the introduction of organic food often must be driven by the initiative of catering service management and must take into account municipal policies to support the local production and certified origin products. Conversely, the adoption intensity increases when PSFP is managed by private companies and stakeholder pressure is strong, although the adoption intensity can be adversely affected by higher perceived costs of organic products when compared to conventional products. This analysis thus confirms the importance of the participation of local stakeholders in designing more sustainable PSFP. The analysis also provides local stakeholders with a systematic dataset at the regional scale regarding the factors that drive sustainable choices in PSFP. The analysis thus supports institutions and policy-makers in coordinating the alignment between food demand and supply in order to better address the sustainability.

## 1. Introduction

Public procurement is a highly discussed topic at the municipal, national and European levels. Moreover, public procurement represented 19% of the GDP at the EU-wide level in 2014 (European Commission, 2015) and increased by 6.9% in 2015 (European Commission, 2016a). In 2004, the Green Public Procurement (GPP), which was part of the EU procurement policies, was introduced as an instrument to encourage public authorities to use their “purchasing power” to ensure sustainable consumption and production patterns (European Union, 2016b).

The monitoring of GPP adoption across European countries has revealed that even if GPP uptake is increasing, in 2010 only 26% of the total number of contracts were considered “green”, which does not meet the European Commission's target of 50% made in 2004 (Renda et al., 2012). Moreover, the uptake of GPP varies among product

groups: while only the “Transport” product group meets the 50% target set at the EU level, the “Food Procurement and Catering Services” remain below 20%. Despite the efforts of public authorities in green procurement, a lot must be done, and the GPP criteria for product groups is now under revision to improve public authority engagement (Boyano et al., 2017).

Concerning the large demand for food and the critical mass involved, few food chains can influence the way food is produced, processed and distributed and thus deeply reduce the environmental impacts of food supply chains. The purpose of GPP is to reinforce the role of public procurement in addressing sustainability issues (Goggins and Rau, 2016; European Commission, 2016). GPP supports the overcoming of traditional cost-effectiveness criteria driving public procurement to foster better social, health and environmental conditions (De Schutter, 2014; Cerutti et al., 2016).

A critical role in orienting the sustainability of GPP is specifically

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played by the Public School Food Procurement (PSFP). In fact, in terms of volume and value of the total meals served, the “Education” sector accounts for 31.4% of the total meals served, and it is second only to the “Health” sector, which accounts for 42.7% (Boyano et al., 2017). Organic food is among the criteria to reach GPP goals (European Commission, 2008) and the use of organic labels may also serve to increase the awareness of consumers regarding the need to change direction toward sustainability (European Commission, 2016b). According to the literature, the PSFP can be seen as a “litmus test of the state’s commitment to sustainable development” (Morgan, 2008, p. 1237).

The adoption of GPP is delegated to the Member States that adopt National Action Plans to green their public procurement. In Italy, the GPP National Action Plan was initially released in 2008 (Italian Ministry of Environment and the Protection of Natural Resources, 2008). It has been followed by the National Guidelines for School Catering (Italian Ministry of Health, 2010) and the definition of Minimum Environmental Criteria (CAM) (Italian Ministry of Environment and the Protection of Natural Resources, 2011a). In the CAM, the inclusion of organic food in public procurement is specifically requested in order to reduce the impact of public meals on the environment, during the production phase (Italian Ministry of Environment and the Protection of Natural Resources, 2011b). Beyond organic food, in the application of the EU GPP, the CAM emphasize the need for food quality, freshness and healthiness as well as regional food specificities. The care for traditions and individual well-being, which are typical Italian values leads people to retain control of food and to have a higher disposition to the introduction of organic and quality products in their eating behavior, influencing also PSFP purchasing power (Morgan and Sonnino, 2008; Grossi et al., 2011). In general, Italy has been considered one of the most committed countries in Europe regarding the provision of organic and quality food in PSFP, and local institutions are actively promoting the inclusion of organic and local products in schools’ canteens (Nölting, 2009; Maietta and Gorgitano, 2016). Moreover, by claiming actions of information and awareness, Italian regulations recognize the PSFP as a unique arena for “social learning” and thus an opportunity for public authorities to encourage users, including teachers, workers, pupils and their families, to adopt more sustainable ways of consumption in their everyday lives (Wahlen et al., 2012), to “empower consumers by building their capacity to eat healthily” (Morgan and Sonnino, 2007, p. 1). The school meals are also recognized as an opportunity to valorise and conserve local Italian traditions, and institutions are requested to consider the preferences of local consumers (Maietta and Gorgitano, 2016; Morgan and Sonnino, 2007). The GPP was introduced while in Italy the “school food revolution” was already operating (Morgan and Sonnino, 2008), which reflects the long-term attention of PSFP on quality food (Ecosistemi, 2012). According to Morgan and Sonnino (2008: 97), “the Italian system of public food procurement is considered a product, rather than a cause, of a deeply embedded culture that connects school meals (and food in general) to local identity”.

However, despite this national tendency, data suggest that the Italian procurement of organic food is still specifically concentrated in the North (71% of total organic food consumed in Italy) rather than in the Centre or in the South (18% and 11%, respectively) of the country. Across Italian regions, Lombardy is the most important in terms of business volume, number of food procurement tenders (1172 tenders for almost EUR 2 billion) (Chamber of Commerce, 2014), number of school canteens provided with organic products (241) and meals provided (298,000) in 2016 (Bio Bank, 2017). This framework makes the analysis of organic food-oriented PSFP in Lombardy a fascinating case study.

The aim of this study is to analyze the factors that affect the adoption of organic food in PSFP at the regional scale; specifically, we explore the factors that explain the introduction and the adoption intensity of organic products in the PSFP at the municipal level. A Zero-Inflated Negative Binomial model is implemented to measure both the likelihood of introducing organic products and the number of food typologies in which the organic food is introduced. The paper is structured as follows. The first section defines the literature background on sustainable PSFP and the role of organic food in this process. The second section focuses on defining the methodological approach. Sample, data collection, variables and modelling specifications are described. The last two sections respectively report the results of analysis and make suggestions for procurement policies.

## 2. Literature review

### 2.1. Sustainable public school food procurement and the adoption of organic food

The Minimum Environmental Criteria (CAM) not only aim to reduce the environmental impact of the public expenditure but also include criteria of social inclusion and economic sustainability. Two kinds of criteria are defined: the “basic criteria” and the “rewarding criteria”. The basic criteria define the “green” procurement (Italian Ministry of Environment and the Protection of Natural Resources, 2011a) by establishing the percentages of the total weight of the food provided that should stem from organic production as certified by the EU, and from integrated system production, PGI (Protected Geographical Indications), PDO (Protected Designation of Origin), TSGs (Traditional Specialties Guaranteed) for the different product categories.

To consider the environmental, economic and social sustainability aspects and provide the market with an appropriate signal (Italian Ministry of Environment and the Protection of Natural Resources, 2011a), the “rewarding” criteria were added to define “the most economically advantageous tender” option by assigning more value to offers that consider (in order of importance) a: (i) higher percentage share of quality food beyond the basic criteria; (ii) products with lower carbon footprints; (iii) actions of unsupplied food recovery to allocate it to non-profit organizations of social utility; (iv) the use of Fair Trade for exotic products.

In Italy, the number of school canteens with organic food has increased rapidly, going from 69 school canteens with organic food in 1996 to 1288 in 2016 (BioBank, 2017). While 23% of school canteens attain at least 70% of their primary products from organic production (BioBank, 2017), only 4.8% of them are completely organic (Maietta and Gorgitano, 2016). In the CAM, the amount of products to be included in public procurement are measured in terms of volume and not in variety of products. Moreover, in 2012, the percentage of contracting stations that included organic food was 96%, but only 34% applied the minimum percentage requested by CAM’s basic criteria. In other word, the provision of organic food was still considered among the rewarding criteria, as several constraints appeared difficult to overcome and CAM appeared too strict (Ecosistemi, 2012).

In the CAM, the adoption of organic food and products with integrated pest control significantly contributes to the reduction of environmental impacts. The adoption of organic food is not only among the basic criteria to have a green procurement, but it is also the most requested one (Italian Ministry of Environment and the Protection of Natural Resources, 2011b). In the GPP, the procurement of organic food is among the “core GPP criteria” to avoid eutrophication, acidification and toxic impacts on human health and the environment due to

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