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SUSTAINABLE PUBLIC PROCUREMENT OF FOOD: A GOAL WITHIN REACH

*Paper written in the framework of the EU Food Policy
Coalition (EU FPC) Public Procurement Task Force **

PURPOSE

The aim of this paper is to provide **five key arguments in favour of sustainable healthy food procurement** to address the **challenges of the EU food system**.

The paper seeks to **provide strong evidence** and thereby **overcome any misconceptions** about the gains of implementing sustainable food procurement in a comprehensive form.

The information presented in this paper thereby also seeks to **contribute to the strategic implementation of the Farm to Fork (F2F) Strategy**, particularly with regards to determining *"the best modalities for setting minimum mandatory criteria for sustainable food procurement to promote healthy and sustainable diets, including organic products, in schools and public institutions"*¹.

Whereas the first four points of this paper focus on sustainable public food procurement for all public institutions (schools, hospitals, elderly care homes, etc.), the fifth point emphasises **sustainable school food procurement** as a **'low hanging fruit'** for the implementation of the F2F Strategy, in light of the planned review of the EU school scheme legal framework, with a view to refocus the scheme on healthy and sustainable food in 2023.

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¹ See [European Commission](#).

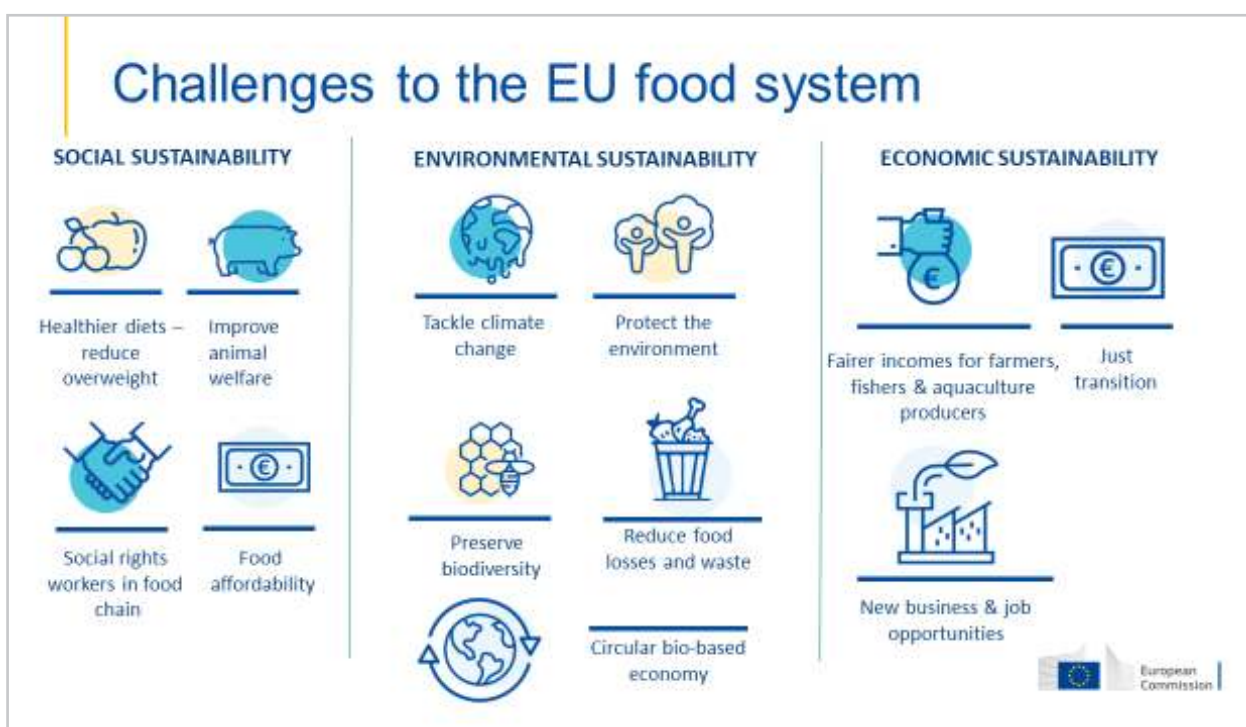
MAKING THE 'BUSINESS CASE' FOR SUSTAINABLE FOOD PROCUREMENT

- 1 Sustainable food procurement should be strategic procurement and support systemic change
- 2 Sustainable food procurement can be cost-effective
- 3 Sustainable food procurement is working across Europe
- 4 EU public procurement legislation needs to clarify local/regional food procurement
- 5 Sustainable school food procurement is a 'low hanging fruit'

1 SUSTAINABLE FOOD PROCUREMENT SHOULD BE STRATEGIC PROCUREMENT AND SUPPORT SYSTEMIC CHANGE

Procurement is the first tool local authorities use when starting to address their food systems². Any new minimum mandatory sustainability criteria for **food procurement** should ensure that its implementation results in **positive systemic change** in the food system that is coherent with global and EU sustainability policies, such as the EU Green Deal, the F2F objectives, the Sustainable Development Goals (SDGs) (particularly SDG 12.7) and the learnings from the COVID-19 pandemic.

Sustainable food procurement has the potential to address all the challenges of the EU food system as outlined in the F2F strategy (see figure below), and the purchasing power of public administrations to drive change is vast. The latter is estimated at 14-16% of the EU's gross domestic product (GDP), with the social food service market for the EU estimated to be worth 82 billion euro.³



² See [European Commission](#).

³ [Public Procurement of Food for Health](#), Technical report on the school setting, Publications Office of the European Union (Publisher), 2017

Utilising sustainable food procurement to its full potential will require changes which address food that is healthy for both **people and the planet**. This means that public procurement should go **beyond addressing solely environmental issues** - that is, green public procurement (GPP). In fact, public procurement has an enormous potential to deliver 'co-benefits'⁴ for a wide range of sustainability dimensions, such as:

- health (human, animal, environmental);
- circular economy;
- greenhouse gas (GHG) reductions;
- fair working conditions;
- supporting small and medium sized enterprises (SMEs), small family farmers and social cooperatives;
- improving animal welfare;
- preserving land for food production;
- supporting reconversion of land to organic food;
- integration of vulnerable groups;
- job creation, and gender equality.

Strategic public procurement is **more effective** when procurement is used to achieve wider **societal objectives**, such as to support climate protection actions and social ambition. This makes sustainable food procurement a **strategic instrument** which strengthens strategic policy targets at local, regional, national and EU government levels, providing also a more coherent framework. Procurement changes in the public sector also have spillover effects into private household consumption⁵ and individual consumption by helping create enabling food environments for healthy and sustainable diets.⁶ More specifically, strategic food procurement would address the urgency of **biodiversity loss and climate heating**, and contribute to tackling the high levels of obesity and diet-related **non-communicable diseases (NCDs)**. For example, through increased organic food content and requiring more varieties of fruit and vegetables, as well as more plant-rich food and less food waste.⁷

While this paper focuses more on public procurement in schools and public canteens than in other contexts, **Annex 2 gives an overview (and makes the business case) of the potential of sustainable public procurement measures in hospitals.**

2 SUSTAINABLE FOOD PROCUREMENT CAN BE COST-EFFECTIVE

One **misconception about achieving both** sustainable and healthy food procurement, particularly for public canteens (e.g. schools, hospitals, elderly care homes), is that it makes a lot of sense but cannot be cost-effective. Leaving aside the **environmental and epidemiological⁸ benefits of organic food** (less negative externality costs to be paid by society), it is true that organic food can be more expensive, particularly when it comes to meat and dairy products from organic production.

⁴ Parsons & Hawkes (2018) [Connecting food systems for co-benefits: how can food systems combine diet-related health with environmental and economic policy goals? Co-benefits paper. WHO European Observatory on Health Systems and Policies](#)

⁵ Simcoe, Timothy & Toffel, Michael. (2014). Government green procurement spillovers: evidence from municipal building Policies in California. *Journal of Environmental Economics and Management*. 68. 10.1016/j.jeeem.2014.09.001.

⁶ EPHA & HCWH (2019) Discussion paper I Public procurement for sustainable food environments

⁷ Thorsen, Sabinsky & Trolle (2014) Madspild i forbindelse med økologiomlægning i offentlige køkkener. DTU Fødevareinstituttet. Reduced waste in public kitchens. <https://docplayer.dk/17269308-Madspild-i-forbindelse-med-oekologiomlaegning.html>

⁸ See for instance: [https://www.europarl.europa.eu/stoa/en/document/EPRS_STU\(2016\)581922](https://www.europarl.europa.eu/stoa/en/document/EPRS_STU(2016)581922)

However, many European cities have shown that strategic use of sustainable procurement in combination with awareness raising and capacity building actions have the potential to offer sustainable healthy meals without additional purchase costs⁹.

In most cases, the same budget is maintained through menu changes (and/or recipe modifications) reducing the amount of meat¹⁰ provided and **increasing plant-rich foods, cooking more from scratch, as well as through the reduction of food waste**. Other measures include **smart menu planning and child-friendly portions**. Moreover, there is no good reason why nutritionally healthier menus would entail more costs.

Other successful levers include:

Market engagement and dialogue to understand what diversity the market (producers, retailers, wholesalers, etc.) has to offer and adapt or develop the tender requirements accordingly.

The division of tenders into **smaller lots and providing longer contract terms** to support longer term partnerships and thereby securing better terms, such as price.

The switch to internal **on-site kitchens; public-private-partnerships; joint or collaborative procurement; innovative solutions** such as municipal farms and support to shorter supply chains, etc.

When taking a broader perspective and examining the **social return on investment**, good practice, such as that from East Ayrshire in Scotland¹¹ showed that one euro spent through sustainable school meals can generate up to six euro back to the local community through employment, environmental, health and social benefits. However, it is not only the social return on investment but also the economic return for the local economy, better productivity on worksites, and improved educational outcomes at school¹².

Moreover, a study¹³ commissioned by the German Federal Food Ministry in 2018 showed that investing in healthier food would only increase the cost of a meal by four cents per meal. Furthermore, the cost per meal decreases as the size of canteens increase.

In terms of social benefits, conversion to healthier, organic and climate-friendly meals is creating a new pride, prestige and dedication to sustainability among leadership and staff working in public kitchens and in the food service sector,¹⁴ whilst other research has found that there are fewer sick days and a 54% increase in job satisfaction.¹⁵

Sustainable food procurement is also about generally improving public health. Depending on the model used for assessing health costs, the benefits of meal conversion have been estimated at being

⁹ Jones M, Pitt H, Oxford L, Orme J, Gray S, Salmon D, Means R, Weitkamp E, Kimberlee R & Powell J (2016) [Food for Life: a Social Return on Investment Analysis of the Locally Commissioned Programme](#). Full Report. UWE Bristol.

¹⁰ On savings on water and carbon costs thanks to increased plant-based food, see [R. Zahora \(2017\)](#); see also [Journal of Hunger & Environmental Nutrition](#) (2015).

¹¹ For more information on the experience from East Ayrshire see case study published [online](#).

¹² see **Annex 1** on 'Literature highlighting environmental, health and economic benefits of healthy and sustainable public food procurement'.

¹³ [Bundeskongress Schulverpflegung \(2018\)](#), DGE-Studie zu Kosten- und Preisstrukturen in der Schulverpflegung (KuPS).

¹⁴ Role of public organic procurement policies (POPPs) in the implementation of organic food and farming strategies – lessons learnt from Denmark, Bent Egberg Mikkelsen og Martin Lundø, *Raizes*, V.36, No. 2, 2016.

¹⁵ Nina N. Sørensen, et al., Wellbeing at work among kitchen workers during organic food conversion in Danish public kitchens: a longitudinal survey, *European Journal of Public Health*, Volume 26, Issue 2, April 2016, Pages 323–328. Available [here](#).

between 1.3 and two billion euro annually in Denmark - or 300-460 euro annually per person. Based on percentages of meals consumed in public kitchens and annual investments of around 2.7 million euro in meal conversion in the last decade, a rough estimate is that for every euro invested as a *one off* investment in public sector kitchens, the associated health benefits would have a value of five to eight euro annually when all kitchens would be converted.¹⁶

3 SUSTAINABLE FOOD PROCUREMENT IS WORKING ACROSS EUROPE

A further **misconception** about sustainable healthy food procurement is that only the cities who are well-known for their commitment to sustainable development, like Copenhagen and Malmö, are the only ones in Europe where sustainable food procurement (with high shares of organic food) works effectively. This is not true¹⁷

In **Italy and France**, for instance, many cities and towns offer sustainable and healthy school meals with the share of organic food ranging from 30-100%, including the use of fair trade products and sustainably sourced maritime products. There are also increasing numbers of good practice cases in Spain and Portugal. It is also worth noting that since August 2020 Italy has a revised mandatory procurement rate of organic fruit and vegetables of 50%; and starting from 2022, France will have a similar mandatory target also.

There are less good practice examples from **Eastern European countries**. However, it is worth noting here that the percentage of meals being served at schools in these countries is much higher than in Western European countries and tends to support small regional food economies more strongly due to the higher share of small onsite kitchens and canteens available. In many countries provision of up to three meals a day is standard practice, and these include warm lunches. Several countries have mandatory organic food procurement targets in place (for example, Latvia 30% and Slovakia 15%) with some countries showing substantial organic food production rates (for example, Estonia 18%). Some countries like the Czech Republic have strong national recommendations to use regional food products, if these are available. School food support programs for vulnerable children are historically very extensive. Finally, in the Czech Republic and in Slovakia, where national ministries of education and public health authorities have a strong say on school meals, municipalities and schools are much more advanced when it comes to implementation of the 'whole school approach',¹⁹ which looks not only at healthy and nutritious food, but also at the wider picture that includes food education and culture.

Local authorities should be supported in using public procurement more strategically and understand the trade-offs between different food procurement choices, which include use of comparable data to understand the outcome of strategic procurement.

¹⁶ Jensen, J. D., (2021). Sundhedsøkonomiske effekter ved efterlevelse af klimavenlige kostråd, 36 s., IFRO Udredning, Nr. 2021/01.

¹⁷ There are several good practices published on sustainable school food procurement on the website of the European Commission - see https://ec.europa.eu/environment/gpp/case_group_en.htm

¹⁸ For example, in the Czech Republic the provision of warm lunches in schools (8-18 years) is mandatory (total of 8,600 school canteens serving about 1,88 million children, students and teachers every day). In Slovakia, more than 4,000 school catering establishments provide food for around 800,000 children a day (~ 69 percent of the total number of children 0-18 years).

¹⁹ The 'whole school food approach' ("WSFA") is a non-standardised method about achieving a healthy food culture in and around schools, an evidence-based intervention contributing to community-wide whole systems change, and impacting on education, sustainability, inequalities, communities and health. (see also: <https://www.foodforlife.org.uk/> <https://www.soilassociation.org/>).

For example, the World Resources Institute is supporting cities in understanding CO₂ emission reduction achievements resulting from food procurement²⁰ in a systematic and comparable way.

4 EU PUBLIC PROCUREMENT LEGISLATION NEEDS TO CLARIFY ISSUES OF LOCAL/REGIONAL FOOD PROCUREMENT

A recurring issue mentioned in every convening on sustainable food procurement is the 'prohibition' of procuring local or regional food according to the current EU public procurement legislative framework.²¹ Many local and regional governments struggle to view the **local food purchase** as a protectionist behaviour in conflict with the principle of non-discrimination and the single market. Instead, they regard local/regional food purchases as a **contribution to resilience, climate protection, culture, waste reduction and support for regional food economy and health**.

After all, the EU school fruit, vegetables and milk scheme (DG Agriculture),²² which supports the distribution of fruit, vegetables and milk to schools across the EU explicitly mentions that "*EU countries may encourage **local, short-supply chain, organic and quality scheme products if they wish***". At a 2019 European Committee of the Regions-ICLEI conference held during the European Week of Regions and Cities, a President of an EU region regretted that while they would encourage their tourists to purchase their delicious regional food products, they have to prevent their public administrations from purchasing the same products for their own citizens in schools, hospitals and elderly care homes.

The definition and setting of any mandatory minimum public procurement criteria at the EU level would need to take into consideration local food environments, regional food economies and national food production. For example, in those countries where organic food production is not able to fulfil national needs, criteria should be progressive and accompanied by additional measures, such as those related to land reconversion and/or farmers support.

With regional being the new sustainable in the wake of the COVID-19 pandemic, there is an urgent need to clarify the conflicting status quo around local food procurement and **find a balance between fair competition and fair food systems**. European cities and regions are **increasingly concerned** about this obstacle and the F2F framework offers an excellent opportunity to provide clarity on the possibilities of local/regional food procurement within legislative boundaries. **Overlooking the increasing concerns will do anything but solve the matter.**

²⁰ Milan reduces carbon footprint of school canteens menus by 20% in five years. October 2020. Available here: <https://www.ellenmacarthurfoundation.org/news/milan-reduces-carbon-impact-of-school-canteen-menus-by-20-in-five-years>

²¹ This is essentially the 2014 EU public procurement directives, the principles of the EU Treaty and relevant case law.

²² EU Commission (DG Agriculture), [EU school fruit, vegetables & milk scheme](#)

5 SUSTAINABLE AND HEALTHY MEALS IN SCHOOLS ARE A 'LOW HANGING FRUIT'

The F2F Strategy mentions **schools** several times, particularly in connection with mandatory sustainable food procurement and the review of the EU school scheme "to enhance its contribution to sustainable food consumption" and "to strengthen educational messages on the importance of healthy nutrition, sustainable food production and reducing food waste".

Indeed, ensuring sustainable healthy school meals in all European schools (from nurseries to universities), leaving no child behind, is a '**low hanging fruit**' for the implementation of the **F2F strategy** and the **SDGs**.

Children spend a considerable amount of time in school, and school food may deliver more than half the daily energy intake for many children in the EU²³.

School food procurement has an enormous potential to address childhood obesity, provide healthy meals to support adequate nutrition and reduce health inequalities by providing access to good food for all, regardless of income (public health), reconnect children with nature (biodiversity) and use the transformational power of young people (food system change).²⁴

The most effective results would be reached by combining sustainable healthy school meals with education (school curriculum includes planetary health food).²⁵

All European children attend some form of education centre or school from the ages of 0-18 years. Many of them are fed at school. Numerous studies²⁶ show the importance of healthy, nutritious and sustainable meals. Children need good food to grow, concentrate and stay healthy.

Furthermore, sustainable healthy school food procurement also supports the various points provided below. These are detailed further in **Annex 1 - Literature highlighting environmental, health and economic benefits of healthy and sustainable public food procurement**.

A) PUBLIC HEALTH PROMOTION

Despite commitments to halt and reverse the rise of obesity, child overweight and obesity are still increasing in many European countries. In the WHO European Region one in three 11-year-

olds is overweight or obese.²⁷ Over 60% of children who are overweight before puberty will be overweight in early adulthood. Obesity is one of the most serious public health challenges of this century, with obesity tripling worldwide between 1975-2016²⁸. It also entails a high cost

²³ Caldeira et al. (2017) Public Procurement of Food for Health: technical report on the school setting, European Commission Joint Research Centre

²⁴ Ekasasi S. R., *The role of children in family decision making: A Theoretical Review*, 2005; Ketchum's Food2020 survey (2016), according to which 49% of interviewed parents declared that their children take an active part in decision making when it comes to food shopping.

²⁵ Food healthy for both the people and the planet: Planetary Health Diet is a flexitarian diet, which is largely plant-based but can optionally include modest amounts of fish, meat and dairy foods. For more information see EAT Lancet Commission (2019), p. 10.

²⁶ *Plates, Pyramids, Planet - Developments in national healthy and sustainable dietary guidelines: a state of play assessment*, Publisher: FAO, The Food Climate Research Network at The University of Oxford, Author: Carlos Gonzalez Fischer, Tara Garnett (2016).

²⁷ WHO European Childhood Obesity Surveillance Initiative (COSI)

²⁸ WHO. Obesity and [overweight](#)

for society.²⁹ Research suggests that to date, no country is on track to meet the WHO targets for obesity by 2025,³⁰ making it clear that our current approaches are not working. Childhood obesity is predicted to increase by a 100 million globally between 2020-2030.³¹

- › Both unhealthy diets and obesity are major risk factors for NCDs, such as cardiovascular diseases, cancer, diabetes and others, which represent over 85% of all deaths and 75% of all diseases in Europe.³² Around 700 billion euro is spent on treating NCDs in the EU each year. Premature mortality from NCDs results in a loss of 115 billion euro per year to the economy, or 0.8% of EU GDP.³³
- › Many NCDs are highly preventable. Up to 80% of cardiovascular diseases and type-2 diabetes, and 40% of cancers can be prevented, or the onset delayed. Unhealthy diets are a main risk factor for these diseases.³⁴ For instance, unhealthy diets are responsible for 49% of the burden of cardiovascular disease, the EU's biggest killer, with an estimated annual cost of 102 billion euro.³⁵
- › Public health is a competence shared between the EU and its Member States (Art. 168 EU Treaty), so using sustainable food procurement strategically to promote and ensure public health is not just a Member State issue.

B) ENVIRONMENTAL (PLANETARY)³⁶ HEALTH

- › Food systems are a primary cause of environmental degradation. Intensive livestock farming has a far more negative impact on the environment than other forms of agriculture. It accounts for around 78% of agriculture's negative impact on biodiversity in Europe.³⁷ Healthy plant-rich menus as the default option in public canteens, in combination with higher welfare criteria for the smaller proportion of animal products that are still served, will have a significant impact on climate change mitigation, and is of direct relevance to the F2F and the EU Green Deal agenda as well as to the SDGs.
- › Public purchases requiring organic food content use fewer pesticides, reduce soil erosion, clearly benefit water and biodiversity quality, are less energy intensive and improve animal welfare.³⁸

C) REGIONAL FOOD ECONOMY

- › Farm to fork cycles connect many stakeholders regionally through short food supply chains from planting, harvesting, processing, transporting, etc.
- › Supporting the regional food economy through public food procurement means strengthening regional/local resilience and economy, which ultimately benefits the EU's economy and resilience.³⁹

²⁹ Organisation for Economic Co-operation and Development. (2019). The Heavy Burden of Obesity: The Economics of Prevention. OECD

³⁰ Ng et al (2014) Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013. The Lancet

³¹ Lobstein T, Brinsden H. [Atlas of Childhood Obesity](#). 2019.

³² European Commission Joint Research Centre. EU burden from non-communicable diseases and key risk factors

³³ OECD/EU (2016) State of Health in the EU. Health at a Glance: Europe 2016

³⁴ WHO/Europe (2016) Action Plan for the Prevention and Control of Noncommunicable Diseases in the WHO European Region 2016–2025

³⁵ European Heart Network (2017) Transforming European food and drink policies for cardiovascular health

³⁶ Planetary Health Diet is a flexitarian diet, which is largely plant-based but can optionally include modest amounts of fish, meat and dairy foods. For more information see [EAT Lancet Commission \(2019\)](#), p. 10.

³⁷ Leip et al. 2015. "Impacts of European livestock production: nitrogen, sulphur, phosphorus and greenhouse gas emissions, land-use, water eutrophication and biodiversity", Environmental Research Letters, 4 November.

³⁸ Thünen Institute. [Public benefits of organic agriculture for environment and society](#). (Comparative study based on 12,000 studies, 2019).

³⁹ See, for instance, the position of the World Food Program on the benefits - in terms of economy and resilience - of local and regional food procurement policies

- › Short supply chains have also proven to support access to land by farmers and land preservation.⁴⁰ In parallel, there are a growing number of local fair trade pilot projects.

D) VULNERABLE GROUPS

- › All children go to school (some countries offer free meals, others free breakfasts) and school closures with consecutive closure of school canteens (or school meals provisions) showed the highest impact on urban food systems during the COVID-19 pandemic.⁴¹
- › Children from low socio-economic groups are disproportionately affected by overweight and obesity and related health impacts.⁴² Providing access to healthy food in school is especially important to vulnerable groups, who may otherwise be exposed to 'food deserts' in their neighbourhoods.

E) CLIMATE ACTION TARGETS

- › Global food systems currently account for 21-37% of total GHGs.⁴³
- › Procurement criteria in favour of consuming more plant-based food and/or less food waste support these targets.
- › Strategic use of procurement criteria can support food waste reduction targets. Only in the EU Food waste produces 170 million tonnes of CO₂ a year.⁴⁴

F) CULTURE

- › Food is culture.
- › Children need to develop a food culture which reconnects them to the value and origins of the food they (should) consume as well as to the welfare needs of animals.
- › Procurement criteria can link to traditional food and food products.

G) EDUCATION

- › Primary prevention is essential to reduce obesity incidence: it is easier to act on the adoption of healthy eating habits than intervene with diets on children who already have weight issues.⁴⁵ Education can play a role in this, accompanied by changes in food environments.
- › Europe's young people, the consumers and leaders of tomorrow, tend to be more open to increased delicious plant-rich food and have in recent years proven their transformational power.
- › While the responsibility for education and professional training systems lies with individual states, the role of the EU is to support and supplement their capacity.
- › Next to Erasmus+, a School+ Programme, including key competences, skills and values on planetary health (nutrition, origin and value of food) would be highly recommendable.

⁴⁰ Policy brief - 'We have the land' Cecília Delgado | LEAP – Policy Development Initiative, Fundação Calouste Gulbenkian | CICS-NOVA e FCSH da Universidade Nova de Lisboa

⁴¹ A FAO Survey (May 2020) on the impact of the Covid-19 pandemic on urban food systems, where over 850 cities around the globe responded, showed that 86 percent regarded the closure of schools and the consequent suspension of school meals as a widespread problem experienced in all regions, for all city sizes, and country income categories.

⁴² Loring and Robertson (2014) Obesity and inequities. Guidance for addressing inequities in overweight and obesity. WHO/Europe

⁴³ IPCC (2019). Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.

⁴⁴ European Commission. Food Waste. Available here: https://ec.europa.eu/food/safety/food_waste_en

⁴⁵ Nittari G. et al., [Fighting obesity in children from European World Health Organization member states](#). Clin Ter. 2019 May-Jun.

ANNEX 1: Literature highlighting environmental, health and economic benefits of healthy and sustainable public food procurement

The overview below provides concrete examples from some of the literature cited to illustrate positive co-benefits that can be achieved through healthy, sustainable public procurement policies.

FOCUS

Economic benefits and impact of healthy and sustainable food public procurement

ARTICLES	CONTENT
<p><u>1) Stefani, G., Tiberti, M., Lombardi, G. V., Cej, L., & Sacchi, G. (2017). Public food procurement: A systematic literature review. International Journal on Food System Dynamics, 8(4), 270-283.</u></p>	<ul style="list-style-type: none"> ➤ Directive 2004/18/EC - legal framework for public procurement strategies toward sustainable objectives. <ul style="list-style-type: none"> • Following this change, in several member states, Sweden, Finland, Denmark, France and Italy for instance, public food procurement was addressed toward local traditional food, organic and healthy food in schools and hospitals (see for example Caranta and Tribus, 2010). • Currently, the PFP in the EU is mainly oriented to promote sustainability and food quality of served meals at large. This development has been acknowledged as efficient practise toward sustainability even by international agencies (OCDE, 2016) ➤ Farm to School Program established in the 1990s to connect school to local agriculture, to enhance the nutritional quality of the school meals, and to cope with the financial constraint of school food service programs. Through this program, schools may base their procurement on geographical preferences in order to select local products instead of cheaper products. ➤ Impact of PFP on local economy: <ul style="list-style-type: none"> • Promotion of sustainable development of rural communities by the creation of a structured demand within a local economy : If contractual conditions specify that food should be procured from local suppliers, PFP represents an external demand shock for the local economic system, initially targeting local farmers, processors and middlemen, and then generating spillovers to other local economic activities. • The extent to which the positive economic effects take place depends on the structure of the local economy, its ability to cope with the increased and structured demand and the definition of what is meant for local.
<p><u>2) Christensen, L., Jablonski, B. B., Stephens, L., & Joshi, A. (2019). Evaluating the economic impacts of farm-to-school procurement. Journal of Agriculture, Food Systems, and Community Development, 8(C), 73-94.</u></p>	<ul style="list-style-type: none"> ➤ Evaluation of Farm-to-School programs <ul style="list-style-type: none"> • 42% of US schools participated in farm-to-school activities • 23,6 million children • US\$800 million of locally procured food items purchased (46% of local food expenditures by school districts) ➤ Farm-to-school implementation differs by location, but always includes one or more of the following core elements: <ol style="list-style-type: none"> 1. procurement of local foods to be purchased, promoted, and/or served in the cafeteria or as a snack or taste-test; 2. education activities related to agriculture, food, health, or nutrition; 3. school gardens (Christensen, Jablonski, Stephens, & Joshi, 2017).

ARTICLES	CONTENT
	<ul style="list-style-type: none"> ➤ Results from 2 schools: Minneapolis School District & Georgia State <ul style="list-style-type: none"> • the multiplier impacts for the farm-to-school farm sector are larger than the more traditional fruit and vegetable farm sectors, indicating that farm-to-school farms purchase more inputs from the local economy per unit of output, which results in positive local economic impacts. • The Minneapolis and Georgia case studies had respectively multipliers of 1.45 and 1.48. ➤ + Annex 5

FOCUS

Health related economic impact of healthy and sustainable food public procurement

ARTICLES	CONTENT
<p><u>3) Organisation for Economic Co-operation and Development. (2019). The Heavy Burden of Obesity: The Economics of Prevention. OECD.</u></p>	<ul style="list-style-type: none"> ➤ Context: more than 50% of the population is overweight in 34 out of 36 OECD countries. ➤ Report: simulation of the impact of obesity on health expenditure and the wider economy in 52 countries to 2050 ➤ Obesity impact: on life expectancy, damages pupils' school performances, workforce productivity, and thus negatively impacts GDP. ➤ Prevention intervention as an excellent investment: <ul style="list-style-type: none"> • every dollar spent on preventing obesity generates an economic return of up to six dollars • achieving a reduction of 20% in calories from relevant food groups would prevent the development of up to 1.1 million cases per year of cardiovascular diseases, diabetes and various types of cancer ➤ Obesity and social inequalities <ul style="list-style-type: none"> On children <ul style="list-style-type: none"> • Obese children do less well at school, get lower marks, more likely to miss school, are less likely to complete higher education • Children with a healthy weight are 13% more likely to report good school performances than children with obesity. On adults <ul style="list-style-type: none"> • Individuals with at least one chronic disease associated with being overweight are 8% less likely to be employed the following year • If they have a job, they are up to 3,4% more likely to be absent or less productive ➤ The health and economic impacts of obesity <ul style="list-style-type: none"> • Overweight and its related conditions will reduce gross domestic product (GDP) by 3.3% in OECD countries • Reduction of life expectancy by 3 years due to overweight and related diseases • 92 million premature deaths from obesity-related diseases in OECD, G20 and EU28 countries. • Estimation of the healthcare costs and services use:

ARTICLES	CONTENT
	<ul style="list-style-type: none"> - 8,4% of the health budget to provide treatment for overweight-related diseases - 70% of all treatment costs for diabetes - 23% of treatment costs for cardiovascular diseases and 9% for cancers - That corresponds to: \$425 billion per year and more than \$200/ person/ day to treat high Body Mass Index (BMI) <p>➤ The impact of obesity policies on the food and drink industry (based on a literature review on six public health policies directly affecting the food industry)</p> <ul style="list-style-type: none"> • reformulation, portion size changes, food labelling, food taxes, advertising restrictions, healthy food subsidies. • Consideration of implementation costs, changes in operations and sales. <p>➤ Key findings:</p> <ul style="list-style-type: none"> • Impacts on profits caused by: investment in R&D (reformulation); implementation, production, marketing and compliance costs; impacts on sales (positive as well as negative) • If the food industry might be financially impacted by those changes, the positive marketing impact of healthier food products that generates public interest will provide additional revenue and create new market opportunities.
<p>4) O'Hara, J. K. (2013). <u>The \$11 trillion reward: How simple dietary changes can save lives and money, and how we get there.</u> Cambridge, MA: Union of Concerned Scientists.</p>	<p>In 2011, 1/3 of the 750 000 deaths in the USA were attributable to some form of cardiovascular diseases.</p> <p>➤ Assumption: Increasing consumption of fruits and vegetables (to meet dietary recommendations) could benefit Americans health and national economy</p> <p>➤ Findings:</p> <ul style="list-style-type: none"> • More than 127 000 deaths per year from cardiovascular diseases could be avoided and 17 billion US\$ in annual national medical costs could be saved • The value of lives saved would exceed 11 trillion US\$ (by meeting dietary guidelines) • Even modest changes in diet could result in big payoffs: one additional portion of F/V per day would save more than 2,7 trillion US\$ <p>➤ This study suggest that public investment fostering local-food systems are cost effective solutions:</p> <ul style="list-style-type: none"> • Simple dietary measures can prevent premature deaths, loss of productivity, massive personal and public costs. • Policy tools: investment in farmers market, farm-to-school programs to further improve access to fresh F/V • 1% subsidy to decrease F/V prices would only costs 14 to 32% of what people were willing to pay to reduce their mortality risk • + Annex 1 - Longevity value and reduced medical costs of additional fruit and vegetable consumption

ARTICLES	CONTENT
<p><u>5) Aune, D., Giovannucci, E., Boffetta, P., Fadnes, L. T., Keum, N., Norat, T., ... & Tonstad, S. (2017). Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality—a systematic review and dose-response meta-analysis of prospective studies. <i>International journal of epidemiology</i>, 46(3), 1029-1056.</u></p>	<p>➤ Focus on the optimal amount of F/V to get to prevent incidence or mortality from cardiovascular disease and total cancer.</p> <p>Key Messages</p> <ul style="list-style-type: none"> • Meta-analysis of 95 studies (142 publications) • Reductions in risk of cardiovascular disease and all-cause mortality were observed up to an intake of 800 g/day of F/V combined • For total cancer no further reductions in risk were observed above 600 g/day. • An estimated 5.6 and 7.8 million premature deaths worldwide in 2013 may be attributable to a F/V intake below 500 and 800 g/day, respectively
<p><u>6) Bradbury, K. E., Appleby, P. N., & Key, T. J. (2014). Fruit, vegetable, and fiber intake in relation to cancer risk: findings from the European Prospective Investigation into Cancer and Nutrition (EPIC). <i>The American journal of clinical nutrition</i>, 100(suppl_1), 394S-398S.</u></p>	<p>➤ European Prospective Investigation into Cancer and Nutrition (EPIC) study:</p> <ul style="list-style-type: none"> • A prospective cohort that includes 23 study centers in 10 countries throughout Europe (Denmark, France, Germany, Greece, Italy, the Netherlands, Norway, Spain, Sweden, United Kingdom) • Main results: <ul style="list-style-type: none"> - The risk of cancers of the upper gastrointestinal tract was inversely associated with fruit intake - The risk of colorectal cancer was inversely associated with intakes of total fruit and vegetables and total fiber - The risk of liver cancer was inversely associated with the intake of total fiber. - The risk of cancer of the lung was inversely associated with fruit intake - + Annex 6

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Educational and productivity benefits of healthy and sustainable food public procurement

ARTICLES	CONTENT
<p><u>7) Belot, M., & James, J. (2011). <i>Healthy school meals and educational outcomes</i>. <i>Journal of health economics</i>, 30(3), 489-504.</u></p>	<p>➤ Study on the positive association between a healthier diet and improved cognitive function and academic performance among children</p> <ul style="list-style-type: none"> • 2004 in Greenwich (UK) • Natural experiment: "Feed me Better" campaign by British Chef Jamie Oliver • Aim: to change meals offered in the schools from low-budget processed meals towards healthier options (80 schools concerned) • Evaluation of the effect of the campaign on educational outcomes in primary schools using a difference in difference approach <p>➤ Impact of children's poor diet:</p> <ul style="list-style-type: none"> • Direct impact on weight and health, • Significant deficiencies in nutrients playing an essential role in cognitive development (see Lambert et al., 2004)

ARTICLES	CONTENT
	<ul style="list-style-type: none"> • Significant and immediate effect on behaviour, concentration and cognitive ability; on the immune system, and therefore the ability to attend school (see Sorhaindo and Feinstein, 2006) • Paper based in the natural experiment “Feed me Better” campaign lead in 2004-2005 by the British Chef Jamie Oliver that aimed at improving the nutritional standards at school <p>➤ Analyse of a sample of the pre-campaign meals by a nutritionist:</p> <ul style="list-style-type: none"> • The meals were lacking fruit and vegetables, • The meat/fish was reconstituted, rather than fresh, • Overall, the meals were lacking in basic nutrients, such as iron and vitamin C, • The reform also included removing all junk food. <p>➤ Results:</p> <ul style="list-style-type: none"> • educational outcomes did improve significantly in English and Science • English: increase by 4.5% of pupils reaching level 4 • Science: increase by 6% of pupils reaching level 5 • 15% fall in authorised absences – which are most likely linked to illness and health <ul style="list-style-type: none"> • + Annex 2: Sample of menus

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Productivity impact of healthy and sustainable food public procurement

ARTICLES	CONTENT
<p><u>8) Jensen JD. Can worksite nutritional interventions improve productivity and firm profitability? A literature review. <i>Perspect Public Health</i>. 2011;131:184–92. doi:10.1177/1757913911408263</u></p>	<p>➤ Aims: This paper investigates whether and how worksite nutrition policies can improve employee productivity and reduce absenteeism.</p> <p>➤ Methods: The questions are pursued through a literature review, including a systematic search of literature – combined with literature identified from backward references – on randomized controlled or quasi-experimental worksite intervention trials and observational cross-sectional studies. Studies were selected on the basis of topic relevance, according to publication title and subsequently according to abstract content. A quality appraisal of the studies was based on study design and clarity in definition of interventions, as well as environmental and outcome variables.</p> <p>➤ Results:</p> <ul style="list-style-type: none"> • Literature review of 30 publications • The review suggested that diet-related worksite interventions have positive impacts on employees' nutritional knowledge, food intake and health and on the firm's profitability, mainly in terms of reduced absenteeism and presenteeism. <p>➤ Conclusions: Well-targeted and efficiently implemented diet-related worksite health promotion interventions may improve labour productivity by 1%–2%. On larger worksites, such productivity gains are likely to more than offset the costs of implementing such interventions.</p>

ARTICLES

g) Lassen, A. D., Knuthsen, P., Bysted, A., & Andersen, E. W. (2018). The nutritional quality of lunch meals eaten at danish worksites. *Nutrients*, 10(10), 1518.

CONTENT

- Importance of **healthy worksite food environment**:
 - to promote workers' good health
 - to enhance employees' productivity
 - ⅓ of daily energy intake consumed while at work
- Danish study examining the nutritional quality of lunch meals eaten at 15 worksite canteens and then comparison with results from a study conducted 10 years before.
 - In the meantime, partnerships have been established with the goal to make healthy choices easy and accessible for all (e.g., the Meal Partnership, the Danish Salt Partnership, and the Wholegrain Partnership).
- Results based on 240 customers' lunch intake and on comparison with the 10 years old study:
 - **Increase in mean estimated intake of F/V** (+38 g/meal = +21% increase)
 - Estimated energy density 599 kJ/100 g, which corresponds to a **decrease in meals' energy density of 76 kJ/100 g** (attributable to the increase of F/V intake). Moreover lunch represents **24% of the energy daily requirements** (vs 27-28% 10 years before).
- Broader impact on canteens' employees: increased awareness and knowledge among restaurant professionals' on how to cook and serve healthy meals
- Rem: **Satisfaction** with the canteen food was high and they implemented **buffet style serving** for all the canteen, when it concerned only half of them 10 years before.
- Conclusion:
 - This study reinforce the **beneficial effects** of initiatives that stimulate the dvpt of supportive food and nutritional environments to influence the most health-conscious customers but also among the wider consumer;
 - This study suggests a possible **improvement in the nutritional quality of canteen lunch meals** over a 10-year period.
 - The positive development found in the present study in relation to improved nutritional intake from canteen food should be maintained and further strengthened through continued efforts and political actions, including the further development of labelling strategies and recommendations for healthy canteen food. In line with this, **The Danish Meal Label** was created in 2017 to provide guidelines to professional kitchens, e.g., at worksites, in serving nutritious food.

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Environmental related benefits of healthy and sustainable food public procurement

ARTICLES	CONTENT
<p><u>10) Wickramasinghe, K. K., Rayner, M., Goldacre, M., Townsend, N., & Scarborough, P. (2016). Contribution of healthy and unhealthy primary school meals to greenhouse gas emissions in England: linking nutritional data and greenhouse gas emission data of diets. European journal of clinical nutrition, 70(10), 1162-1167.1757913911408263</u></p>	<ul style="list-style-type: none"> ➤ Context: <ul style="list-style-type: none"> • UK food production and consumption is responsible for 18–30% of total GHGEs • Highest percentage of public sector spending for food is on school dinners (29%). • Focus on the GHGE and nutritional quality of primary school meals ➤ Differences between packed lunches and school meals <ul style="list-style-type: none"> • School lunches: 0.40-0.80 KgCO₂e/ 224 million KgCO₂e per year • Packed lunches: 0.46–0.86 KgCO₂e/ 354 million KgCO₂e per year ➤ Switch to healthy packed lunches and school meals <ul style="list-style-type: none"> • GHGE of healthy school lunches: 0.54 (0.47–1.46) KgCO₂e / GHGE of unhealthy school lunches was 0.81 (0.57–1.44) KgCO₂ • GHGE of healthy packed lunches (0.39 KgCO₂e)/ GHGE of unhealthy packed lunches (0.72 KgCO₂e). ➤ Conclusion: <ul style="list-style-type: none"> • Total GHGEs due to primary school meals in England is 578.1 million KgCO₂e a year • By adopting healthier lunches (defined by low salt, sugar and saturated fat), the total GHGEs from primary school meals would be 441.2 million KgCO₂e, saving 136.9 million KgCO₂e compared with the current total emissions from primary school meals.

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Overall benefits and impact of healthy and sustainable food public procurement

ARTICLES	CONTENT
<p><u>11) Public Procurement of Food for Health: TECHNICAL REPORT ON THE SCHOOL SETTING</u></p>	<ul style="list-style-type: none"> ➤ EU food public procurement: <ul style="list-style-type: none"> • Most EU member states schools provide lunch + one snack = ca 50% of children daily energy intake • 250 000 public authorities involved, spend about 14% of EU GDP (= 1,9 trillion euros) in purchasing services, works and supplies • Social food service market estimated to 82 billion euros

ARTICLES	CONTENT
<p><u>12) WHO Report - Action framework for developing and implementing public food procurement and service policies for a healthy diet</u></p>	<ul style="list-style-type: none"> ➤ Key role to play for public setting in ensuring people are provided with healthy food and helping prevent the 950,000 annual deaths and over 16 million disability-adjusted life years (DALYs) caused by unhealthy diets ➤ Dr Tedros Adhanom Ghebreyesus, WHO Director-General <i>"Public places that serve the entire community, including our most vulnerable populations, must be places where healthy diets are promoted not discouraged. Now is the time for governments to lead by example through ensuring that the food served or sold in public settings contributes to healthy diets and saves lives. No public funds should be spent on food contributing to unhealthy diets."</i> ➤ Benefits <ul style="list-style-type: none"> • Public Health • Economic • Increased productivity and educational attainment • Driving markets by boosting availability of healthy affordable, culturally acceptable food that is sustainably produced through local agriculture • Equity benefits • Large reach
<p>13) Springmann, M., Godfray, H. C. J., Rayner, M., & Scarborough, P. (2016). <u>Analysis and valuation of the health and climate change cobenefits of dietary change</u>. Proceedings of the National Academy of Sciences, 113(15), 4146-4151</p>	<ul style="list-style-type: none"> ➤ Study: <ul style="list-style-type: none"> • At planetary scale • Evaluation of the benefits of transitioning towards more plant-based diets in line with dietary guidelines according to 3 possible scenarios: Health Global Diet, Vegetarian, Vegan ➤ Main results: <ul style="list-style-type: none"> • 6-10% decrease of global mortality • 28-70% decrease of food-related GHG (reference scenario in 2050) • Health benefits would be about the same or even more important than the environmental ones • Economic benefits, depending on the scenario: between 1-31 trillion US\$/ 0,4-13% of GDP in 2050 • + Annex 3 and Annex 4
<p>14) Niebylski, M. L., Lu, T., Campbell, N. R., Arcand, J., Schermel, A., Hua, D., ... & Liu, P. (2014). <u>Healthy food procurement policies and their impact</u>. International journal of environmental research and public health, 11(3), 2608-2627.</p>	<ul style="list-style-type: none"> ➤ Context: <ul style="list-style-type: none"> • NCDs burden on public health (over 63% of deaths; 40% of them attributable to diet) • Call for population health interventions to reduce the burden of NCDs by improving the quality of dietary intakes: policy interventions can support healthy eating <ul style="list-style-type: none"> - Healthy food procurement policies require that the food purchased, provided, or made available is healthy (or at least healthier); policies are often directed at people who have a large proportion of their daily intake from a central organization (e.g., schools)

- Healthy food procurement definition: "***a process which encompasses not just how public bodies procure food, but also how they determine what food they want to buy and from whom; receive and store food; prepare and serve food; dispose of waste food; and monitor their costs***"

➤ Review goal:

- Evaluation of the impact of implementing healthy food procurement policies
- Policies identified were coupled with other components such as education, price reductions, and health interventions
- Evidence that the implementation of healthy food procurement policies in schools, worksites, hospitals, care homes, correctional facilities, government institutions, and remote communities **increase markers of healthy eating.**

➤ Results:

- **Intervention in schools** - English example based on the introduction in 2008 of a national regulation that requires all primary schools to use a healthy food procurement standard for foods throughout the school day
 - 136 primary schools impacted
 - Improvement of the purchases of fruits, vegetables, and salads by 15%
 - Reduction of processed foods high in sodium, fats, and sugars by 12% (e.g., French fries, pizza, and cookies)
 - Results:
 - **74% of students indicated a greater desire for healthier foods,**
 - **15% increase in the purchase of healthier foods in cafeterias from 2006 to 2009**
- **Intervention in Worksite** - Danish example [Lassen, A. D., Knuthsen, P., Bysted, A., & Andersen, E. W. \(2018\). The nutritional quality of lunch meals eaten at danish worksites. *Nutrients*, 10\(10\), 1518.](#)
- **Intervention in Hospitals, Care Homes, Correctional Facilities, Government Institutions and Miscellaneous Settings** - Irish example - evaluation impact of a structured catering initiative on food choices in a hospital setting
 - Evidence that improving the dietary quality of menu items provided in hospitals can reduce the amount of unhealthy nutrients such as fat, sugar, and sodium in foods served to patients in a hospital setting by up to 30%

Conclusion on the impact of healthy food procurement programs:

- Effectiveness in **increasing the availability of healthier food** and in decreasing that of less healthy food;
- It contributes to increasing the purchases of healthier foods and to lower purchases of food high in fat, sodium and sugar.
- Health outcomes: healthy food uptake led to improvements in health outcomes (blood pressure and BMI)
- Economic impact: increase the capacity of the food industry to produce healthy foods or to reformulate product lines to be healthier.

ARTICLES	CONTENT
<p>15) Parsons, K., & Hawkes, C. (2018). <u>Connecting food systems for co-benefits: How can food systems combine diet-related health with environmental and economic policy goals?</u></p>	<p><i>How to combine diet related health with environmental and economic policy goals?</i></p> <p>Public procurement as a specific and powerful space of opportunities where nutritious foods, environmentally sustainable production methods and more equitable economic outcomes could come together for co-benefits.</p> <ul style="list-style-type: none"> ➤ What is it? <ul style="list-style-type: none"> • A single process which explicitly includes taking foods from point of production to specific food environments (e.g. schools), • Significant cost in government budget (17% GDP of EU Member States), • Opportunity to set nutritional and environmental standards. ➤ HOW? <ul style="list-style-type: none"> • Health: nutritional standards can be included in procurement specifications • Economy: countries spend considerable amounts on procuring food, potential to improve livelihoods for farmers through providing markets • Environment: sustainability criteria can be included in procurement specifications ➤ Current state of EU food public procurement: <ul style="list-style-type: none"> • A "tale of untapped potential" Barling D et al. (2013) • Focus on environmental goals (along with the inherent economic goal of keeping costs to a minimum) • Less focus on social and health issues • Voluntary EU Green Public Procurement (GPP) scheme: main tool for addressing food goals <ul style="list-style-type: none"> - Recommendation: to purchase organic and higher animal welfare food, fairly-traded items - But narrow scope ➤ Recommendations for aligning procurement policy with food systems: <ul style="list-style-type: none"> • More focus on nutritional components, • Wider social considerations: <ul style="list-style-type: none"> - reskilling and improved working conditions, - improved links between smaller producers and buyers.
<p>16) Barling, D., Anderssen, G., Bock, B., Canjels, A., Galli, F., Gourlay, R., ... & Sonnino, R. (2013). <u>Revaluating public sector food procurement in Europe: an action plan for sustainability.</u></p>	<ul style="list-style-type: none"> ➤ Report on Revaluating Public Sector Food Procurement based on the <u>Foodlink project</u> <p>Results:</p> <ul style="list-style-type: none"> • Action Plan to help and encourage urban governments to take up the challenge of more sustainable purchasing practices • Greening of Public Procurement Policies identified by European policy makers for furthering sustainable consumption and production

ARTICLES

CONTENT

- **“Moral responsibility”** of public institutions to promote an **“ethic of care”** for their communities and environment in the ways that they purchase, prepare and serve food
- Public Procurement is one of the **most powerful tools** urban governments have at their disposal to fashion sustainable food systems that prioritize quality foods
- **Main and central message of revaluing public sector food procurement: investing today in public food systems may imply a significant financial effort and sacrifice at a time of recession, but the savings made in other budgetary accounts will far outweigh and offset the costs of your initial investment.**
- Policy level
 - Importance to adopt an **integrative approach** that recognizes and emphasizes the cross cutting, multifunctional nature of public food systems and their capacity to deliver socio-economic and environmental benefits.
- Practical level
 - **In all cases local governments have managed to promote relocalisation without breaching the EU legislation on public procurement.**

ANNEX 2: The potential of sustainable food procurement in hospitals

The European healthcare sector can play a significant role in influencing market supply and demand, and lead the transition to healthier and more sustainable products and services in healthcare. In fact, healthcare accounts for approximately half of public spending in the EU - 14% of annual EU GDP in total.⁴⁶ Therefore, **sustainable food procurement in the healthcare sector** also represents an excellent opportunity to achieve sustainable development and climate objectives, as well as to contribute to long-term changes in eating habits and preferences, and improve public health.

GOOD PRACTICE: AUSTRIA

With approximately 30,000 employees, the Vienna Hospital Association association cares for nearly 295,000 inpatients and 2.8 million outpatients each year, serves approximately 30,000 meals per day - 34% of food served is organic, coming mostly from local suppliers.

"Natürlich gut Teller" [naturally good dish] (2010), is a programme of the City of Vienna for sustainable nutrition that established mandatory criteria for procurement:

- At least one main component of the dish must be organic
- Only use seasonal fruit and vegetables
- Portions may contain a maximum gross weight of 90g of meat.
- Fish must be sourced from sustainable Austrian fisheries or organic farms

Between 2011-2016 approximately 4.4 million meals were consumed under the Natürlich gut Teller programme. In this four-year period, 56% of meals served were vegetarian, 24% contained fish dishes, and 20% contained meat. Looking at the overall content of these dishes, fruit and vegetable content was 87%, fish content was 8%, and 5% was meat.

- 24,000kg of organic fruit and vegetables is used annually, equivalent to 12 hectares of agricultural land farmed organically;
- 190,000kg of seasonal fruit and vegetables is purchased preventing 21,600 tonnes of CO₂ emissions;
- The reduction in meat portions has annually saved 57,000 euro, seven cows, 65 pigs and 853 chickens. Water use is also reduced by 233,000 m³;
- By using only local fish, a further annual saving of 150,000 euro is achieved.

This programme brings many environmental benefits - the proportion of organic food in the City of Vienna has already saved approximately 11,700 tonnes of CO₂ equivalent per year; savings between 2008-2012 amounted to approximately 58,600 tonnes of CO₂ equivalent.

⁴⁶ Eurostat (2018) [Healthcare Expenditure Statistics \[Dataset\]](#).