



UNIVERSITA' DEGLI STUDI DI PADOVA

**DIPARTIMENTO DI SCIENZE ECONOMICHE ED AZIENDALI "M.
FANNO"**

**CORSO DI LAUREA MAGISTRALE IN
BUSINESS ADMINISTRATION**

TESI DI LAUREA

**"Challenges and opportunities of Green Public Procurement: experiences
in the Italian context"**

RELATORE:

CH.MO PROF. De Marchi Valentina

LAUREANDA: Reffo Aurora

MATRICOLA N. 1210018

ANNO ACCADEMICO 2020-2021

Il candidato dichiara che il presente lavoro è originale e non è già stato sottoposto, in tutto o in parte, per il conseguimento di un titolo accademico in altre Università italiane o straniere.

Il candidato dichiara altresì che tutti i materiali utilizzati durante la preparazione dell'elaborato sono stati indicati nel testo e nella sezione "Riferimenti bibliografici" e che le eventuali citazioni testuali sono individuabili attraverso l'esplicito richiamo alla pubblicazione originale.

The candidate declares that the present work is original and has not already been submitted, totally or in part, for the purposes of attaining an academic degree in other Italian or foreign universities. The candidate also declares that all the materials used during the preparation of the thesis have been explicitly indicated in the text and in the section "Bibliographical references" and that any textual citations can be identified through an explicit reference to the original publication.

Firma dello studente



Table of contents

Introduction	1
Chapter 1 – Literature review	3
1.1 The concept of Green Public Procurement	3
1.2 Why is GPP important?	6
1.2.1 <i>Environmental benefits</i>	7
1.2.2 <i>Social benefits</i>	8
1.2.3 <i>Economic development</i>	9
1.2.4 <i>Cost savings</i>	10
1.3 Regulations at EU level	10
1.3.1 <i>Criteria in the GPP process</i>	14
1.4 Regulations at Italian level	17
1.5 Macro and meso factors that influence GPP	19
1.5.1 <i>Macro factors</i>	20
1.5.2 <i>Meso factors</i>	21
1.6 Internal factors in PAs that influence GPP	22
1.6.1 <i>Financial resources</i>	24
1.6.2 <i>Internal knowledge and employee training</i>	25
1.6.3 <i>Managerial support</i>	28
1.6.4 <i>Organizational culture and motivation</i>	29
1.6.5 <i>Size</i>	29
1.7 Firms' engagement in GPP	30
1.7.1 <i>Barriers and enablers</i>	30
1.7.2 <i>Financial resources and knowledge</i>	31
1.7.3 <i>Duration of contracts</i>	32
1.7.4 <i>Costs</i>	33
1.7.5 <i>Culture and motivation</i>	33
Chapter 2 – Quantitative analysis	35
2.1 Methods	35
2.1.1 <i>The empirical setting: the Compraverde Buygreen Forum</i>	35
2.1.2 <i>The sample</i>	37
2.1.3 <i>Vendor Rating and Sustainable Purchases award</i>	37
2.1.4 <i>Green Culture award</i>	38
2.1.5 <i>Green Construction with innovative materials award</i>	39
2.1.6 <i>Green construction with local and renewable materials award</i>	40
2.1.7 <i>Green Canteen award</i>	41

2.2 Survey results.....	42
2.2.1 Sectors.....	43
2.2.2 <i>The sustainability activities implemented</i>	44
2.2.3 <i>Changes implemented in order to become sustainable</i>	46
2.2.4 <i>Economic, environmental, social performances</i>	47
2.2.5 <i>Benefits and challenges of engaging with GPP</i>	50
2.3 Discussions and conclusions.....	53
Chapter 3 – A qualitative approach	55
3.1 GPP in the City of Padua	55
3.2 Initiatives at municipal level.....	55
3.2.1 <i>Training of administration employees</i>	57
3.2.2 <i>Dissemination activities</i>	58
3.3 GPP Action Plan for 2015-2017	58
3.3.1 <i>Results of the monitoring of the 2015-2017 GPP Action Plan</i>	60
3.4 GPP Action Plan for 2019-2022	62
3.5 Methods	63
3.6 The empirical setting	64
3.7 Companies interviewed	65
3.7.1 <i>The firms interviewed</i>	65
3.8 Interview results.....	66
3.8.1 <i>Sustainability criteria adopted</i>	67
3.8.2 <i>Reasons for adopting a sustainable business model</i>	68
3.8.3 <i>Changes or investments to participate in public tenders</i>	70
3.8.4 <i>Difficulties and benefits from the participation in public tenders</i>	71
3.8.5 <i>Advice for other companies</i>	73
3.9 Observations and conclusions.....	74
Conclusion.....	77
References	81
Appendix	86
Interview with FURNITURE1	86
Interview with FURNITURE2	89
Interview with FURNITURE3	90
Interview with FURNITURE4	91
Interview with TEXTILE1	92
Interview with TEXTILE2	93
Interview with TEXTILE3	94

Introduction

On 4 June 2021, the first climate clock was inaugurated in Italy. The instrument, installed on the front wall of the Ministry for Ecological Transition in Rome, serves to measure the time we have left to reverse the climate course, a countdown to remind everyone of our responsibilities towards the planet, and which may vary depending on the initiatives that will be taken at global level.

Installed on the occasion of World Environment Day on 5 June, the clock shows that, according to scientists at the Mercator Research Institute on Global Commons and Climate Change, we have just under seven years' time to adopt behaviours and actions to limit the increase in the planet's average temperature to 1.5 degrees. In fact, according to the Paris Agreement, governments have decided to limit global warming to below 2°C and preferably 1.5°C, to significantly reduce the risks and impacts of climate change.

The clock therefore ticks a time that can be reversed, depending on the actions governments take. Green Public Procurement (GPP) is a tool meant to respond to climate change, the main causes of which are CO₂ emissions due to the use of fossil fuels for energy and electricity production, transport, heating and industrial activities. The strength of GPP lies in promoting energy efficiency, the use of renewable energy sources, reducing air pollution and creating healthier workplaces for employees.

The objective of this work is to provide an analysis of the literature on the important issue of GPP, supported by a quantitative analysis through a questionnaire to the enterprises that have distinguished themselves over the years for the choice of a sustainable business model, and by a qualitative analysis conducted through interviews with the companies that have won GPP tenders for the Municipality of Padua. The aim of this study is to deepen the experiences of the enterprises, in order to understand what have been the changes necessary to adapt to the required sustainability criteria, the difficulties in the relationship with the administrations, or the benefits deriving from the participation to the tenders. The ultimate aim is to develop useful indications for public administrations, so that they can improve their processes, as well as to provide advice to companies wishing to make their business model more sustainable, also with a view to participating in GPP tenders.

The work is divided into three main parts. In particular, in Chapter 1, the concept of GPP will be illustrated by means of a review of the literature on this topic, with the aim of outlining its main characteristics. It will attempt to analyse why it is such an important governmental tool

and what benefits can be derived from its application. It will then proceed to outline the main legislative sources that regulate its application in the European and national context. At the end of the chapter, the analysis will focus on the factors that act as enablers or barriers to the application of GPP, both within public administrations and companies.

In Chapter 2 the Italian context of the Compraverde Forum will be observed, in order to deepen the point of view of enterprises participating in GPP tenders in Italy, which choose to adopt a more sustainable business model. Through the analysis of the answers to a questionnaire, the most important aspects will be outlined, also in accordance with what has been discussed in the literature review.

Finally, Chapter 3 will have a territorial focus, concentrating on the GPP initiatives and projects of the Municipality of Padua, and will then proceed with a qualitative analysis of the experiences of the companies that participated in the calls for tenders of the Municipality. The analysis will be carried out through interviews with representatives of the companies that won the tenders for the supply of furniture and textiles. Also in this case, what emerged will be commented in light of the results of the two previous chapters.

Chapter 1 – Literature review

The aim of this chapter is to conduct a literature review on the topic of green procurement. Starting with an in-depth analysis of what is meant by green procurement of public administrations, the benefits that make it such an important tool will be analysed, along with the main sources of legislation governing its application in Europe and Italy.

Finally, the factors favouring or hindering its implementation will be explored, both within public administrations and with regard to the experiences of firms.

1.1 The concept of Green Public Procurement

The concept of Green Public Procurement (GPP) can be placed within the broader topic of sustainable development and is the main tool through which Public Administrations introduce environmental criteria in the purchasing policies of goods and services. It can be defined as “a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured” (Sönnichsen and Clement, 2020).

Public procurement is the process by which public authorities, such as government departments, regional and local authorities or bodies governed by public law, purchase goods or services from companies (European Commission, 2017). Public authorities have a key role in dealing with environmental issues due to the large share of public spending around the world: public sector spending covers around 17.1% of global GDP (Darnall *et al.*, 2018); in developing countries, public procurement accounts for around 70% of government spending (Zaidi *et al.*, 2019), whereas in 2015 public procurement represented around 14% of EU’s GDP, with Member States spending approximately 1.8 trillion euro annually (European Commission website).

Given the significant carbon footprint of the public sector, international organizations are promoting sustainable public purchasing to encourage the procurement of products and services with lower negative impacts for the environment and to stimulate the production of greener products worldwide (Darnall *et al.* 2018). It can be said that GPP is an integral part of sustainable development because its importance lies in its ability to have a positive impact on

climate change through its lower environmental footprint, opposed to doing ‘business as usual’ (Mélou, 2020).

A great potential of GPP derives from the influence that Public Administrations can have on the market. The behaviour of the "PA consumer" can, in fact, exert a considerable level of influence on market behaviour both on the supply side, since the producers of products and services are incentivized to reduce their environmental impact in order to maintain the possibility of selling to PA, and on the demand side, where PA acts as a model for the behaviour of citizens, private institutions and businesses. This way public authorities can help change production and consumption trends and create demand for green products and technology.

Green Public Procurement allows Public Administrations to apply environmental criteria at all stages of the purchasing process. This encourages the diffusion of technologies and the development of products that have less impact on the environment, throughout their entire life cycle. In some particular sectors (such as public transport and constructions, health services and education), public purchases represent an important share of the market, so decisions have a significant impact.

Through GPP, public authorities can help reduce the pressure on our planet and also save money by opting for products and services with better energy performance. GPP means thinking about the impact of a product throughout its lifecycle, and what happens to it when it is no longer being used. Green Public Procurement, therefore, is not only an environmental policy tool, but represents a method of optimization of public resources and a stimulus for innovation in the environmental field.

The topic of Green Public Procurement is often linked to the concepts of sustainability and circular economy. GPP has been adopted in a series of EU policies and strategies, reflecting its potential to encourage an environmentally sustainable use of natural resources, establish behavioural changes for sustainable consumption and production, and drive innovation. The 2015 EU Action Plan for the Circular Economy identifies GPP as one of the necessary tools to help ensure a more efficient use of resources.

Many public authorities in the EU are applying GPP as part of a broader approach to sustainability in their procurement, which also addresses economic and social aspects. Sustainable Public Procurement (SPP) can be described as “a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only for the organisation, but also for the society and the economy, whilst minimising damage to the environment” (Preuss, 2007).

Sustainable Public Procurement is therefore a process where public authorities take account of the three pillars of sustainable development (economic, social and environmental) when purchasing goods and services.

The concept of “sustainable development” appeared for the first time in a 1987 report published by the World Commission on Environment and Development (also known as the Brundtland Commission). The report, called *Our Common Future*, explicitly defines sustainable development as a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Mebratu, 1998).

Through its report, the Brundtland Commission was the major political turning point that made the concept of sustainable development of great importance and its definition has been very important for developing a global view with respect to our planet’s future, contributing to national and international policy development (Mebratu, 1998).

Another milestone after the WCED was the 1992 UN Conference on Environment and Development, also known as the “Rio Conference” or “Earth Summit”. In preparation to the conference, there were four international Preparatory Committees in which each UN member country produced a report covering national environmental aspects and preparing an action plan for promoting sustainable development in their country. The preparatory process involved the participation of major stakeholders, bringing the concept of sustainable development to every corner of the world. The Rio Conference led to the production of some very important documents such as the Rio Declaration, the Agenda 21 and other conventions focusing on climate change, biodiversity and desertification.

In “Transforming the World: the 2030 Agenda for Sustainable Development”, the United Nations announced 17 sustainable development goals, including improved nutrition and promoting sustainable agriculture, clean energy and water, sustainable cities and economic growth, responsible production and consumption and so on (Rosa, 2017).

Public procurement can embrace the principles of a circular economy, as well. Circular public procurement is defined as “the process by which public authorities purchase works, goods or services that seek to contribute to closed energy and material loops within supply chains, whilst minimising, and in the best case avoiding, negative environmental impacts and waste creation across their whole life-cycle” (European Commission, 2017).

Several cities, regions and countries have been developing their own circular economy strategies. These strategies can help the public sector buyers take a more holistic approach to

sustainability by including circular economy principles from the first stages of the procurement process to the end of the product life (European Commission, 2017). These choices also allow some potential savings given that costs can be calculated on the basis of a product's life-cycle, therefore considering all the costs incurred during the lifetime of the product, including operating costs (such as energy, fuel and water use, spares, and maintenance), end-of-life costs (decommissioning or disposal) and residual value (European Commission website).

The 2015 EU Action Plan for the Circular Economy proposed actions to help close the circle of product life-cycles, keeping resources in the economy and contributing toward the creation of a more sustainable, low carbon, resource efficient and competitive economy (European Commission, 2017). This plan sets out several actions to facilitate the integration of circular economy principles in public procurement, such as enhancing waste policy in support of waste prevention and circularity, creating a well-functioning EU market for secondary raw materials, driving the transition through research, innovation and digitalisation (European Commission, 2015).

In 2017 the European Commission published the brochure 'Public Procurement for a Circular Economy', containing guidance on how to integrate circular economy principles into public procurement.

Circular public procurement also plays an important role in achieving the Sustainable Development Goals, defined in the aforementioned UN 2030 Agenda for Sustainable Development. In particular, goal 12 – ensuring sustainable consumption and production patterns – includes specific targets in promoting “public procurement practices that are sustainable, in accordance with national policies and priorities” (Rosa, 2017).

The following chapters will go into greater depth on the topic of GPP, focusing on its importance for economic, societal and environmental reasons, the way it is regulated at European and national level, and the enabling factors and difficulties that hinder its adoption.

1.2 Why is GPP important?

Various studies have examined how GPP can be used by public authorities as a viable tool in fostering environmental, economic and societal goals. The most important benefits that can be obtained from the application of environmental standards by Public Administrations are outlined in Table 1. The advantages deriving from GPP are grouped in four categories:

environmental, social, economic development, and cost-saving benefits. The following paragraphs explore each of these four categories in more detail.

Table 1: Benefits of GPP

Environmental benefits	Social benefits
<ul style="list-style-type: none"> • lower consumption of natural resources • lower CO2 emissions • reduction of energy consumption • greater control of hazardous substances in the environment • greater environmental awareness among users 	<ul style="list-style-type: none"> • improved quality of life • overall improved standards of products for private consumers • opportunities for economic development of local communities and SMEs
Economic development	Cost savings
<ul style="list-style-type: none"> • creation of new jobs in the Green Economy • opportunities of technological innovation • GPP as a ‘market trigger’ to stimulate demand for green products 	<ul style="list-style-type: none"> • cost savings in terms of waste management and pollution prevention • saving of resources and energy • increasing competition reduces prices of environmental technologies also in the private sector

1.2.1 Environmental benefits

Green Public Procurement can be instrumental for addressing environmental issues such as the consumption of natural resources and the production of waste and polluting emissions. For example, GPP can be used as a valid tool to fight deforestation (by purchasing wood from sustainably managed forests) and greenhouse gas emissions (by choosing products and services with lower a CO2 footprint).

The reduction and rationalization of energy consumption is another environmental benefit generated by GPP. On the long run, governments are able to save taxpayers’ money by

procuring products with less impact on the environment. For instance, the City of Phoenix managed to cut carbon emissions by 60% by replacing existing inefficient streetlights with more efficient ones. The replacement also benefited taxpayers by saving up to 22 million dollars over 12 years, thanks to energy savings and lower maintenance costs (Darnall *et al.*, 2018). Similar results can be obtained by acquiring water efficient products or chemical cleaning products that reduce impacts on the environment.

The reduction of exposure to harmful substances is another environmental benefit brought about by the application of GPP. Thanks to the application of minimum environmental criteria there is greater control of chemicals and hazardous substances used in agriculture and an encouragement in the purchasing of organic foods.

The integration of environmental considerations in the transportation, construction, and infrastructure sectors result in reduced environmental impacts and greater awareness among users on the benefits of these alternatives. This can lead to positive outcomes in the private sector, too, because GPP can be a stimulus to environmental innovation, promoting the local economy and sustainability wherever possible.

The majority of EU citizens perceives environmental protection as a fundamental priority of the Union: in the 2008 Eurobarometer Report “Attitudes of European citizens towards the environment”, 78% of respondents agreed with the statement “the EU should allocate more money to the protection of environment, even if this means that less money is spent on other areas”.

1.2.2 Social benefits

GPP is an opportunity for PAs to set a good example by spreading good practices and a more sustainable lifestyle. It can be an effective way to demonstrate public authorities’ commitment to improve the quality of life and enhance sustainable consumption and production.

GPP can improve the quality of life by improving services to the public, such as a cleaner public transport to help improve air quality in cities, or a lower use of hazardous substances in the cleaning products for healthier working environments. Moreover, thanks to the stimulus given by GPP and the demand for products with higher environmental standards, it is possible to improve overall standards also for private consumers.

Encouraging GPP practices gives significant incentives for industry to develop more efficient technologies, offering opportunities for small and medium sized companies in particular to find market for their innovative solutions (European Commission website).

Public authorities can create opportunities for economic development of local communities, given that large amounts of public spending are implemented at the local level (Semenova *et al.*). The small size of local businesses may hinder their engagement in GPP, however development programs sponsored by local PAs may offer learning opportunities which make them more competitive in their markets (Michelsen and de Boer, 2009). Furthermore, strategies to mediate equity concerns can be implemented by including the institution of minority-owned businesses requirements in tenders, to specifically reach out to minority and woman owned businesses (Kaye Nijaki and Worrel, 2012).

1.2.3 Economic development

The public sector can encourage the creation of new jobs in the so-called "Green Economy", thus being part of the solution to climate and environmental issues.

Thanks to the large volume of purchases made by the Public Administration, it is possible to increase the availability and competitiveness of green products and services through the spread of sustainable consumption and purchasing practices. In other words, GPP is one of the keys to transforming the world to a green economy.

In fact, GPP can stimulate technological innovation in the private sector as well. By pushing companies that want to win contracts to undertake the path of environmental sustainability, the Public Administration is able to trigger a virtuous circle with benefits in the private sector and, in turn, in the lives of citizens. These significant market incentives extend to the supply chains, leading to sustainable buyer and supplier practices, and eventually to a more sustainable society (Darnall *et al.* 2018). In this way, public procurement acts as a 'market trigger' in the absence of green product alternatives, and helps stimulate demand for more sustainable goods (Testa *et al.*, 2012).

1.2.4. Cost savings

One of the main obstacles in adopting green practices is often the higher costs of sustainable products, however, in the long run, green options often turn out to be the cheapest.

In fact, if we consider the whole life-cycle of a product, GPP reduces unnecessary expenditures and allows for lower resource and energy consumption, leading to savings both for public authorities and for society in general.

Using a life-cycle cost (LCC) approach in procurement decisions makes clear economic sense, since the purchase price is just one of the cost elements to be considered, along with the use and disposal. Life-cycle costing means considering all the costs incurred during the lifetime of the product, which include:

- the purchase price and associated costs (delivery, installation, insurance, etc)
- the operating costs (including energy, fuel and water consumption and maintenance)
- the disposal costs

The purchasing of green products therefore results in lower costs for waste management and pollution prevention, which are not reflected in the purchase price.

Another important aspect to be considered is that GPP can reduce prices for environmental technologies also in the private sector: the introduction of "green" award criteria can influence the market and cause new entrants to the field of environmental technologies and products - potentially increasing competition and lowering prices.

1.3 Regulations at EU level

This chapter will present the major legal sources that regulate the implementation of GPP in the EU, focusing in particular on some aspects of the current legislation.

GPP policies in Europe began with the publication of the Green Book of Integrated Products Policy (IPP) in 2001 and the Sixth Environment Action Programme in 2002 (Testa *et al.*, 2012). The Communication introduces for the first time in this context the concept of an Integrated Product Policy. The aim of IPP is to minimise the product impact on the environment throughout all phases of its life-cycle, considering also the market and competitiveness concerns. IPP uses a whole variety of tools such as economic instruments, substance bans,

voluntary agreements, environmental labelling and product design guidelines (European Commission website). IPP also highlights the role of PAs as leaders in driving the market demand towards a greener consumption through GPP (Nissinen *et al.*, 2009).

Another important document is the 2003 Communication on ‘Integrated Product Policy – Building on Environmental Life-Cycle Thinking’ (COM (2003) 302), because it encouraged all Member States to prepare their own national action plans (NAP) by the end of 2006, for greening their public procurement. As it states, the action plans “should contain an assessment of the existing situation and ambitious targets for the situation in three years’ time”, “should state clearly what measures will be taken to achieve this”, “should be drawn up for the first time by the end of 2006 and then revised every three years” and “will not be legally-binding but will provide political impetus to the process of implementing and raising awareness of greener public procurement”.

Despite the European goals of promoting IPP and NAP measures to enhance the nationwide uptake of GPP, only a few nations were considering the push towards Green Public Procurement as a comprehensive phenomenon. It was not until the EU released the Communication on ‘Public Procurement for a Better Environment’ in 2008 that each Member State (including Italy) adopted its own national plan on GPP (COM (2008) 400). The general objective of the Communication was to “provide guidance on how to reduce the environmental impact caused by public sector consumption and to use GPP to stimulate innovation in environmental technologies, products and services”. In particular, it addressed the following issues as obstacles to the uptake of GPP: the need for a process for setting common criteria, information on life-cycle costing of products, legal and operational guidance, political support through a political target. The Communication also set out an indicative target according to which, by the year 2010, 50% of all tendering procedures should be green, i.e. compliant with the core EU GPP criteria.

The above-mentioned measures played a major role in providing operational guidance to contracting public offices, however they are not legally binding for Member States. The indications provided by these policies have been embedded in the 2004/18/EC Directive (on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts) and the 2004/17/EC Directive (on coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors) (European Commission website).

In 2010 the EU released ‘Europe 2020: A strategy for smart, sustainable and inclusive growth’ to respond to the needs for growth and jobs after the 2008 financial crisis. The strategy emphasized the need to improve Europe’s productivity and support a more resource efficient, greener and more competitive economy (European Commission, 2010).

The current most important legislative frameworks in the field of GPP are the two directives adopted by the EU Council and the European Parliament in February 2014 (2014/24/EU and 2014/25/EU). These two directives respectively replaced the 2004/18/EC and 2004/17/EC directives on public sector and utilities in order to “increase the efficiency of public spending, facilitating in particular the participation of small and medium-sized enterprises (SMEs) in public procurement, and to enable procurers to make better use of public procurement in support of common societal goals.” The social and environmental goals include: protection of the environment, social responsibility, innovation, climate change and public health (European Commission website). Member States had until April 2016 to bring into force the laws, regulations and administrative provisions necessary to comply with them. The 2004/18/EC Directive also highlights how public procurement plays a key role in the Europe 2020 strategy as one of the market-based instruments to be used to accomplish its goals.

According to the European Commission, the following sections of the directives concerning GPP are worthy of attention:

Definition of technical requirements of a contract

They are specified in Article 42 of Directive 2014/24/EU and Article 60 of Directive 2014/25/EU. Technical specifications must be set out in procurement documents and shall establish the characteristics required of a works, service or supply. They shall “all afford equal access of economic operators to the procurement procedure and shall not have the effect of creating unjustified obstacles to the opening up of public procurement to competition”. Further details on technical requirements in the procurement contract are discussed in chapter 1.3.

Conditions for using labels

As indicated in Article 43 of 2014/24/EU and Article 61 of 2014/25/EU, contracting authorities may require a specific label as proof that the works, services or supplies correspond to the required environmental characteristics.

The most valuable labels from a GPP perspective are those which are “based on objectively verifiable and non-discriminatory criteria”. They are set by an independent third party and can be of different type, as indicated in ‘Buying green – A Handbook on green public procurement’ published by the EU Commission in April 2016 (European Commission, 2016).

Multi-criteria labels are the most commonly used in GPP and are based on scientific information about the environmental footprint of a product or service throughout its life-cycle. They apply different sets of criteria for each product or service group. Examples include the EU Ecolabel, the Nordic Swan and the Blue Angel.

Single issue labels are based on a pass or fail criteria linked to a specific issue. If the product is capable of meeting the criteria, then it may use the label. Examples are the EU Organic label and the Energy Star label. On the other hand, graded products labels grades products according to their performance related to a specific issue. For example, the EU Energy label grades products on their energy efficiency.

Finally, sector-specific includes certification schemes operated by organisations in a particular sector (for example, FSC – Forest Stewardship Council).

As stated in the directives, whenever an economic operator is not able to obtain the specific label requested by the contracting authority, the latter shall “accept other appropriate means of proof, which may include a technical dossier from the manufacturer, provided that the economic operator concerned proves that the works, supplies or services to be provided by it fulfil the requirements of the specific label or the specific requirements indicated by the contracting authority”.

Lowest price award and life-cycle costing

Articles 67 of 2014/24/EU and 82 of 2014/25/EU specify that the contracting authorities shall base the award of public contracts on the most economically advantageous tender (MEAT) which shall be identified on the basis of price or cost, using a cost-effectiveness approach (such as the life-cycle cost). Such approach considers criteria such as: quality (including technical merit, aesthetic and functional characteristics, design, social, environmental and innovative characteristics); organization, qualification and experience of staff; after-sales service, technical assistance and delivery conditions.

Regarding the already mentioned life-cycle cost approach, the directives specify that it shall cover the acquisition costs, the maintenance costs and the end of life costs. Moreover, the

contracting authority shall apply a common method for the assessment of life-cycle cost “whenever a common method for the calculation of life-cycle costs has been made mandatory by a legislative act of the Union”.

Defining the procedure for establishing an innovation partnership

Article 31 of Directive 2014/24/EU defines the procedure for innovation partnerships. This partnership shall aim at the development of innovative products or services whenever they are not already available on the market, provided that they “correspond to the performance levels and maximum costs agreed between the contracting authorities and the participants”.

The partnership can be set up with one or several partners to be treated equally by the contracting authority, and will be structured in different stages, starting from the R&D process, with intermediate targets to be attained by the partners. The estimated value of the innovative solutions shall be proportionate in relation to the investment required for their development.

Consulting the market

Article 40 of Directive 2014/24/EU allows for preliminary market consultations before the procurement procedure. Contracting authorities may therefore search for advice from independent authorities or market participants, provided that such advice does not affect competition or does not violate the principles of non-discrimination and transparency.

1.3.1 Criteria in the GPP process

EU green public standards’ purpose is to simplify the purchasing process for goods with lower environmental impact. The adoption of GPP relies on having clear and verifiable environmental criteria and requirements based on a life-cycle approach and scientific foundation. The challenge is to ensure that Member States adopt similar criteria in order to avoid a distortion of the single market that would reduce competition. A common playing field would significantly reduce the administrative burden, thus helping implement GPP practices, in particular for those companies operating in more than one Member State (European Commission website).

With the above mentioned Communication ‘Public procurement for a better environment’ (COM (2008) 400), the EU Commission has developed criteria for product and service groups

in 10 different sectors. These strategic sectors are considered the most suitable for implementing GPP and were selected using a multi-criteria analysis which takes into account the scope for environmental improvement, public expenditure, potential impact on suppliers, potential for setting an example to private or corporate consumers, political sensitivity, existence of relevant and easy-to-use criteria, market availability and economic efficiency (European Commission website).

The 10 priority sectors are the following:

- Construction (including raw materials and construction products, operational and end-of-life aspects of buildings, maintenance services, on-site performance of work contracts)
- Food and catering services
- Transport and transport services
- Energy (electricity, heating and cooling from renewable sources)
- Office machinery and computers
- Clothing, uniforms and other textiles
- Paper and printing services
- Furniture
- Cleaning products and services
- Equipment used in the health sector

The criteria are based on existing ecolabel criteria as well as information collected from industry stakeholders and civil society. Their goal is to reach a good balance between environmental performance, costs, market availability and ease of verification (European Commission website).

Within tenders, standards can be applied in technical specifications or award criteria. The standards formulated as technical requirements are intended as knock-out criteria, whereas award criteria help stimulate better voluntary performances and open tenders to more potential suppliers (Rainville, 2017).

Standards can be considered within any stage of the procurement process and procuring authorities can choose to apply all or certain criteria required for the tenders in each sector. For each product or service group the Commission distinguishes between two types of criteria: “core” and “comprehensive” criteria. Core criteria are those designed to allow an easy application of GPP by any contracting authority across the Member States. They focus on the key environmental impacts and are designed to keep administrative costs and additional

verification efforts at a minimum. Comprehensive criteria are used by contracting authorities that wish to consider further aspects of environmental performance and purchase the best environmental products available on the market. They may require additional verification efforts and an increase in cost compared to other similar products (Testa *et al.*, 2016).

References to formal standards are encouraged in the directives set at European level or at national level when no higher equivalent exists (Rainville, 2017). Article 42 of Directive 2014/24/EU refers to Annex VII to define technical specifications.

They are described as follows: in the case of a public works contract, as “the totality of the technical prescriptions contained in particular in the procurement documents, defining the characteristics required of a material, product or supply, so that it fulfils the use for which it is intended by the contracting authority”. The characteristics shall include “levels of environmental and climate performance, design for all requirements (including accessibility for disabled persons) and conformity assessment, performance, safety or dimensions, including the procedures concerning quality assurance, terminology, symbols, testing and test methods, packaging, marking and labelling, user instructions and production processes and methods at any stage of the life cycle of the works”.

In the case of public supply or service contracts, technical specifications shall be in the form of “specification in a document defining the required characteristics of a product or a service, such as quality levels, environmental and climate performance levels, design for all requirements (including accessibility for disabled persons) and conformity assessment, performance, use of the product, safety or dimensions, including requirements relevant to the product as regards the name under which the product is sold, terminology, symbols, testing and test methods, packaging, marking and labelling, user instructions, production processes and methods at any stage of the life cycle of the supply or service and conformity assessment procedures”

Annex VII also defines ‘standards’ as technical specifications adopted by a recognized standardisation body for repeated or continued application. There can be international, European or national standards, according to the level of the organisation which adopts them.

A new set of EU GPP criteria was established in June 2010 in order to increase the synergies between different product-related policy instruments, such as EU GPP and EU Ecolabel. The EU Commission Joint Research Centre in Seville is in charge of drawing up an annual GPP work plan for the standards development process in coordination with the EU Ecolabel workplan. This workplan is adopted together with the consultation of the GPP Advisory Group, whose function is to provide advice to the European Commission on the development and

implementation of GPP policies. The GPP Advisory Group is composed of one representative for each Member State and five representatives of industry stakeholders (European Commission website)

1.4 Regulations at Italian level

In Italy, public procurement was governed by the Public Procurement Code which entered into force on July 1st, 2006, and covered public work contracts, public supply contracts and public service contracts. This Code put together the 2004 EU directives on public procurement along with the other pieces of Italian legislation. It fully implemented the EU directives, and in some cases the use of GPP exceeds the minimum requirements (Appolloni *et al.*, 2011). However, it was eventually repealed by the new Code of 2016, which included the guidelines of the 2014 EU directives.

Coherently with the solicitation of the above-mentioned EU Communications of 2003 and 2008, also Italy adopted its own National Action Plan (NAP) on Green Public Procurement in 2008. The plan is being implemented by an inter-ministerial committee and is supported by an advisory board composed of representatives from all the sectors involved (Appolloni *et al.*, 2011).

The Italian NAP sets out five main objectives:

- Involvement of all relevant authorities for GPP at national level
- Wide outreach of knowledge on GPP among public authorities and other public bodies through dissemination and training activities
- Definition, for products, services and works identified as priorities for environmental impacts and expenditure, of methods for the creation of sustainable purchasing processes and environmental criteria to be included in the tender specifications
- Definition of national goals, to be achieved and redefined every three years
- Periodic monitoring of the diffusion of GPP and analysis of the environmental benefits obtained

In particular, it refers to some environmental products which are considered particularly relevant in the country:

- **Efficiency and savings in the use of natural resources (especially energy) and consequent reduction of CO2 omissions**

These goal of reduction of energy consumption from fossil sources shall be achieved through an increased energy efficiency and the use of renewable sources. With the action plan it will be possible to increase the public demand for energy-efficient products and technologies, and to help convert current buildings into sustainable buildings. The reduction of CO2 emissions will actively contribute to achieving the goals set by the Kyoto Protocol.

- **Reduction of hazardous substances**

The procurement of supplies must be characterized by the absence or the smallest possible quantities of hazardous substances, in accordance with the minimum environmental criteria.

- **Waste reduction**

This goal must be reached through promoting the purchase and diffusion of products with a longer life-cycle, easily reusable, containing recycled and recyclable materials, with a lower volume of waste products (packaging).

The National Action Plan also refers to specific decrees issued by the Ministry of the Environment and the Protection of the Territory and the Sea for the identification of a set of Minimum Environmental Criteria or MEC (in Italian CAM, Criteri Ambientali Minimi). These criteria are those technical requirements essential to classify a product or a service as 'sustainable'. For each criterion or set of criteria, quantitative and temporal objectives will be defined with reference to their application in public procurement practices. The sectoral objectives will allow an approximate calculation of the lower environmental impacts through the use of appropriate indicators.

Although in Italy GPP was initially a voluntary tool, it is mandatory since 2015 and Italy has become the first European country to impose MEC. In fact, minimum environmental criteria are made mandatory with the law n. 221 of 28 December 2015 (article 18) to promote GPP and to limit the excessive use of natural resources. Various articles of this law have been repealed by the new Public Procurement Code of 2016. In particular, art. 34 of the Code on "Energy and Environmental Sustainability Criteria" fully integrates the provisions of art. 18, with regard to

the mandatory application of the MEC. It states that contracting authorities must apply specific green criteria in public procurement. This means that every public purchase of goods and services, or every public work carried out by a contracting authority, must be sustainable.

Other articles concerning GPP are worthy of attention since they report the contents provided for in the EU directives of 2014. For example, art. 68 on technical specifications and art. 69 regarding labels correspond to art. 42 and 43 of Directive 2014/24/EU. Art. 95 of the Italian Code specifies the contract award criteria that are identified in art. 67 of the EU directive.

1.5 Macro and meso factors that influence GPP

The purpose of this chapter is to shed light on the factors of GPP adoption which are not strictly related to the characteristics of the contracting unit itself. The literature on GPP can be divided into two categories: the first regarding studies of the enabling factors and barriers to its adoption, and the second focused on the its consequences and effects.

Most studies have been focusing on the micro-level characteristics (such as the level of knowledge of GPP inside the contracting authority, training programs, environmental awareness and financial constraints), and these will be discussed in the following paragraphs. However, little is still known about the macro and meso factors. Moreover, in a literature review of sixty-seven papers regarding GPP, Cheng *et al.* (2018) revealed that the majority of the literature focused on single countries, level of government or sector.

Macro factors are those concerned with the GPP system as a whole, which are alien to the tendering process but still impact on GPP adoption (for example, regulations or economic conditions within a country). Meso factors can be defined as ‘contracting process effects outside the contracting unit scope but influenced by the contracting process characteristics itself’. In this case, the contracting authorities maintain a certain level of influence, whereas other characteristics also lie outside their control (Rosell, J. 2020). Micro factors are not easy to detect because they are typical of each separate contracting unit, while macro and meso factors are easier and cheaper to recognize.

A study by Rosell (2020) explored the award criteria for 25 European countries, recorded in the Tenders Electronic Daily database for the period from 2006 to 2017, identifying the macro and meso factors that influence GPP adoption. The purpose of the paper was to develop a broader framework for decision making by identifying the contract awards that represent GPP in their award criteria, and comparing the main differences between green and general public

procurement across Member States. The paper contributed empirically to the literature by analysing half a million tender processes, concerning four levels of government in sixteen different industries, and shows significant cross-country differences in GPP uptake. In particular, it identified the macro and meso factors described below.

1.5.1 Macro factors

There is empirical evidence that shows cross-country variation in GPP uptake, and this reinforces the idea that some particular factors influence its adoption.

For example, one of the first studies on sustainable public procurement conducted by Bouwer *et al.* (2006) reports important cross-country differences in relation to GPP adoption: the study highlighted how 7 countries known as the ‘Green 7’ (Austria, Denmark, Finland, Germany, Netherlands, Sweden and UK) consistently implemented more elements of GPP in their tenders than the ‘Other-18’ countries. Moreover, the ‘Green 7’ exhibited some common characteristics including: strong political guidance and national guidelines, available GPP websites and information resources, national programmes regarding GPP and others (Bouwer *et al.* (2006)). Another paper from Nissinen *et al.* (2009) examined the use of environmental procurement criteria in the calls for tenders of three Nordic countries (Denmark, Finland and Sweden) and found significant differences between the countries.

Another factor that influences GPP corresponds to the economic setting and the level of economic development. Economic conditions such as recessions and periods of expansion influence an organization’s resources and motivations. For instance, periods of economic recession may limit its financial resources, which in turn affect its ability to adopt sustainable procurement. On the other hand, economic recession may also encourage an organization to emphasize resource efficiencies that come from pollution prevention (Darnall *et al.* 2018). External stakeholders may also change the pressures they exert on public authorities according to the economic setting. For example, in periods of recession city employees may be more hesitant in pressuring local governments to address a specific issue, and this in turn affects public organizations’ capacity to adopt GPP (Darnall *et al.* 2018).

A report by Bouwer *et al.* (2006) shows how additional costs associated with greener products are perceived as a strong barrier by PAs, which may suggest that wealthier countries are keener to adopt GPP (Rosell, 2020). Economic development is often linked to government performance, which in poor countries tends to be lower, whereas richer countries achieve better

results in terms of sustainability goals. For example, the 2018 Environmental Performance Index shows a positive correlation between the wealth of a country and its environmental health and ecosystem vitality (Rosell, 2020).

Another factor which determines the uptake of GPP practices is the role of the public sector in the economy. There is reason to believe that a more developed public sector should have greater tendency to impact positively on the environment, and GPP is indicative of a government's desire to do that. In fact, higher government expenditure tends to redistribute resources, which in turn increases equality and positively effects the demand for environmental quality (Rosell, 2020) For example, in a study on the effect of government spending on the environment, Halkos and Paizanos (2013) found that government size is negatively related to the emission rates of some pollutants.

Finally, the decision to adopt GPP is influenced by the existence of clear government regulations. Each EU country has its own agenda regarding GPP implementation, since the 2004 and 2014 EU Directives do not make it mandatory. For example, Finland and Sweden have produced and distributed clearer guidelines compared to Denmark, which positively affected the adoption of GPP.

1.5.2 Meso factors

The following paragraph analyses the factors which are not wholly external to the contracting unit, and over which the contracting authority does not have total control.

Overall, the adoption of GPP seems to differ depending on the level of government. In particular, lower tiers of government seem to favour GPP overall (Rosell, 2020). On a study on environmental integration and engagement in the Portuguese municipalities, Nogueiro and Ramos (2014) found that municipal levels tend to adopt sustainable management practices more rapidly than other public sector levels. In China, the awareness of GPP policies by local officials, along with their level of training, appeared to have a positive impact on GPP performance at municipal level (Liu *et al.* 2019).

Another important factor according to Rosell (2020), is the contract value or tender price: the resources dedicated to a tender process will increase with the contract value, leading to greater GPP adoption, given that the contracting authority will allocate more human and economic resources to the process. Moreover, the higher budget for tendering processes suggests a higher

probability of dedicating more resources to the process. Evidence of this is shown in the study by Renda *et al.* (2012), which shows how higher priced contracts are related to an increased use of GPP. However, sometimes a high price results in a negative impact on GPP uptake, although this can be considered as a consequence and not a determinant of GPP (Rosell, 2020).

Environmental awareness differs from one sector to another, given that they may be characterized by different levels of awareness (for example, GPP for the defence sector differs from that of public procurement related to environmental activities and services). Bouwer *et al.* (2006) clearly show that the uptake of GPP in Europe differs from country to country and from one sector to another.

Finally, the type of contract may also influence GPP adoption, depending on whether the contracting authority needs to purchase goods, works or services. In the case of a goods purchase contract, contract clauses are usually in the form of award criteria or technical specifications, whereas longer service contracts are characterized by performance clauses. According to Beuve *et al.* (2019), GPP in the award criteria is more common in purchase of goods contracts than in service ones, since a shorter contract duration is often associated with less contractual rigidities

1.6 Internal factors in PAs that influence GPP

After a brief analysis of some macro and meso factors affecting GPP adoption (over which the contracting unit has little or no control), the aim of the following chapters is to investigate the internal factors that influence its uptake from two perspectives: the point of view of the contracting authority and from the point of view of the firm. In particular, the following chapter will analyse the main obstacles or drivers concerning GPP implementation from a public perspective.

There are numerous studies that draw attention to the challenges that limit the uptake of environmental considerations into public sector procurement.

A study by Bouwer *et al.* (2006) identified the major obstacles encountered by PAs in the application of green procurement. The report analysed results from 25 Member States, dividing them into two groups according to their performance. The results showed that the main barriers were the perceived higher costs for green products, lack of environmental knowledge and information tools, insufficient employee training and lack of managerial support.

Table 2: Perceived barriers to GPP

Obstacle	All	'Green-7'	Other 18
Perception that environmentally friendlier products would be more expensive	44%	46%	38%
Lack of knowledge about the environment and how to develop environmental criteria	35%	27%	37%
Lack of management support (including money and time), strategic focus and organisational policy strongly promoting GPP	33%	34%	32%
Lack of practical tools and information (e.g. handbooks, internet-tools)	25%	21%	30%
Lack of training for public procurement officers	25%	24%	27%

Source: Bouwer et al. 2006

However, the same factors that limit the application of green practices can also act as enablers when there is managerial support and motivation and human and financial resources to invest in GPP. The table below shows the most important factors that affect green procurement in public authorities according to the literature. The following paragraphs will analyze these factors in further detail.

Table 3: Factors affecting GPP in Public Authorities

FACTORS AFFECTING GPP	ENABLERS	BARRIERS
Financial resources	<ul style="list-style-type: none"> Perception of the financial viability of GPP 	<ul style="list-style-type: none"> Tight budget constraints in PAs Perception that green products are too expensive
Internal knowledge and employee training	<ul style="list-style-type: none"> Sharing of tacit knowledge within PAs Employee training Good access to environmental information 	<ul style="list-style-type: none"> Lack of information tools Ambiguity of government regulations Low level of employee training
Managerial support	<ul style="list-style-type: none"> Top management commitment 	<ul style="list-style-type: none"> Poor understanding of the importance of GPP

	<ul style="list-style-type: none"> • Work environment supportive of sustainability 	<ul style="list-style-type: none"> • Poor results in spreading awareness among employees • Unclear directives
Organizational culture and motivation	<ul style="list-style-type: none"> • Organizations with values linked to environmental concerns • Entrepreneurial cultures supportive of innovativeness and proactiveness 	<ul style="list-style-type: none"> • Low environmental awareness • Risk-averse nature of public officials
Size	<ul style="list-style-type: none"> • Larger organizations have greater capacity in terms of knowledge and managerial resources 	<ul style="list-style-type: none"> • Small organizations often lack internal know-how and resources

1.6.1 Financial resources

Financial constraints have always been one of the main barriers to GPP because sustainable methods are often perceived as more expensive. Because of tight budget constraints faced by most public sector authorities, organizations are often reluctant to pursue green procurement in contexts where the payoffs are unclear, or whenever they may come into conflict with directives to deliver value for money.

A study from Brammer and Walker (2011) surveyed over 280 public procurement practitioners from 20 countries in order to understand some common practices among the respondents and highlight the main facilitators and barriers to the uptake of sustainable procurement.

The table below provides an insight into the most common difficulties encountered by PAs when implementing GPP. In general, financial constraints were the most commonly identified barriers to sustainability, with almost a third of organizations highlighting that green products were seen as too expensive.

Table 4: Perceived barriers to implementing sustainable procurement

	UK (%)	Western Europe (%)	Eastern Europe (%)	Scandinavia (%)	USA/ Canada (%)	Rest of the world (%)	All countries (%)
Financial	48.1	16.3	11.1	10.3	34.6	18.2	30.4
Informational	12.3	12.2	5.6	6.9	7.7	9.1	9.9
Legal	1.9	8.2	2.8	6.9	7.7	0.0	4.6
Managerial/ structural	21.7	8.2	2.8	3.4	5.8	9.1	11.7
Political/ cultural	5.7	8.2	2.8	0.0	5.8	18.2	5.7
Product/quality	5.7	4.1	2.8	0.0	9.6	27.3	6.0
Priority	8.5	2.0	0.0	0.0	3.8	0.0	4.2

Source: Brammer and Walker (2011)

Moreover, as the study shows, two respondents highlighted that:

“As a public funded organisation, it is frequently difficult to put the business case to justify the additional cost of purchasing the option that is preferred from a sustainable perspective (as the sustainable option usually carries a premium)” (UK respondent)

and

“While we award contracts that make sustainable products available, client Departments choose which products to draw from them. Cost factors play a role in that choice. Cost can be a barrier to selection of green options” (Republic of Ireland respondent).

Another study by Walker and Brammer (2009), which investigated sustainable procurement in the UK public sector, also found that cost was the main barrier to sustainable procurement, and top management support the leading facilitator. The study suggested that perceptions of the financial viability of green procurement were among the most important factors, given the prohibitive costs and insufficiently large budgets.

1.6.2 Internal knowledge and employee training

Public organizations that have expertise with sustainability, pollution prevention and recycling policies have developed some knowledge-based capabilities which allow them to coordinate employees around these common issues. Sharing tacit knowledge of the internal operations helps public authorities achieve organizational expectations whilst minimizing the impact on

the environment. These organizations are more likely to have invested in training their employees and to recognize how sustainable procurement can help reduce environmental impact (Darnall *et al.* 2018).

Moreover, organizations with greater access to environmental information are more likely to adopt GPP because they have a greater understanding of how their buying decisions, objectives and initiatives relate to specific environmental outcomes. Organizations that possess information capacity and information systems can access more easily to data regarding the environmental impact of certain products, and can more effectively consider the complex sustainability aspects of their decisions (Darnall *et al.* 2018).

However, some frequently encountered obstacles for GPP implementation are the lack of awareness and information tools, the ambiguity of government regulations and the non-sufficient level of employee training. There are several researches that have investigated these factors.

For instance, a study by Varnäs *et al.* (2009) interviewed organizations involved in procurement in construction projects in Sweden, and revealed that one of the reasons for limiting the application of environmental procurement preferences was the lack of knowledge of how to formulate certain environmental preferences in a specific, measurable and verifiable way. The study also suggests ways to address this problem, like increasing the use of different tools such as procurement systems or generalised requirements and criteria, or to increase collaborations between clients through workshop or similar activities.

Similarly, Zhu *et al.* (2013) investigated GPP practices adoption in developing countries by using primary data collected from 193 Chinese government officials. One of the main problems for GPP practices in China was related to regulations' ambiguity and lack of knowledge from government officials and employees. Moreover, contrary to what happens in developed countries, where regulatory policy and clear guidelines are needed to promote GPP, a greater knowledge of detailed regulations does not fully encourage the uptake of green practices from government officials. This happens because most GPP laws in China are not mandatory but promotion-oriented. In addition, there might be ambiguity on the regulatory policy of who is responsible for these practices. Developing clearer government regulations thus becomes crucial to clarify responsibilities of each stakeholder.

Another study by Walker and Brammer (2009) found that, along with costs, fear of change and lack of awareness of how to include environmental criteria in public tenders were the main

barriers to sustainable procurement. One respondent among the 106 UK public organizations that were interviewed pointed out that:

“[Barriers include] lack of awareness, and this being a new phenomenon with little comparative value. For example, finance is easy to measure in comparison, environmental impact is less so. Budgetary pressures are also barriers, and short versus long termism. Fear of change and laissez faire attitude prevent people engaging in this agenda.”

Similar results emerged from a survey carried out on 249 Italian public administrations, in which the main issues appeared to be: lack of information about the real environmental impacts of the products (27%), difficulty in finding suppliers (27%), difficulty in the preparation of call for tenders and purchasing (23%) and lack of guidelines from higher-order authorities (20%) (Testa *et al.*, 2012).

The issue of familiarity with policies and related information is also identified by Testa *et al.* (2016), who performed a content analysis on tender documents as an alternative to direct interviews. The study analysed the content of 164 Italian tenders in the building and construction sector, identifying the green criteria being used in order to understand how frequently they were used and how they were distributed. The results showed a limited use of green criteria, mainly in the form of technical specifications and award criteria, thus shedding light on an incomplete awareness of how to design green tenders. In fact, the criteria were mainly focused on energy consumption and recycled material, lacking selection criteria or contract performance clauses to address other environmental issues. The prevalent use of technical specifications and award criteria highlights the tendency of organizations to look for a final result in terms of products that comply with certain standards. However, given the high environmental impact of construction processes, the limited use of criteria that influence the process more than the product reduces the overall impact of green criteria in terms of environmental sustainability. Moreover, the study suggests that public procurers should be able to increase their monitoring of the operations by already including in the tenders the information required by the supplier for the execution of the job or service.

Another important aspect to keep in mind is that the majority of European Member States' public procurement is carried out at the local or regional level, and departments and employees often do not have all the knowledge or capacity to engage in innovative procurement procedures. GPP has been often criticised due to the lack of expertise and insufficiently well-defined criteria, but its modest use can also be attributed to the risk-averse nature of public officials. In fact, if public officials are unsure how to determine the environmental conditions

of the tender in line with the EU law, they will not procure green. If green procurement is not mandatory and it does not imply any personal benefit for public employees, then procurement according to the lowest price is favoured. This trend has occurred across all Member States, contrary to the aims and expectations of the laws of the EU (Mélon, 2020).

1.6.3 Managerial support

Some studies have also highlighted that a perceived lack of managerial support (in terms of poor understanding of the importance of GPP or poor results in spreading awareness among employees) influences the degree to which GPP is implemented in organizations. On the other side, top or middle management awareness can act as a driving force for environmental purchasing.

For example, Walker and Brammer (2009) argue that top management commitment was one of the most frequently mentioned facilitators of GPP practice in a sample of 106 UK organizations. Organizational attitude and culture also influence the degree to which organizations procure in a sustainable manner: there will be greater development of green procurement if the work environment is supportive of sustainability and change in general. Brammer and Walker (2011) confirm that managerial and structural barriers are primarily concerned with the absence of support from senior managers. One Swedish respondent from the transport sector revealed as follows:

“The top management has not issued explicit directives regarding sustainable development. Thus, people in charge of procurement do not have a clear “mandate” to introduce, e.g. ethical criteria which might entail increased overall costs. Hence, in order to get a higher focus on overall sustainability, top management might have to become more dedicated to the so-called “triple bottom line” concept. Furthermore, purchasing is decentralised in the organisation. This makes it more difficult and time consuming to introduce “novelties” when it comes to long-term purchasing strategies” (Brammer and Walker 2011).

Björklund (2011) used a mail survey to investigate the different factors that can influence the environmental purchasing of transportation services, and grouped them according to the actors involved. The main drivers were the internal management, reputation, resources of the firm, customer demand, carriers and governmental means of control. The management of the firm was confirmed to have great influence, and over 75% of respondents described the influence as positive.

1.6.4 Organizational culture and motivation

Darnall *et al.* (2018) believe that organizations with values, culture, mission and vision statements that are more favourable towards addressing sustainability are more likely to develop the capabilities necessary to focus on environmental concerns. Public authorities with values that emphasize intergenerational equity, social responsibility, and environmental sustainability are also keener to improve training for employees (through workshops or conferences) to help them develop the skills and knowledge needed to address particular issues.

Organizations may vary in culture and some support entrepreneurial activities among employees more than others to better respond to the citizens they serve. Entrepreneurial cultures support innovativeness (engaging in new ideas and experimenting new technologies), risk taking (they encourage employees to feel more empowered to take risks and break routines) and proactiveness (they reward employees' willingness to anticipate future needs and strategic opportunities). These cultures offer greater discretion to employees to experiment new solutions for issues such as sustainability.

Public organizations with vision and mission statements that give priority to environmental sustainability issues are more likely to build organizational capacities to achieve them, given that formal statements hold them accountable towards external stakeholders. Organizations which set the goal of improving their environmental impact are likely to develop performance targets to monitor them and information systems to track them (Darnall *et al.* 2018).

1.6.5 Size

Barriers to developing GPP initiatives also relate to the small size of public authorities. Testa *et al.* (2012) performed a regression analysis on public authorities located in three Italian regions and found that the size of an organization can influence the ability of procurers to include sustainable criteria in public tenders. The study found that internal know-how and presence of other significant obstacles to GPP are often linked to the small size of organizations, which are characterized by a structural lack of resources and are not able to develop internal competences. Michelsen and de Boer (2009) collected data from 111 public authorities in Norway and confirmed that there is a clear correlation between the size of municipalities and whether they put forward demands on environmental performance in calls for tenders.

1.7 Firms' engagement in GPP

Public procurement objective and transparent procedure and its verifiable criteria allow for an equal access to tenders within the private sector, improving the possibility of large suppliers as well as small and medium enterprises to participate. It is therefore important to understand how private firms contribute to the sustainability goals and are able to meet the demands put forward by public authorities.

Larger companies in general have more experience in responding to environmental initiatives, because of greater capacity in terms of human and managerial resources. (Semenova *et al.*, n.d.) However, suppliers sometimes have little incentive in participating in GPP because of a perceived low government commitment. For instance, Michelsen and de Boer (2009) investigated to what extent Norwegian municipalities include certain environmental criteria in their tenders, and to what degree suppliers' environmental performance actually influences their final selection. The survey revealed that suppliers perceived that the final evaluation of their bids was not in all cases influenced by environmental criteria, and they were not always required to provide information about the environmental performance of their products.

Despite the high impact on the environment of SMEs, research suggests that companies are rarely aware of the negative impacts of their operations. Moreover, some firms appear sceptical about the lower production costs and increased profitability resulting from a more eco-efficient performance. (Revell and Blackburn, 2007)

Other issues concerning smaller businesses are the high administrative efforts related to GPP implementation and the environmental focus of their green products specifically guided by end-customers. Some industry sectors with high environmental footprint (such as construction and transport) tend to be more responsive to GPP, and this generates differences between the uptake of GPP as a market-wide instrument at the national level, and the real impact of GPP policies within firms in the private sector. (Semenova *et al.*, n.d.)

1.7.1 Barriers and enablers

Semenova *et al.* define enablers as factors that help SMEs in adopting environmental practices, and barriers as obstacles that hinder their response to green demands and public purchasing. The following paragraphs group the most relevant factors on the basis of the subject matter,

similarly to the previous chapters concerning PAs. As shown in Table 5, these factors can influence positively or negatively the adoption of green practices in firms.

Table 5: Factors affecting GPP in private companies

FACTORS AFFECTING GPP	ENABLERS	BARRIERS
Financial resources	<ul style="list-style-type: none"> • Financial support from government • Government initiatives to involve SMEs in GPP 	<ul style="list-style-type: none"> • Scepticism about lower costs and higher profitability of a more sustainable production
Knowledge	<ul style="list-style-type: none"> • Training programs for employees • Web portals to access bidding information 	<ul style="list-style-type: none"> • Lack of helpful feedback from PAs after participating in public tenders • Companies not always aware of negative impact of their operations
Duration of contracts	<ul style="list-style-type: none"> • Ongoing relationships and long-term contracts allow firms to make green investments 	<ul style="list-style-type: none"> • Lack of trust regarding relationships with public buyers
Costs	<ul style="list-style-type: none"> • Cost savings in terms of increased efficiency and lower energy consumption 	<ul style="list-style-type: none"> • Higher administrative costs • Difficult for SMEs to compete against low prices of big suppliers
Culture and motivation	<ul style="list-style-type: none"> • Environmental awareness and responsible attitude • Company culture of innovation and high development of technology • Trained managers 	<ul style="list-style-type: none"> • Low environmental awareness • Lack of top management support

1.7.2 Financial resources and knowledge

When small and medium enterprises (SMEs) compete for public tenders, they are usually at a disadvantage compared to larger suppliers.

Extant literature suggests that governments have established a series of initiatives aimed at increasing the financial and human capabilities necessary for SMEs to adopt environmental practices. Government programs provide SMEs with information regarding environmental

concerns, technological and financial advice and financial resources in the forms of concessions, grants or loans (Walker and Preuss, 2008).

A study by Vasilenko et al. (2011) explored the financial enablers available for SMEs in Germany, Sweden and Finland, and showed that government financial support can be used to access know-how and technological resources.

Lee and Klassen (2008) confirm that an increase in training programs for employees raises access to technical knowledge, thus contributing to the adoption of green initiatives.

However, other studies found that public funding is not always effective in supporting innovation among SMEs. A possible reason for this may be the difference in geographical context (Aschhoff and Sofka 2009).

Moreover, research shows the role of knowledge transfer and networking among different market actors and potential buyers (SMEs, PAs, industry specific sector associations) as an enabler of innovative green solutions (Lee and Klassen 2008). Web portals where all procurement opportunities are published by the government are also helpful tools for SMEs to access bidding information (Zheng *et al.*, 2006). On the other hand, Uyarra *et al.* (2014) found that an impediment to successful biddings for SMEs was the lack of helpful feedback from public authorities after participating in public tenders.

A study conducted by Bala *et al.*, (2008) shows the process by which large public administrations establish ongoing relationships with SMEs to implement green purchases, and provide training and education to increase environmental knowledge.

1.7.3 Duration of contracts

The duration of public contracts also affects the uptake of green practices from SMEs. Winning long term contracts allows small and medium sized firms to accept large initial investments required for ‘greening’ their production. Aschhoff and Sofka (2009) find that SMEs with long term contracts are more likely to invest in green initiatives when immediate, reliable and ongoing sales for the public tenderer are guaranteed.

1.7.4 Costs

Studies show that engaging in green practices leads to higher costs, which translate into higher prices. Loader (2011) suggests that SMEs are not capable of overcoming the financial burden associated with the adoption of green practices, and this affects firms' profitability when public tenderers are cost sensitive. When tenders are awarded on the basis of the most economically advantageous tender (MEAT), SMEs are not able to compete against the low prices of big suppliers (Loader, 2011). Moreover, firms that perceive adoption of sustainable practices as costly, believe that these expenses (in terms of investments and higher prices of green raw materials) limited the other resources of the company, leading to a disadvantage towards their competitors (Parker *et al.*, 2009). For example, a study by Revell and Blackburn (2007) shows that SMEs are not as likely to engage in green practices in highly competitive sectors, such as the construction sector.

However, Semenova *et al.* suggest that companies which adopted green practices to varying degrees were able to reduce their operational costs with minimised organizational effort. Common cost savers were green practices such as use of public transport, digitalization of documentation, IT communication instead of face to face communication. Moreover, the adoption of green practices allows firms to improve their company image and attract new customers.

1.7.5 Culture and motivation

Environmental awareness among employees and overall organizational attitude toward the environment affects SMEs' probability of becoming environmentally responsible. According to Perez *et al.*, (2003), companies that have a culture of innovation and high development of technology and quality systems, have a higher degree of participation in green public procurement. Similarly, del Brìo and Junquera (2003) show that managers who receive higher training on environmental issues and embrace flexibility and innovation, are more capable of leading the firm towards the adoption of environmental practices. SMEs with "environmental champions" among their personnel are more likely to become green compared to those where environmental objectives are not a priority (Semenova *et al.*). Also Aragón-Correa *et al.* (2008) show that a strategic plan with a clear vision and environmental goals, along with staff interaction and commitment, facilitate the process of adopting sustainable practices.

Other factors that hamper SMEs' compliance with green demands include lack of trust regarding the relationship with public buyers, and their idea of a lack of legitimacy behind environmental concerns of large public buyers. Walker et al. (2008) found that SMEs have fear of exposing poor environmental performance, and this may suggest a reluctance to share data in the fear of losing customers (Semenova *et al.*).

Chapter 2 – Quantitative analysis

2.1 Methods

Following the literature review which examines the main features of GPP and the factors which influence it, the aim of this chapter is to analyse in more detail the way different companies deal with green purchasing practices and the difficulties they encounter when applying GPP criteria. These monitoring procedures are important in order to improve the GPP process and identify best practices to be spread among the various contracting authorities. Accordingly, we performed a quantitative analysis on firms that successfully participate to the GPP processes. For this analysis, the Italian context of the Compraverde forum was selected, because it plays a very important role in the dissemination and monitoring of sustainable procurement activities.

2.1.1 The empirical setting: the Compraverde Buygreen Forum

In Italy, the Compraverde Buygreen Forum is the most important Italian and European event for public and private policies, projects and initiatives regarding GPP. The purpose of the event is to discuss legislative innovations, national and international best practices, opportunities in the field of green purchases with conferences, workshops, training sessions, one-to-one exchanges and other initiatives. It is an opportunity for firms to connect and think of innovative solutions to accelerate policies, projects and initiatives, both public and private, dedicated to sustainable purchases.

Another function of the Compraverde Buygreen Forum is to select and reward the best Italian GPP experiences. Every year the forum announces awards for companies and public administrations that have distinguished themselves for their activities in the field of Green Public Procurement. After a four-month selection and evaluation process involving leading national experts, the Buygreen Award is awarded for 8 sections. Of these awards, three are dedicated exclusively to public administrations, while five are assigned to both public and private entities. These categories are described in Table 6 below.

Table 6: Compraverde Buygreen Awards assigned to Italian public and private companies

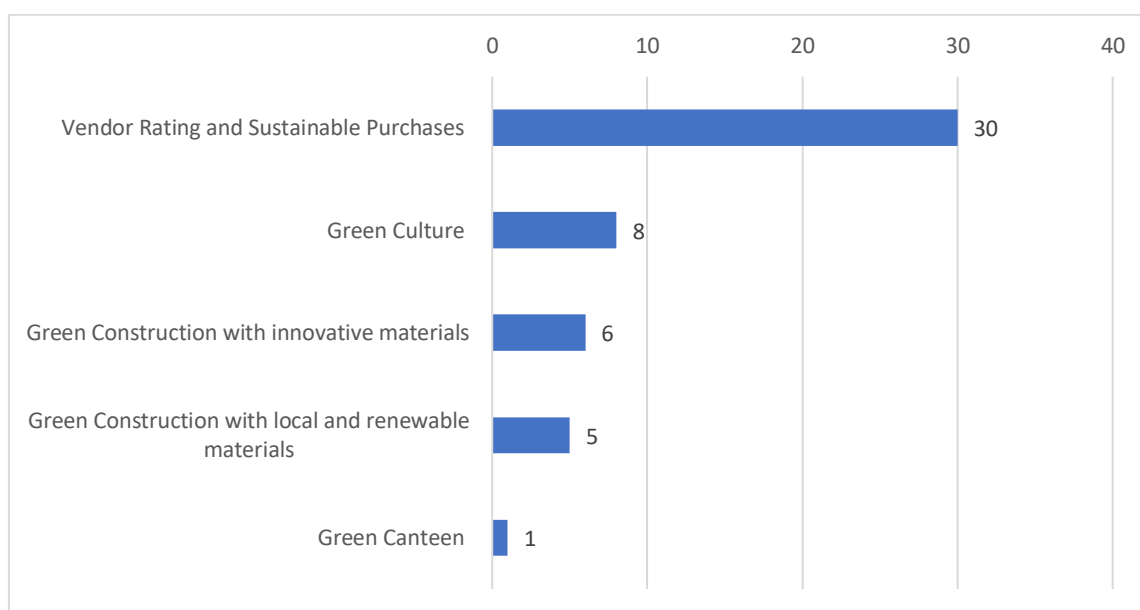
 <p>Premio Compraverde Buygreen MENSA VERDE</p>	<p align="center">Green Canteen Award</p> <p>Given to canteens which have shown particular attention to the quality of food and to the reduction of environmental and social impacts related to the management of the canteen</p>
 <p>Premio Compraverde Buygreen VENDOR RATING E ACQUISTI SOSTENIBILI</p>	<p align="center">Vendor Rating and Sustainable Purchases award</p> <p>Awarded to companies that have systematically adopted sustainability criteria in their purchasing processes and in the qualification of their suppliers</p>
 <p>Premio Compraverde Buygreen CULTURA IN VERDE</p>	<p align="center">Green Culture award</p> <p>The award is assigned to cultural events and film production activities that have reduced the environmental impacts generated by their activities</p>
 <p>Premio Compraverde Buygreen EDILIZIA IN VERDE MATERIALE INNOVATIVO</p>	<p align="center">Green Construction with innovative materials award</p> <p>Is assigned to companies that produce innovative materials for low environmental impact construction</p>
 <p>Premio Compraverde Buygreen EDILIZIA IN VERDE MATERIALE LOCALE E RINNOVABILE</p>	<p align="center">Green Construction with local and renewable materials award</p> <p>This prize is a recognition for companies that produce local and renewable materials for low environmental impact construction</p>

The companies of the sample are distributed as follows for the different award categories: 30 companies (60% of the sample) were awarded the Vendor Rating and Sustainable Purchases Prize, 8 companies (16%) the Green Culture prize, 6 companies (12%) the prize for Green Construction with innovative materials, 5 (10%) companies the Green Construction with local and renewable materials award, and 1 company the Green Canteen award. The prize distribution for the sample is shown in Figure 1.

2.1.2 The sample

For the purposes of this analysis, it was possible to contact the award-winning companies in the previous years (2009 to 2020), in order to better understand their experiences with sustainable procurement. The sample of 50 companies contacted was obtained from the number of firms that were awarded (or received a special mention for) a Compraverde prize in one of the five categories dedicated both to public and private companies.

Figure 1: Distribution of the award categories across the sample



The following paragraphs analyse in greater detail the procedures for obtaining the awards and the criteria used by the Technical-Scientific Committee for evaluating the companies. This will allow for a better understanding of the characteristics of the companies, and the reasons why they can be chosen as examples of best practice. Finally, the results of the questionnaires completed by part of these winning companies allow for further analysis of their experiences with regard to Green Public Procurement.

2.1.3 Vendor Rating and Sustainable Purchases award

The largest number of companies in the sample that have won in previous editions the Compraverde Award belong to the Vendor Rating and Sustainable Purchasing section.

This prize is awarded to companies that have systematically adopted sustainability criteria in their purchasing processes and in the qualification of their suppliers. Companies aspiring to obtain this recognition must have adopted concrete procedures and actions for the choice of goods and services and of suppliers based on environmental and ethical-social aspects as well as economic ones. In particular, the board examines the actions for the implementation of sustainable purchases within the organization such as:

- formal corporate commitments for the implementation of sustainable purchases
- action plans for sustainable purchases
- monitoring of sustainable purchases
- training sessions for internal staff
- drafting of specifications and supply contracts with sustainability criteria
- incentives for employees and purchasing managers to adopt sustainability criteria

The actions for the qualification, selection and evaluation of suppliers are also relevant for the awarding of the prize, and they include:

- the introduction of sustainability criteria in the qualification and selection processes
- adoption of sustainable vendor rating systems
- adoption of "green" catalogs and suppliers register
- monitoring the sustainability performance of suppliers

Finally, the board also evaluates the actions of the company to raise involvement and awareness, such as:

- panel discussions with suppliers
- creation of sustainable supplier communities
- communication and awareness campaigns for customers
- incentives for green purchases

2.1.4 Green Culture award

There were 8 companies in the sample that received the Green Culture award. This award is assigned to cultural events and film production activities that have reduced the environmental

impacts generated by their activities, integrating environmental and social aspects in the purchase of goods and services.

Public, private or non-profit organizations, in the role of organizers, promoters or financiers of a specific cultural event or in the role of creators, organizers or promoters of a film production activity and sports events can compete for the award.

The evaluation of the committee considers the size of the event in terms of duration and audience reached in order to judge the relative weight of the actions implemented, in terms of reduction of environmental impact, spreading of public awareness and promotion of green supply chains within the cultural sector.

For example, the commission considers the following activities:

- energy supply from renewable sources
- reduction of water and energy consumption
- printing on eco-compatible materials (e.g. recycled and/or certified paper)
- installations made with recycled and reused materials
- public awareness campaigns
- actions for the reduction and proper management of waste
- restaurant and catering services with low environmental impact (e.g. use of organic farming products, promotion of the short chain and typical products, products of fair trade)
- choices related to sustainable mobility for both organizers and the public (e.g. making public transport vehicles available, soliciting the use of public or low environmental impact means of transport - foot, bicycle)
- selection of locations also based on the impact on the landscape and the territory
- training of personnel in charge of the management and organization of the event
- agreements with local communities
- offsetting of CO₂ emissions

2.1.5 Green Construction with innovative materials award

The award is assigned to companies that produce innovative materials for low environmental impact construction. The winners of this award are companies that have distinguished

themselves for having designed, developed, produced and marketed construction materials and building components with low environmental impact throughout their life cycle. For this analysis, there were 6 companies contacted belonging to this section.

"Eco-innovative materials" refers to building materials or building components that have one or more of the following characteristics:

- are made up in whole or in part of materials deriving from waste recycling (pursuant to art.181, Legislative Decree 152/2006) and/or by-products (pursuant to art.184 bis, Legislative Decree 152/2006)
- are made of natural or artificial materials (mineral, stone, metal, ceramic, polymeric, composite) whose technical performance with environmental advantages (thermal and energy performance, durability, absorption of polluting emissions, etc.) are superior compared to those of conventional building materials and components

For the "eco-innovative materials" section, the evaluation criteria that give rise to the ratings are the following:

- evidence of the improvement of environmental impacts over the life cycle, compared to equivalent materials and components on the market
- percentage of recycled content (materials deriving from recycling and recovery of waste and/or by-products)
- improvement of the energy performance of the building
- improved durability of the material/component with consequent longer building maintenance cycles
- innovative technical performance of the material/component for thermohygrometric improvement, indoor environmental quality, absorption of polluting emissions from outside, etc.
- regional origin of the recycled materials

2.1.6 Green construction with local and renewable materials award

This prize is a recognition for companies that produce local and renewable materials for low environmental impact construction. The award is intended to be a recognition for companies

that have distinguished themselves for their commitment to innovation and environmental sustainability in the construction industry.

“Local and renewable materials” shall mean:

- construction materials and/or building components made up in whole or in part of materials of plant and/or animal origin
- the plants and animal farming of origin, as well as any preparation and processing sites for semi-finished products, must be located in the same region as the production site of the material covered by the tender
- the environmental impacts and the consumption of non-renewable resources (energy and materials) over the life cycle must be improved with respect to equivalent conventional materials and components available on the market

For this section, the evaluation criteria that determine the ratings are as follows:

- the “local” or “renewable” characteristic of the material
- evidence of the improvement of environmental impacts over the life cycle, compared to equivalent materials and components available on the market

2.1.7 Green Canteen award

The final prize taken into consideration is awarded to public and private canteens which have shown particular attention to the quality of food (organic, zero km, seasonal, fair trade) and to the reduction of environmental and social impacts related to the management of the canteen.

For the assignment of the award, the forum considers some aspects of the procurement procedure and/or service contracts, in particular:

- inclusion of environmental criteria in the tender documentation and/or in the service contract in line with the provisions of the Minimum Environmental Criteria adopted in the context of the National Action Plan
- requests for additional and experimental services to the companies supplying the service
- inclusion of social criteria in the tender documentation and/or in the service contract
- the procedures for awarding the service and the appropriate recognized cost

Moreover, among the other activities carried out to improve, guarantee and promote the sustainability of the collective canteen and catering service, particular attention is paid to the following aspects:

- attention to the use of organic, as well as typical and traditional foods and drinks
- the implementation of ethical-social projects
- initiatives for the protection of cultural, religious and ethnic differences
- environmental awareness and education programs for sustainable nutrition
- programs, actions and measures for the reduction of energy and water consumption and for a better management of waste
- actions and initiatives for the enhancement of local production chains, the short chain and the involvement of SMEs
- support for initiatives and projects for the recognition of the ethical value of work
- measures for social inclusion and in general corporate social responsibility actions
- promotion of fair trade

2.2 Survey results

Of the sample of 50 companies, it was possible to analyse the answers of 20 respondents (40%) to the questionnaire. The results of the questionnaire allowed an in-depth analysis of some aspects concerning the sector in which the companies operate and the activities they carry out to reduce their effects on the environment, the relationships between companies and public administrations, the reasons and effects for adopting a sustainable business model, and finally what the companies' performance is on an economic and financial level, as well as on a social and environmental level, compared to their competitors.

2.2.1 Sectors

First of all, it was possible to analyse the sector in which each company operates and the type of activity carried out. In Table 7, the economic activities of the 20 respondents have been sorted according to the ATECO 2007 classification.

The table shows the ATECO macro-categories to which the companies belong on the left column, whereas the right column describes the activity carried out by each of the 20 respondents.

As shown in the table, and as in the case of the reference sample, most of the respondents belong to the manufacturing sector (8 respondents, 40% of the total), followed by companies involved in wholesale and retail trade (5 companies, 25% of respondents). There are also two companies working in the accommodation and catering sector (10%), followed by firms operating in the remaining different sectors shown in the table, each accounting for 5% of the total.

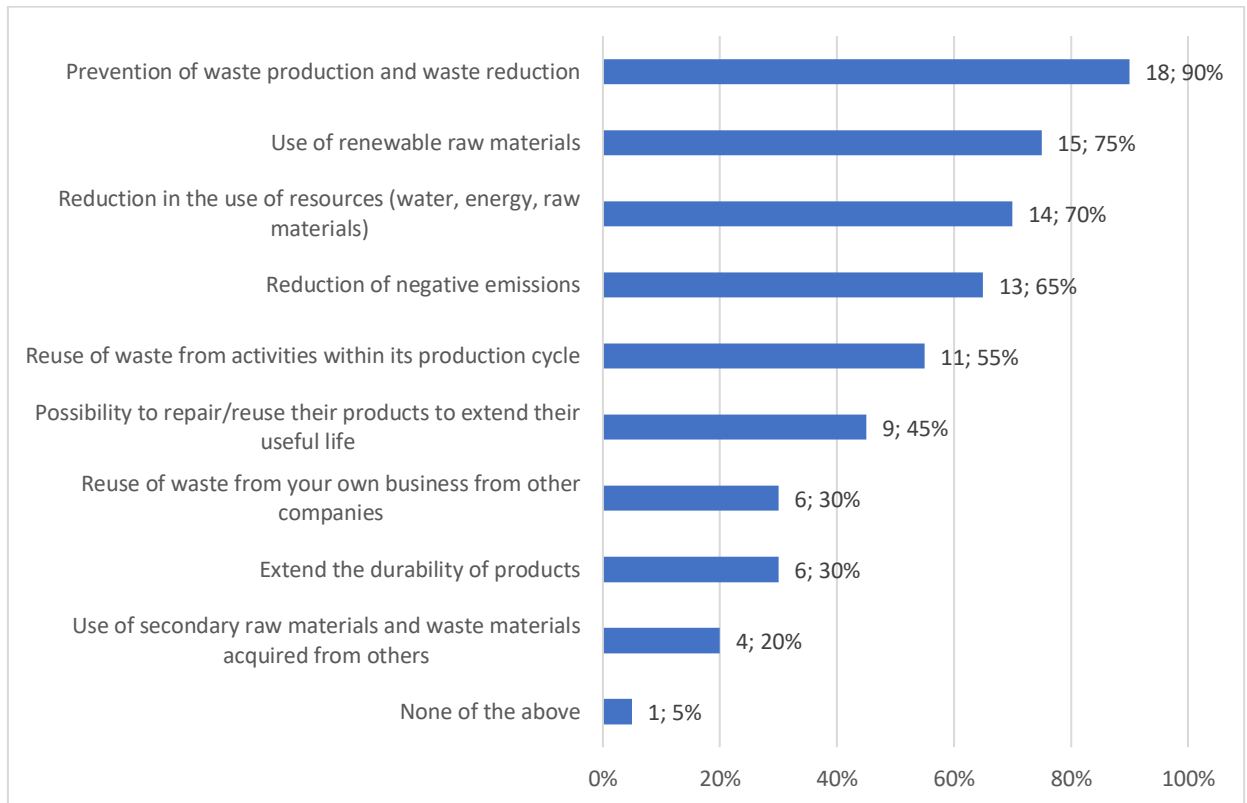
Table 7: Economic activities carried out by the respondents

Macrocategory ATECO code 2007	Respondents	Activity description for each respondent
C - MANUFACTURING ACTIVITIES	8	Manufacture of organic basic chemicals
		Manufacture of corrugated paper and paperboard and of containers of paper and paperboard
		Furniture manufacture
		Manufacture of chairs and seats (except those for aircraft, motor vehicles, ships, trains, office and stores)
		Manufacture of other non-metallic mineral products
		Printing
		Wood cutting and planing
G - WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	5	Production of table wines and quality wines
		Wholesale of fresh fruit and vegetables
		Wholesale of medicines
		Wholesale of other building materials
		Wholesale of chemicals for industry
I - ACCOMMODATION AND FOOD SERVICE ACTIVITIES	2	Wholesale of ICT equipment
		Hotels and similar facilities
A - AGRICULTURE, FORESTRY AND FISHING	1	Catering with administration
		Raising of dairy cattle and production of raw milk
D - SUPPLY OF ELECTRICITY, GAS, STEAM AND AIR CONDITIONING	1	Electricity transmission
J - INFORMATION AND COMMUNICATION SERVICES	1	Film, video and television program production activities
M - PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	1	Other business consulting and administrative/management consulting and business planning activities
R - ARTISTIC, SPORTS, ENTERTAINMENT AND RECREATIONAL ACTIVITIES	1	Support activities for artistic performances

2.2.2 The sustainability activities implemented

The respondents were asked if they practice one or more of the activities shown in Figure 2 to tackle pollution and/or reduce emissions.

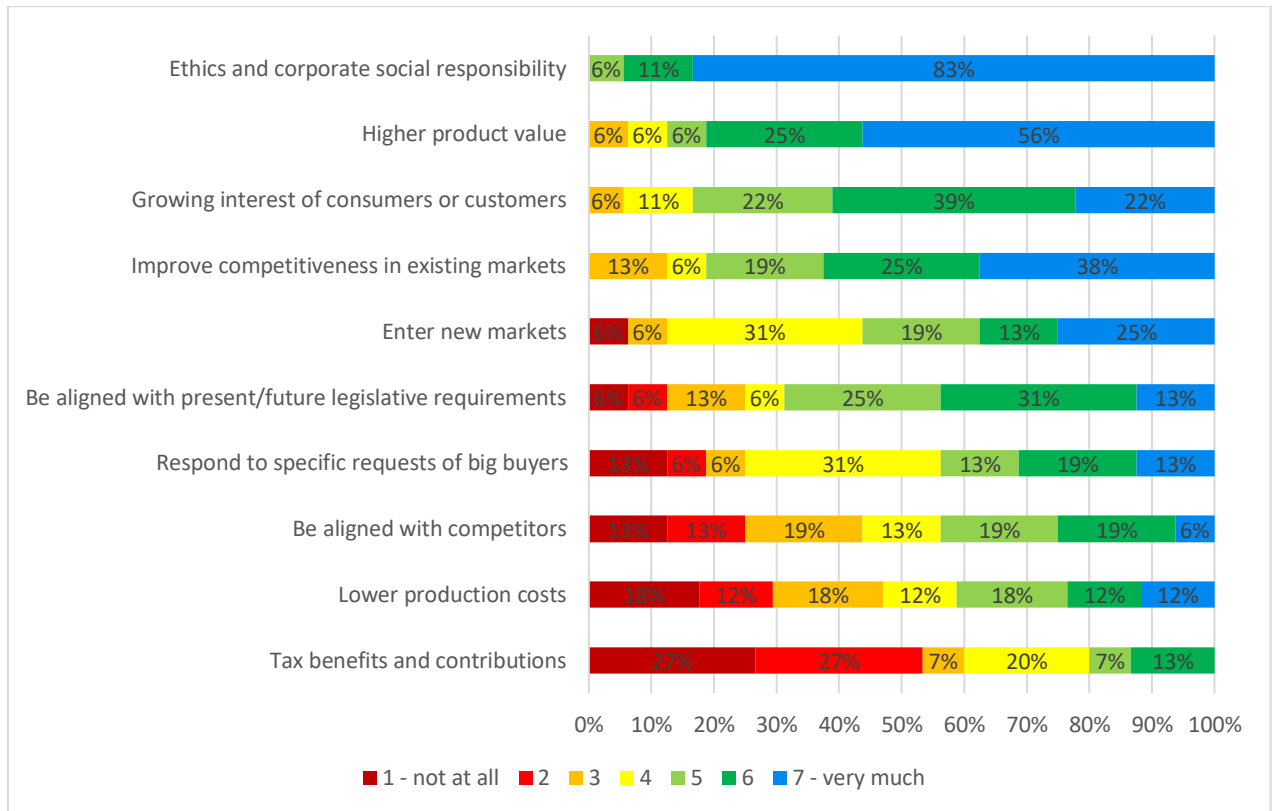
Figure 2: Actions implemented to reduce pollution



As can be observed, the most common measures adopted by the companies are prevention of waste production and waste reduction (implemented by 18 respondents, 90% of the sample), use of renewable raw materials (15 respondents, 75% of the sample), reduction in the use of resources (14 respondents, 70%) and of negative emissions (13 respondents, 65%).

Another interesting aspect that emerged from the survey is the reason why companies choose to convert their business model into a sustainable model, regardless of their engagement in GPP.

Figure 3: Importance of the different reasons for adopting a sustainable business model



As shown in Figure 3, the reasons with more blue and green responses are the most important reasons for companies to adopt a sustainable business model, while the red and orange responses are those considered less important.

For example, ethics and corporate social responsibility is by far the most important reason why companies have adopted a sustainable business model (with a score of 7 given by 15 companies out of 20 respondents, the 83% of the total). This confirms what was discussed in the literature review in the previous chapters, namely that the implementation of sustainable actions is very often influenced by corporate culture and staff motivation.

In fact, when asked which advice they would give to other companies interested in supplying PA through GPP, one respondent replied that:

“It will be an unrequited sacrifice, but you will feel better towards the environment”.

Another major reason why companies change their business model are: higher value of sustainable products, the growing interest in the demand for green products, and their greater competitiveness in existing markets.

The possibility of entering new markets and the need to be aligned with present or future legislative requirements are also among the most significant reasons why companies choose to go green. Tax benefits and contributions, however, do not appear to be a very good incentive for most respondents.

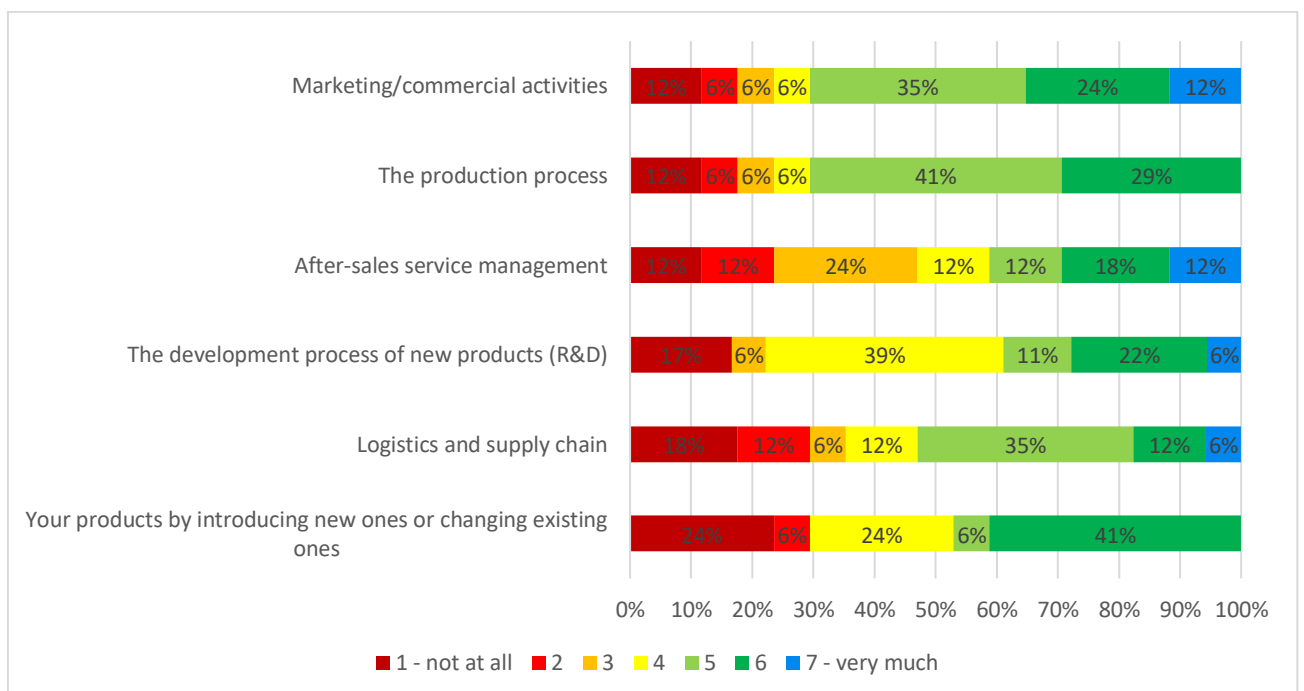
2.2.3 Changes implemented in order to become sustainable

Another important issue that emerged from the survey were the different activities that companies had to change to create a business model based on environmental sustainability. As shown in Figure 4, the results indicate different levels of change from one company to another, however some activities had to be significantly modified by a significant number of firms.

For example, 12 out of 17 respondents (70%) agree that the production process has had to be changed in a significant way (with a rating of 5 and 6), along with the marketing and commercial activities (with 12 respondents, 70% of the total, attributing a score of 5 or more).

In general, it can be said that for each of these categories there is a considerable number of responses with a level equal to or greater than 5, which means that for a significant number of companies it was necessary to make important changes to their business model.

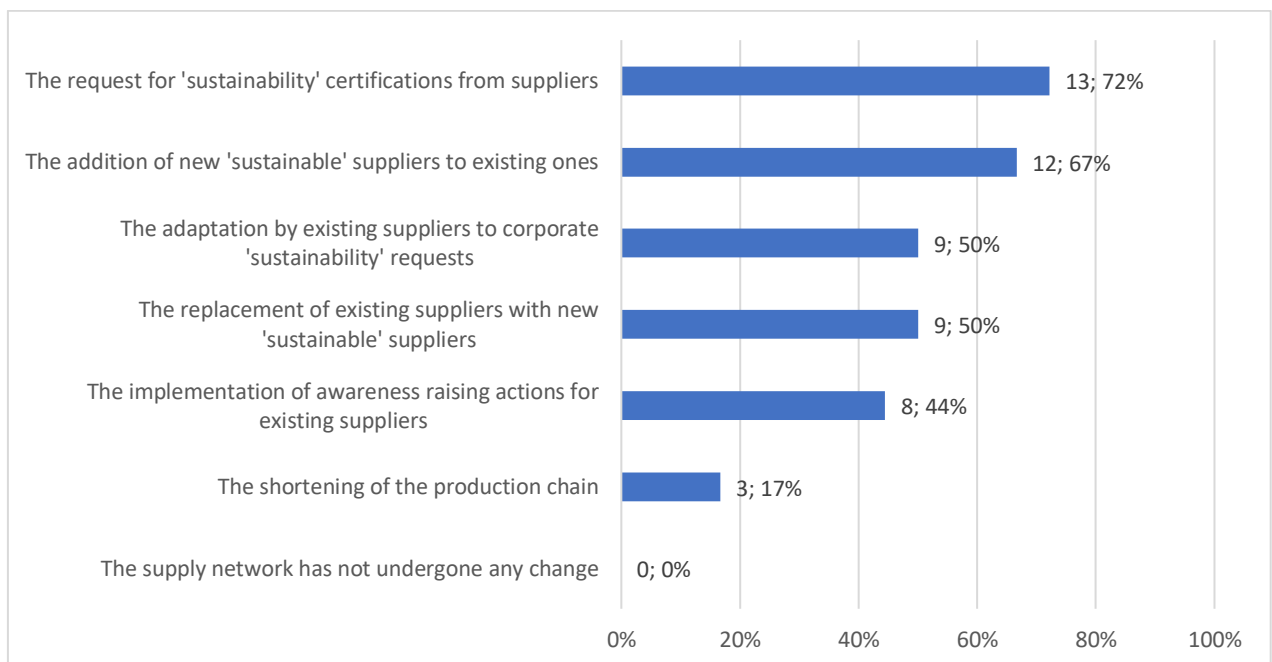
Figure 4: Changes required to create a business model based on environmental sustainability



Another important aspect for companies that have adopted a sustainable business model concerns the choice of suppliers. In many cases, the adoption of a sustainable business model has led to the request for sustainability certifications from suppliers (13 out of 18 respondents, 72%), the addition of new suppliers to existing ones (12 respondents, 67%) or the replacement of the old ones (9 respondents, 50%), and the adaptation by existing ones to sustainability requests of the buyer (9 respondents, 50%).

The choice of suppliers appears to be very important when changing their business model, in fact no firm has declared that the supply network did not change at all.

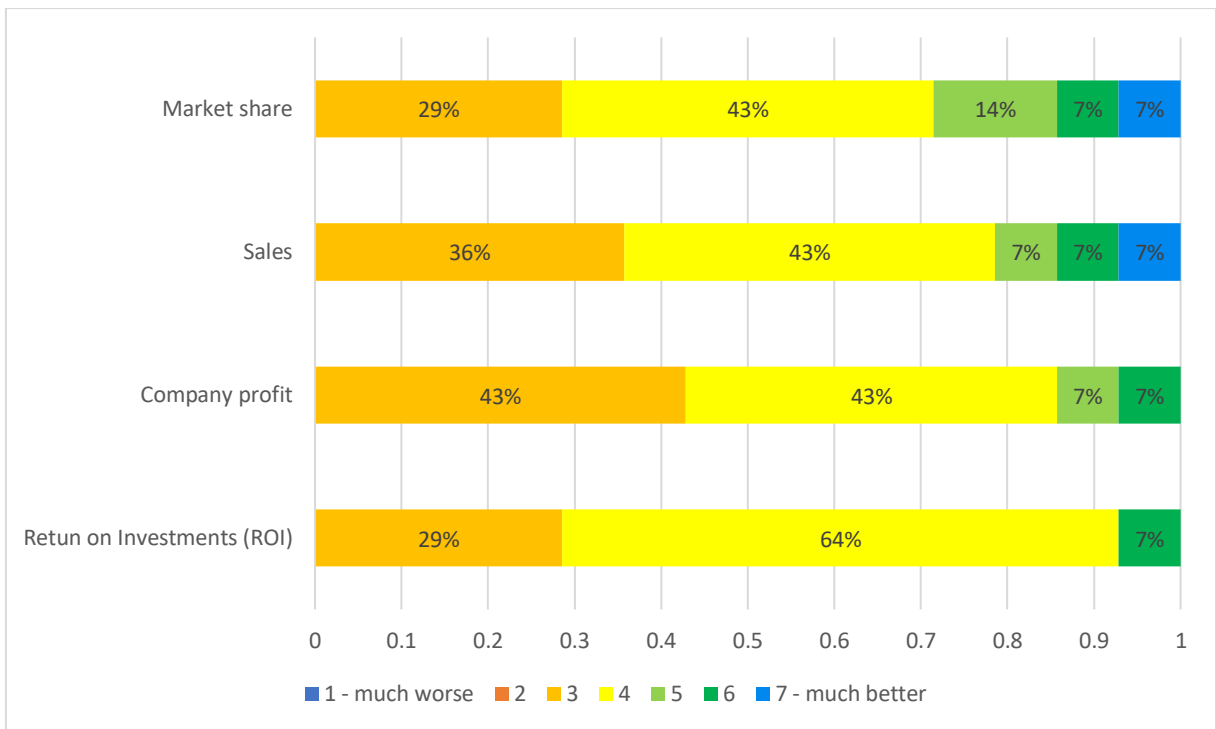
Figure 5: With respect to the selection and management of suppliers, the adoption of a sustainable business model has led to:



2.2.4 Economic, environmental, social performances

In one part of the survey, the companies were asked to provide some data regarding the corporate performances (economic-financial, environmental and social) achieved in year 2019.

Figure 6: Economic and financial performance of your company compared to competitors in the reference sector, in 2019

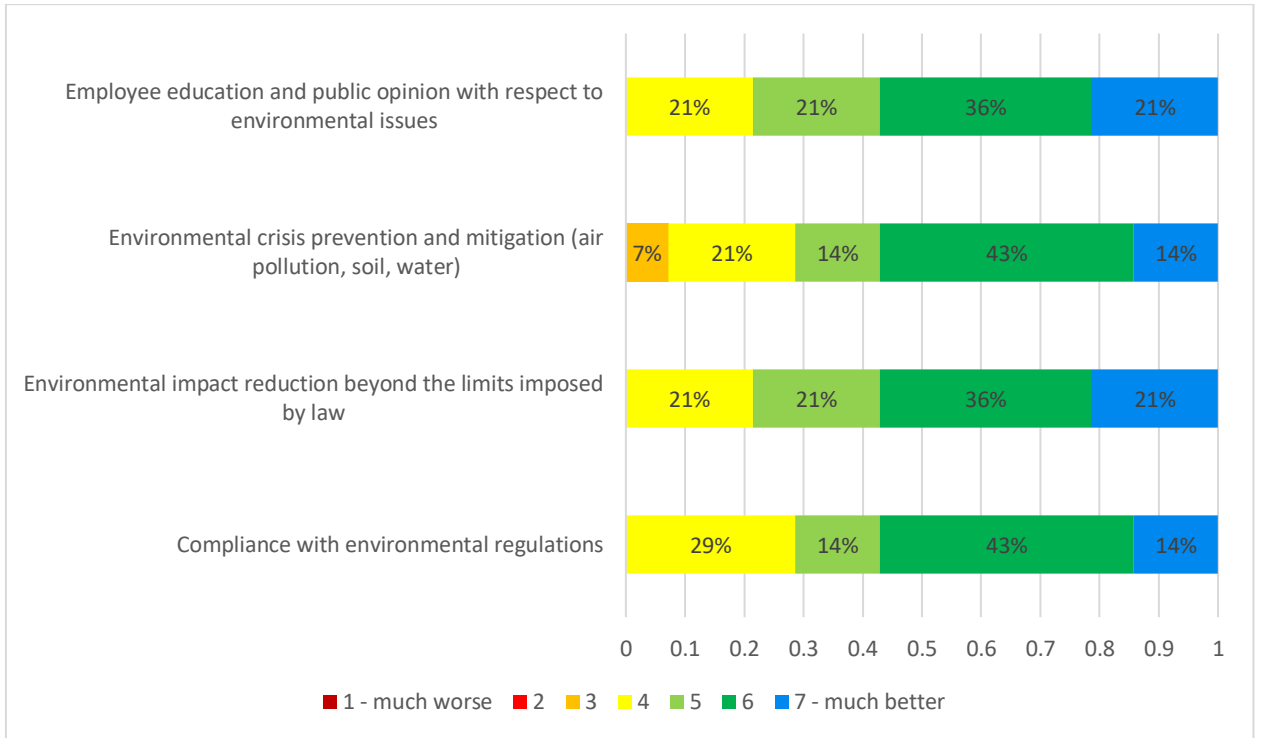


As shown in Figure 6, most companies declare that their economic and financial performances are in line with those of competitors in their reference sector (ratings of 4) or slightly worse (ratings of 3), whereas few respondents show greater performances in the areas listed above.

However, the figures appear to be different when we consider environmental and social performance indicators, since most companies declare to have higher performances than the average of the reference sector.

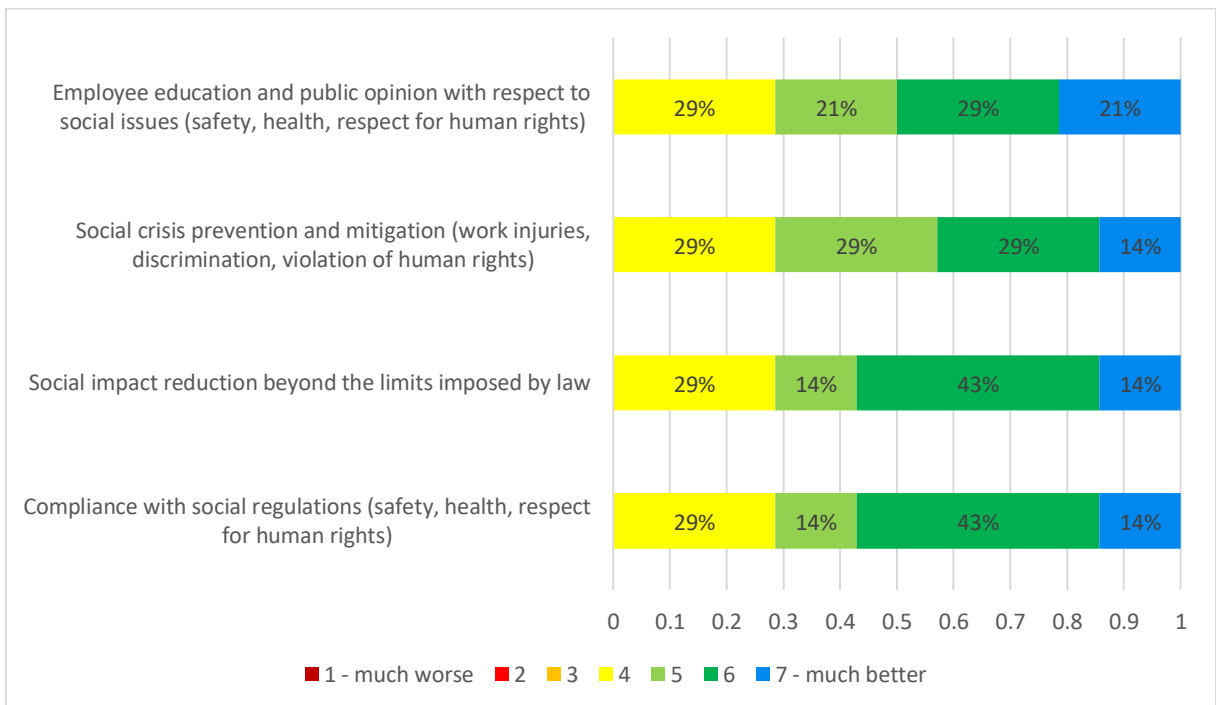
As can be seen in Figure 7, most respondents rated the environmental performances of their companies with a score of 4 or higher, which means that the company is performing better compared to competitors in terms of environmental impact reduction and prevention, compliance with environmental regulations and employee training and education with respect to environmental issues.

Figure 7: Company environmental performance compared to competitors in 2019



Speaking of social performances of the company compared to its competitors in the year 2019, the answers appear similar to the figure above, with all companies declaring a performance equal or higher to the other companies of the reference sector (ratings 4 to 7).

Figure 8: Company social performance compared to competitors in 2019:

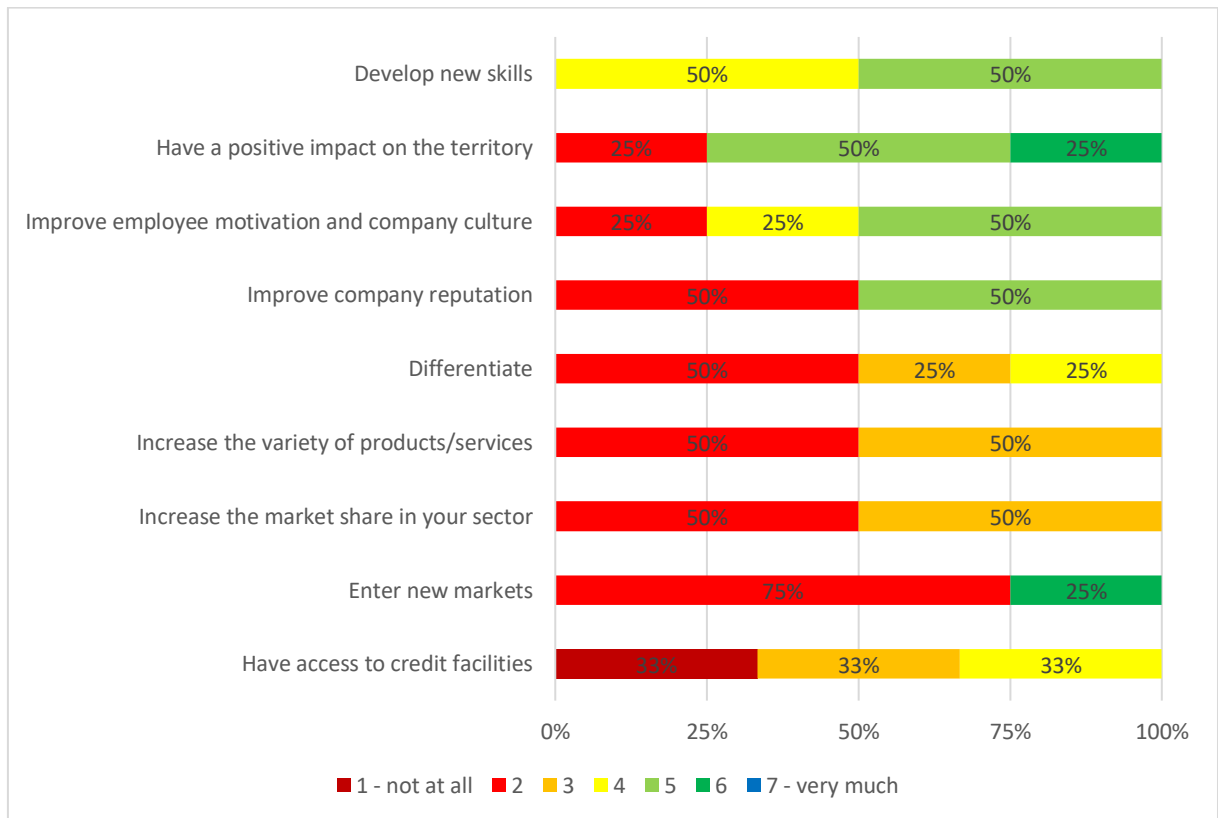


2.2.5 Benefits and challenges of engaging with GPP

Of the companies that were asked if they had the public administration as a client, a small number of 6 respondents answered "yes", 5 of which in a systematic or periodic manner and one on an occasional basis.

These firms were asked what benefits they received from participating in public procurement tenders, with a scale of 1 to 7 for each of them (1 meaning they did not perceive any benefit, 7 meaning the benefits were very high). Each firm could indicate more than one benefit. Figure 9 shows the results of the survey question by using a colour scale, from dark red to indicate responses with the lowest level (1) to blue to indicate responses with the highest level (7).

Figure 9: Benefits received from the participation in Public Procurement tenders (GPP)



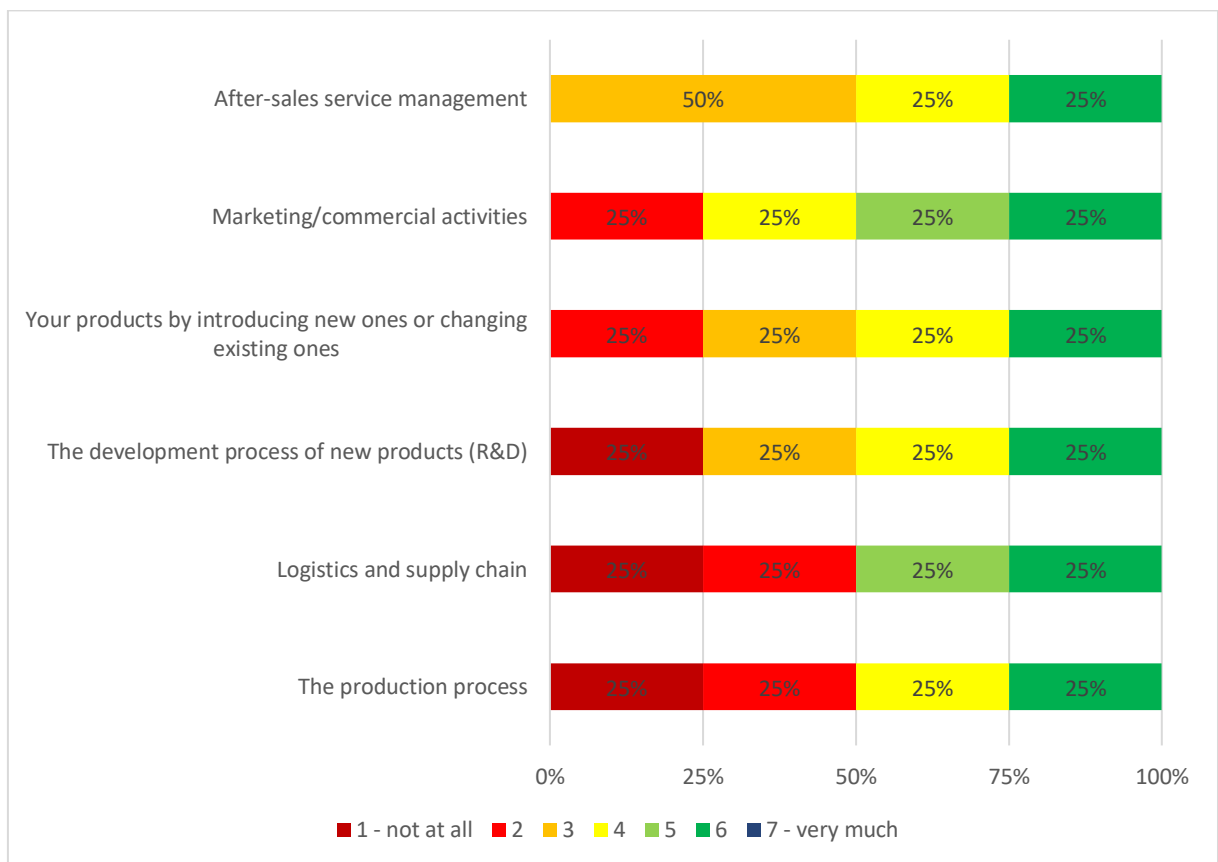
Despite the limited number of respondents (6), we can easily observe that a significant number of answers received a low rating (below or equal to 4), and none of these benefits was ranked with the highest possible value of 7. Overall the firms agree that the participation in public tenders has not brought many benefits in terms of greater access to credit facilities, increase in market share, increase in variety of products or services and greater differentiation.

However, some firms replied that having participated in public tenders allowed them to improve the company reputation, improve employee motivation and company culture, develop new skills and have a positive impact on the territory (two companies assigned a value of 5 for each of these categories). The latter was perceived as a great benefit (with a score of 6) from one company, along with the possibility to enter new markets.

The companies were also asked if they had to change one or more of the operations listed in Figure 10 to supply PAs through Green Public Procurement. The firms could attribute a score from 1 to 7, based on the level of change they had to make for each category.

It is possible to notice that the responses varied widely, meaning that companies had different experiences with respect to the changes they needed to make to supply PAs through GPP. Perhaps this could be due to the fact that companies operate in very sectors and also to the limited number of respondents (6).

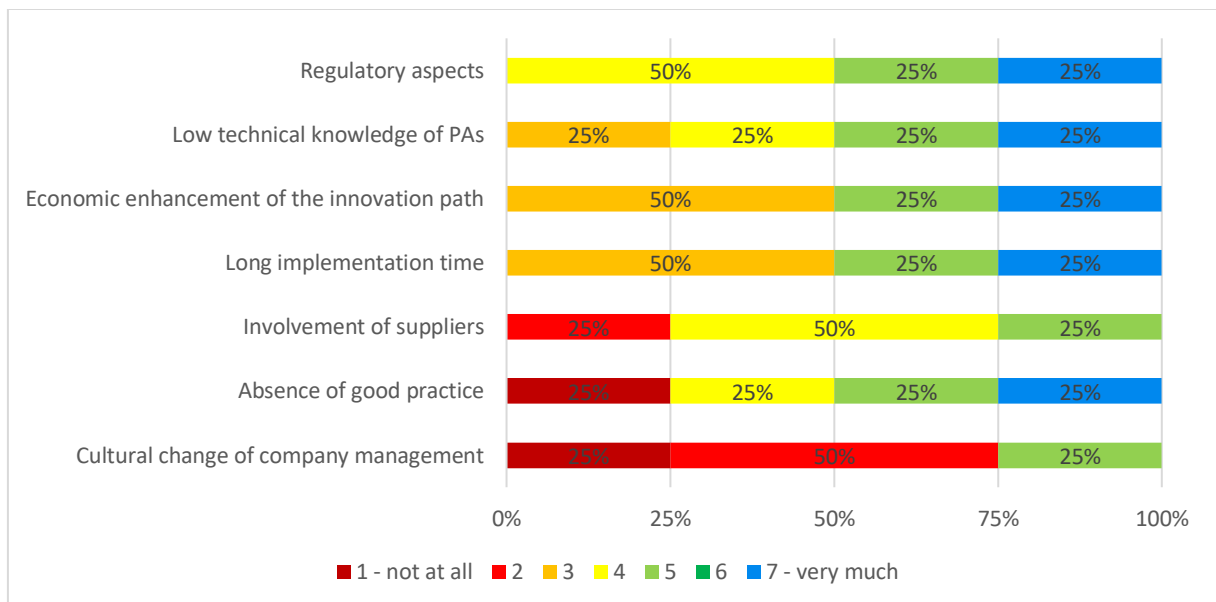
Figure 10: Changes required to supply public administrations through GPP



Similarly, the difficulties that businesses have had to face resulted to be very different from each other, and this is probably due to the characteristics of the company itself, and the sector in which each firm operates. For example, for one company the absence of good practice was not at all an obstacle encountered with regard to GPP (with a rating of 1), whereas another respondent reported that it was a great difficulty (rating of 7), and for other two companies it was an average difficulty (rating of 4 and 5).

However, more than one firm found the regulatory aspects of GPP very challenging, and some declare there is a low technical knowledge within PAs (Figure 11).

Figure 11: Difficulties encountered with regard to GPP



These aspects were confirmed by some answers to the survey question: “If you could offer advice to PAs that are developing green purchasing (GPP), what would it be?”.

One respondent offered the following advice:

“To improve their knowledge of the organic food supply chain, of fair trade, and their importance with regards to a sustainable development”

Another one replied:

“To attend training courses”

Another respondent laments the fact that the regulations regarding GPP are not fully applied:

“To apply existing laws and regulations. They do not apply them!”

2.3 Discussions and conclusions

The results obtained by the 20 companies that took part in the survey made it possible to further investigate some of these features, and to draw some important conclusions. With regards to firms' perspective on the engagement in GPP activities, it was possible to observe that barriers and difficulties exist for Italian companies as well. In fact, every respondent of the survey has encountered some kind of difficulty with regard to GPP, perhaps the most challenging being the low technical knowledge within PAs and the need to simplify regulatory aspects. This confirms what has emerged from the literature, namely that the lack of knowledge about the environment and how to develop environmental criteria within PAs is one of the main perceived obstacles in the application of GPP. Moreover, overall firms agreed that the participation in public tenders did not lead to a greater access to credit facilities, increase in market share or increase in variety of products.

However, it could be observed that participation in GPP calls for tenders has allowed some companies to obtain some benefits with respect to a better company reputation, an improved staff motivation and company culture, the possibility to develop new skills and a more positive impact on the territory. It is interesting to see that, in most cases, company culture and employee motivation are among the main reasons why companies choose to adopt more sustainable business models, but for some responding companies it was found to be a benefit gained as a result of participating in GPP calls. This confirms the importance of the role of public authorities in raising awareness among firms, and help stimulate innovation in the private sector as well.

Another finding of the questionnaire was that, in order to supply public authorities with GPP, for some companies it was necessary to significantly change their production process, their logistics and supply chain, or the development process of new products (R&D), whereas, according to other companies' experiences, these types of changes were not necessary at all. It is therefore clear that, in order to supply public administrations through GPP, some companies already have the minimum requirements demanded by public tenders, while others need to make changes to their business models in order to meet the criteria set by PAs. Once again, this demonstrates the importance of the role of public authorities in driving the economy towards more environmentally friendly business models, thanks to the minimum environmental criteria required in the calls for tenders, and to which the companies have to conform.

When analyzing the answers concerning the reasons why firms choose to adopt a sustainable business model (independently of their participation in GPP calls), further important aspects could be observed. Ethics and social responsibility were by far the most important reasons,

which confirms what was seen in the literature, namely that corporate culture, management and employee motivation are all very important contributing factors. Moreover, almost all companies that took part in the survey reported higher environmental and social performances compared to other companies in their sector, which suggests that these are generally companies that are more sensitive to environmental and social issues.

Ethics and corporate culture, however, are not the only important reasons why companies choose more environmentally friendly business models. For many respondents, environmental sustainability standards were shown to add value to products, allowing for an improved competitiveness in the market. Another important reason to consider is the growing demand for this type of products, probably due to a growing awareness among consumers of the environmental and social consequences of their purchasing decisions.

Another aspect found in the analysis of Italian companies is the need for companies to make certain changes in order to adopt a sustainable business model. In particular, these changes regarded activities within the firms including the production process, their marketing and commercial activities, the logistics and supply chain, and the introduction of new products or the modification of existing ones. One cannot fail to consider the financial burden incurred by firms associated to the adoption of green practices, however, in the long term, it was observed that the benefits resulted to be greater in terms of higher product value and increased competitiveness in the market.

Significant changes have been made also with regard to the choice and management of suppliers, when adopting a green business model. A great number of firms had to demand for suppliers' sustainability certifications, or in many cases has had to replace them or add new ones. It is therefore clear how the adoption of environmental sustainability practices by the respondents has had some positive implications also with regards to suppliers, thus helping enhance innovation and spread environmental awareness among them.

Chapter 3 – A qualitative approach

3.1 GPP in the City of Padua

After analysing the experiences of Italian companies in green procurement in the context of the Compraverde forum, the aim of this chapter is to get more in details on the process described via the quantitative analysis, by performing a qualitative analysis on firms that engaged in GPP. With this methodological model, an attempt is made to deepen the results that emerged following the literature review in the first chapter, and the analysis of the survey results in the second chapter, thanks to the information gathered regarding the experiences of the companies involved. To ensure comparability across cases, we decided to focus on firms that engaged with the same public authority, the Padova city Municipality.

The following pages describe the various initiatives undertaken at municipal level regarding green procurement, highlighting the reasons why the city of Padua was chosen as the empirical context for this work.

3.2 Initiatives at municipal level

Over the years, the City of Padua has undertaken several initiatives and projects to achieve the GPP objectives set at municipal level and to monitor them regularly. The importance of these initiatives within the municipality is linked to what has been seen in the first chapter, i.e. that a greater commitment by administrations to train staff and disseminate good practices and information tools, may result in a greater adoption of GPP practices within the municipality.

Since September 25, 2001, the city is part of the “Coordinamento Agende 21 Locali Italiane” (Italian Local Agenda 21 Association). The Italian Local Agenda 21 Association was founded in 2000 and pursues social solidarity goals, carrying out activities in the field of the protection and enhancement of the environment. More specifically, the Association aims to promote in Italy, in particular in urban areas, the process of Local Agenda 21 to promote sustainable development by integrating economic, social and environmental aspects.

The Local Agenda 21 process aims to achieve the goals of Agenda 21 through the definition and implementation of a long-term strategic plan that addresses priority sustainable development issues at the local level. In summary, Local Agenda 21 is the mandate for local authorities to operationally translate the UN's Agenda 21 program for the 21st century at municipal level.

It includes 174 entities, including 55 Municipalities, 21 Provinces, 8 Regions, 3 Parks, 10 ARPA, 1 Mountain Community, the Ministry of the Environment, CONSIP, APAT, the State Forestry Corps, ISTAT, UNCEM, 5 Universities and 65 environmental associations, trade associations, companies and fair-trade organizations.

In November 2001, the Local Agenda 21 process for the municipality of Padua was activated with the project “PadovA21”, with funding from the Ministry of the Environment. The establishment of this initiative is to be considered the official adherence to the Aalborg Charter of 13 February 2001, the charter of European cities for sustainable development.

Within this project, a proposal for a Local Agenda 21 Action Plan for the city of Padua has been developed. The main priorities of the plan are to encourage responsible production and consumption models, promote sustainable resource management, prevent and reduce waste and implement recycling, reduce carbon emissions and ensure equity and participation.

Later, in 2005, the project "Padova Acquista Verde" (Padua Buys Green) was activated as a realization of action A95 of the PadovA21 Local Action Plan "To encourage green purchasing in all municipal and public facilities". This project provides for a broad involvement of internal offices through programs of participation and specific training. The activity is carried out by a working group within the administration made up of different sectors under the supervision of a Director General.

The most important overall strategic goals of the project are to promote the improvement of the quality of purchases and services oriented towards greater sustainability and encourage process and product innovation of local businesses through the public procurement process, thus contributing to a reduction of hazardous products and greater energy efficiency.

The project also aims at dissemination activities, by raising awareness of the implications of sustainable consumption and environmental management in the staff of public authorities (managers, officials, employees), in suppliers and in citizens. It is also an initiative to connect the City of Padua to international networks on GPP. The Municipality of Padua adheres to GPPnet, the network of green procurement co-financed by the European Commission, and the working group of the “Coordinamento Agende 21 Locali Italiane”

The project is structured in several phases to allow for diverse and contemporary interventions. The operational phases of the project include the establishment of a coordinating office, the training of administration employees, the analysis of purchases and identification of GPP objectives, the preparation of a Three-Year Green Procurement Plan, and the dissemination of

results in terms of objectives achieved. Training and information for citizens and trade associations are also important activities carried out in this context.

Chapters 3.5.1 and 3.5.2 discuss staff training and dissemination activities carried out over the years, highlighting the various initiatives undertaken to achieve the objectives of "Padova Acquista Verde".

3.2.1 Training of administration employees

As seen in chapter 1.6 concerning barriers and enablers of GPP within public authorities, staff training is an important way to make administrators understand the role of GPP as a tool for sustainable development and to make sure they have the specific knowledge needed for the procurement decisions.

Since 2005, training courses have been held for all staff of the Municipal Administration. In 2005 and 2006, a training course was held in several editions, involving a total of 100 directors and administrative officials. After that, courses on more specific topics have been organised over the years, such as a course on energy saving (in 2006 and 2007) and on the use of certified wood (2008).

From 2010 onwards, partnerships have been set up to ensure more advanced levels of training. For example, in 2010 and 2011, an advanced course on green public procurement and one on the organization of sustainable events were organized, both as part of the training programme "400 hours of GPP" proposed by AcquistiVerdi.it Srl, in collaboration with the Italian Local Agenda 21 Association; in 2012, the course "Responsible purchasing of wood and paper by public authorities" within the project Sustainable Timber Action; in 2014, the course "Techniques and tools for green public procurement for the City of Padua" within the path for the definition of the Three-Year Plan for Green Procurement; in 2015, the course "Green purchasing for CO2 reduction" within the GPP2020 project (a project that aims to achieve the objectives set out in the "Europe 2020 Strategy").

More recently, in 2019, a training and updating course on green procurement was held within the municipality.

3.2.2 Dissemination activities

In addition to the importance of the role of technical knowledge within public administrations, the municipality of Padua has been committed for years to ensure that good practices are also disseminated among its citizens. For this reason, in 2006 the city launched the campaign "Buone pratiche in Comune a Padova" (Good practices in the municipality of Padua) with activities within the administration and others aimed at citizens. The campaign promotes small, common-sense actions, often by means of brochures and information sheets, with the aim of spreading virtuous behaviour within the Administration and being a proposal to citizens to promote environmentally friendly lifestyles that can be implemented in everyone's daily actions.

Those carried out within the Administration include activities such as training and information courses on energy savings, dissemination of signage, and distribution of mouse pad and poster to all municipal employees, with advice on what can be done within the office for the environment.

The activities addressed to the citizenship, on the other hand, include dissemination material with information and education on best practices (for example, on waste, sustainable mobility, energy consumption and air quality), educational projects for schools of all levels, the organization of events addressed to the citizenship (such as Green Sundays), and other initiatives such as the "Ambiente e Cultura" and "AmbientAzioni" campaigns.

The Municipality of Padua has also participated in forums and conferences on GPP over the past years. Among them are Flormart (an observatory on urban green for the protection of sustainability and biodiversity), the Compraverde Buygreen Forum in Rome (consisting of two days of Green Purchasing States-General), and the Compraverde Buygreen Forum in Padua.

3.3 GPP Action Plan for 2015-2017

In 2015, the Municipal Administration decided to further implement activities on green procurement by responding to the provisions of the National Action Plan for Green Procurement (PAN GPP), through the drafting of a Three-Year Action Plan of the Municipality of Padua (2015 - 2018) that established improvement goals on green procurement.

The coordination of the implementation of the GPP Action Plan was carried out by the Environment and Territory Sector through Informambiente (the centre for sustainable

development and environmental education of the City of Padua), which managed the GPP Technical Group.

The GPP Technical Group had the task of implementing the individual actions foreseen in the Plan, directly applying those for which it was responsible and cooperating with the staff of all Departments involved. Informambiente also acted as an internal help desk providing support for the inclusion of ecological criteria in tenders and specifications.

The implementation of the three-year plan implied a significant change in the way resources are programmed, goods and services are purchased and consumed, and sometimes the work is organised.

A key part of the three-year GPP Action Plan was the implementation of a monitoring system that allows to assess the progress in terms of targets achieved, and quantify the amount spent on environmentally friendly goods and services by product category and on the whole.

In order to monitor the achievement of the GPP objectives defined in the plan, an annual monitoring sheet on the implementation of the plan has been adopted as a control tool. The sheet shows, for each product sector, the GPP target expressed in percentage, the total amount planned and awarded in euro, the green amount planned and awarded in euro, and finally the GPP target achieved (in %).

The categories of purchases, works and services for which a monitoring sheet was required are as follows:

- Furniture – for this category, the products purchased concerned: office furniture, school furniture, furniture and equipment for kindergartens, furniture for auditoriums and senior citizens' centres
- Construction – in this case attention was paid to the construction and renovation of buildings with a focus on materials, road construction and maintenance
- Waste management – the environmentally friendly municipal waste management service indicated by the MECs was considered in this case
- Urban and territorial services – this category includes purchases made by urban infrastructure works, maintenance and street furniture sectors for: fences, play equipment, furniture and paving
- Energy services – this category includes expenses incurred both for public lighting and illuminated signs, as well as for heating and cooling of buildings, and the supply of electricity

- Electronics – in this category, "green" expenses were considered to be those incurred for the purchase of electronic office equipment and supplies (PCs, monitors, servers, printer cartridges) and for the rental of photocopiers, which meet specific parameters characterising the low environmental impact of the equipment
- Textile products and footwear – this category includes the purchase of various types of clothing for internal staff (e.g. uniforms or work outfits of various types)
- Stationery products – this category includes both stationery products that meet the stated environmental criteria and also data on the paper used in printing services outsourced by some sectors
- Catering – the products purchased concerned canteen services and food supplies
- Buildings management services – in this category, expenditure on cleaning services and the purchase of hygiene materials (detergents, hand soap) were considered, as well as expenditure on the purchase of dusting paper and toilet paper
- Transportation – includes sustainable transport means and services (such as LPG or CNG-fuelled vehicles)

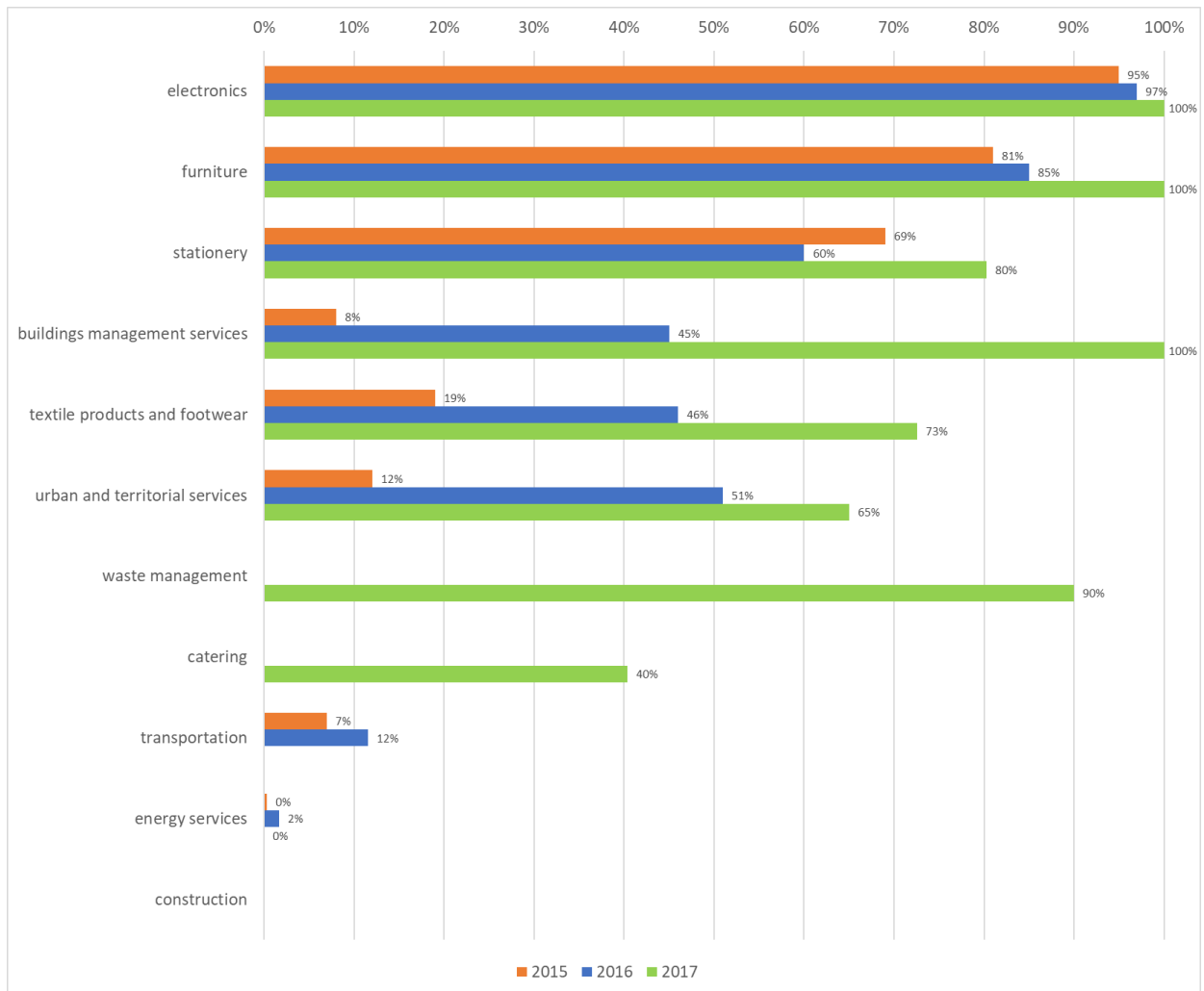
3.3.1 Results of the monitoring of the 2015-2017 GPP Action Plan

The function of annual monitoring is to identify the reasons for the non-achievement of a GPP target for that year and identify those areas where action is needed to ensure that more green procurement criteria are applied.

Thanks to the monitoring sheets submitted by the various sectors annually, it was possible to identify the amount of GPP expenditure in relation to the total expenditure made. Figure 12 shows the percentages of adopted GPP products or services compared to the total, for the years 2015, 2016 and 2017.

As can be seen, for some sectors an assessment was not possible because no monitoring sheets were received. However, for some sectors the level of GPP products adopted has been high and continuous over the years. For example, in the electronics, furniture, and stationery sectors, the percentages of adopted GPP products compared to total expenses are high for all three years observed.

Figure 12: Percentage of GPP products and services on the total expenses in 2015, 2016 and 2017



Furthermore, it is clear from the three annual monitoring reports that a critical element is linked to the skills of the administrative staff preparing calls for tenders in the various sectors. While some sectors have trained staff that have been applying green criteria in tenders for more than 10 years, others need specific in-depth knowledge regarding the different types of minimum environmental criteria (MEC) to be applied. In fact, in the first two years of monitoring, it was observed that there was no participation of the whole of the relevant sectors. For this reason, in 2017, the data sheet was simplified in order to facilitate its compilation by the various sectors of the municipal administration.

For all three years of monitoring, the data on the achieved GPP targets confirm the following issues: there have been difficulties in drafting green calls, and in verifying environmental requirements in the award phase, as well as an insufficient market response (unqualified suppliers, high prices, lack of clarity on environmental characteristics of goods and services).

At the conclusion of the application of the GPP Action Plan for 2015-2017, the municipality suggested a number of activities to expand the application of the current legislation on Green

Procurement and minimum environmental criteria. These actions included the expansion of the work group in order to include staff dealing with tenders, procurement and works in every sector; the identification of a better way to send data, in order to solve environmental criteria application problems, also by organizing training courses if necessary; the modification of the monitoring sheet (which was simplified in 2017); the introduction of an automatic form of identification of the green purchase, by inserting a "flag" on the procedure for entering the approval decision that corresponds to the monitoring form to be filled in at the time of purchase; the inclusion of compliance with the three-year GPP Plan and the application of CAM in the executive management plan of the various sectors.

3.4 GPP Action Plan for 2019-2022

In November 2019, the new GPP Action Plan of the City of Padua for the years 2019-2022 was approved by the City Council. The new Action Plan sets out a path to improve practices for incorporating environmental criteria into the authority's procurement activities.

In addition to the aims pursued in previous years, the new Action Plan sets objectives in four macro areas of action: purchasing, training, experimentation, and networking.

In particular, the purchasing objectives, as in the previous plan, are to comply with the application of the MECs and to verify that they are respected at the award stage. However, there is more experimentation than in the previous years in the application of award criteria in some tenders, and in the introduction of environmental criteria in tenders related to product categories for which MECs have not yet been drawn up. There is also an increased focus on the inclusion of social criteria in tenders. As in previous years, the new action plan aims to define and implement a monitoring system on the application of GPP during both the tendering and implementation phases.

With regard to training activities, the new plan proposes training programs for technical and administrative staff, with the aim of strengthening the skills for incorporating environmental criteria into purchasing and for assessing and verifying the requirements. This will enable the administration to respond effectively to regulatory obligations, but also to improve skills and administrative capacity in the management of environmental criteria in all sectors.

More experimentation is proposed with regard to environmental criteria for sustainable events in concessions for occupying public space (including green areas) or using municipal halls and facilities. The new experimentation objectives also include the establishment of low

environmental impact criteria for events taking place in the city, organised by the Municipality of Padua or carried out in its territory, and the introduction of a 'Sustainable Padua' label for shopkeepers, to promote the reduction of the environmental impact of activities.

With the adoption of the new plan, the municipality also intends to create a network, thanks to the activation of a working group including the university of Padua, the Chamber of Commerce of Padua and the Italian Local Agenda 21 Association. Through collaboration with professional bodies and the university, the city also aims to strengthen the skills of technicians and plan developers.

The annual monitoring reports of the 2019-2022 plan, unlike those of the previous plan, are not yet available.

3.5 Methods

The method used for this analysis was the multiple case study method. The firms were selected from the sample of companies that won tenders for supplies for the municipality of Padua in 2020. Information about the name of the company awarded the tender and the type of contract was available on the website of the municipality of Padua, in the section concerning data, information and documents regarding the organisation and activities of the Administration.

All the interviews were carried out in the period 26 May - 4 June 2021, remotely via video call or telephone interview. For some companies it was not possible to arrange a telephone interview, but they still agreed to answer the questions by email.

The purpose of the investigation was to understand the companies' perspectives on the environmental sustainability criteria required by public authorities. Specifically, to understand whether companies had to make changes to comply with the criteria, whether they experienced difficulties in dealing with public administrations, and if they received any benefit as a result of the provision. The aim of the study is to develop useful indications for the municipality of Padua, and for public administrations in general, to improve their processes.

Specifically, the short interview consisted of the following five open questions:

1. Did your company already comply with the sustainability criteria required by the PA, or was the call for tenders an incentive to review your products or processes?

2. What are the reasons that led you to adopt a business model based on environmental sustainability?
3. In order to participate in public tenders related to GPP, did your company have to make any changes/investments (e.g. purchase or develop new machinery, acquire certifications, set up specific training courses for staff)?
4. Did the participation in public tenders related to GPP lead to difficulties or benefits for your business? If so, which ones?
5. What advice would you give to companies wishing to participate in public tenders?

3.6 The empirical setting

The Municipality of Padua, which counts a population of 209,143 inhabitants (data as at March 2021) and is the 14th largest municipality in Italy in terms of population (ISTAT data as at January 2021), was chosen for its commitment to green procurement and its initiatives carried out over the years. In fact, the city began its own experience of green purchasing after the entry into force of Regional Law n. 3 of 2001 that provides for the purchase of at least 40% recycled paper and Presidential Decree 203/2003, which requires the purchase of products made from at least 30% recycled material. Over the years, it experimented with initiatives on cleaning products, stationery products, staff clothing and cleaning services, promoting the inclusion of increasingly advanced environmental criteria at the national level. Furthermore, the municipality of Padua has received a number of awards for its activities in implementing and promoting GPP.

In 2007 and 2009 the city won the "Comune riutilizzatore" award, promoted by the association "Amici della Terra". The award is a recognition for those municipalities that, in addition to recycling policies, promote the repositioning of products on the market through the direct purchase of goods resulting from the recycling process. Therefore, the winner of the prize is the municipality that implements a conscious separate collection aimed at the reuse of products, especially through purchasing,

In 2009, the municipality won the "Innovazione Amica dell'Ambiente" award, promoted by Legambiente, with the aim of identifying those public authorities that implemented projects and actions to convert their purchases to Green Public Procurement, stimulating the Green

Procurement market and reducing the environmental impact of administrative and governmental activities.

Padua also won the Compraverde award for the best GPP policy implemented in 2009 and, more recently, 2020. It received a mention for the same award in the 2008 and 2018 editions. The award aims to promote, disseminate and valorise the best Green Public Procurement experiences on the national territory.

In 2020, with the new Action Plan 2019-2022, the City of Padua was awarded the Compraverde Veneto Award for the "Best GPP initiative implemented - Local authorities and parks section".

3.7 Companies interviewed

In order to identify the companies to be contacted regarding their GPP experience with the Municipality of Padua, the sectors with a high percentage of GPP participation were identified through the GPP Action Plan monitoring reports for the years 2015, 2016 and 2017.

We decided to interview firms from two sectors: furniture and textile and footwear. Both of them are sectors for which the incidence of GPP is high and have a similar productive structure: indeed, they are both traditional manufacturing industries. Interviewing multiple firms from two different industries will allow us to check for within industries and between industries results.

In total, representatives of seven Italian companies were interviewed, four of which operating in the furniture sector, and three in the textiles and footwear sector. Chapter 3.6.1 describes the characteristics of the companies interviewed, with a focus on the type of activity carried out, where they are located, as well as other information available about the company.

3.7.1 The firms interviewed

The four furniture companies interviewed will be referred to as companies FURNITURE1, FURNITURE2, FURNITURE3 and FURNITURE4.

FURNITURE1 is located in the province of Mantua, Lombardy. It produces equipment and furniture for children in nurseries, school furniture, library furniture, playroom furniture and teaching materials for the Montessori Method. The sales revenue for the year 2019 was of 10,4

million euro, and the net profit for the same year of 594,16 thousand euro, with a total of 18 employees.

FURNITU8.1RE2 is a Padua-based company that manufactures office and home furniture. The products offered by the company include office seating, armchairs and sofas, desks and cabinets, bookcases and chests of drawers, false ceilings and lighting, movable walls for open-plan spaces, partitions and wooden floors. For 2019, the company reported a turnover of 2,29 million euro, a net profit of 54,9 thousand euro, and a total of 15 employees.

FURNITURE3 is located in the province of Vicenza, in the Veneto region, and produces office furniture as well as entirely custom-made furniture.

FURNITURE4, located in the Veneto province of Treviso, is specialized in the production of office chairs.

The remaining three textile and footwear firms will be referred to as TEXTILE1, TEXTILE2 and TEXTILE3.

TEXTILE1 is a company based in Modena, Lombardy that produces and sells, both in Italy and abroad, clothing, knitwear and garments, generally used in the workplace. In 2019, the company reported net sales of 491,4 thousand euro, and a net profit of 4675 euro.

TEXTILE2 is located in the province of Varese, Lombardy. It produces and supplies hotel bed linen, restaurant tablecloths, certified fireproof bed linen, textiles and supplies for hospitals, as well as linen for schools and nursery schools, nursing homes and care centres.

The last company contacted, TEXTILE3, is located in the province of Padua. It offers occupational safety services, such as the construction of automatic fire detection and extinguishing systems, accident prevention devices and systems, and the maintenance of fire-fighting equipment within a company. The company also produces workwear and footwear. In 2019, it reported net sales for 7,11 million euro, net profit of 135 thousand euro, and had a total of 39 employees.

3.8 Interview results

This chapter presents the results of the interviews with the seven companies that won the tenders of the municipality of Padua for the supply of furniture and textile and footwear products. The answers given by the single companies to the various points will be individually analysed in

order to understand their GPP experiences with the municipality of Padua, with a comparison between the two sectors involved. At the end of each of the following paragraphs, a table will summarise the most important points that emerged from the interviews, both for the furniture companies and for the textile and footwear companies. The full interviews are included in the Appendix.

3.8.1 Sustainability criteria adopted

One of the objectives of the interviews was to find out whether the companies that won the tenders already complied with the sustainability criteria required by the PA, or if the call for tenders was an incentive to review their products or processes.

Concerning the experiences of furniture enterprises, FURNITURE1 and FURNITURE2 stated that the requirements of public administrations have been and still are decisive in forcing companies to obtain sustainability requirements. In particular, FURNITURE1, which sells 97% of products to the public market, is practically obliged to review its certifications annually, while for FURNITURE2, the required certifications have been a stimulus to review its production processes and to ensure that the criteria are also met by its suppliers. FURNITURE3 and FURNITURE4, on the other hand, stated that some products already met the sustainability criteria. However, for some products, they had to adapt to the standards required by PAs, for example by requesting sustainability declarations from their suppliers.

All three textile and footwear companies stated that they already had OEKO-TEX certification, which verifies that the manufacturer is environmentally friendly in its processes and also in its plants. In addition, TEXTILE3 stated that as a business choice, it is increasingly requiring its suppliers to use fabrics made of recycled or recyclable material, even though these requirements are not currently required by PAs.

Table 8: Compliance with sustainability criteria required by the PA

FURNITURE SECTOR	
FURNITURE1	<ul style="list-style-type: none"> • Always complied with environmental criteria required by PAs • Reviews certification requirements every year

FURNITURE2	<ul style="list-style-type: none"> • Introduction of criteria forced company and suppliers to comply with them • Stimulus to review the production process of PA products
FURNITURE3	<ul style="list-style-type: none"> • Already offered products that met sustainability criteria
FURNITURE3	<ul style="list-style-type: none"> • For some products, already complied with them • In some cases, asked suppliers for declarations
TEXTILE AND FOOTWEAR SECTOR	
TEXTILE1	<ul style="list-style-type: none"> • For some products, already complied with the criteria (e.g. OEKO-TEX certification) • Some products do not comply
TEXTILE2	<ul style="list-style-type: none"> • From 5-6 years, has been opting for environmentally sustainable products
TEXTILE3	<ul style="list-style-type: none"> • Voluntary choice of adopting sustainable criteria • Requests recycled or recyclable materials from its suppliers

3.8.2 Reasons for adopting a sustainable business model

The interview also aimed to understand what motivated the various companies to adopt a more environmentally friendly business model. For all seven companies it can be said that, in general, the main motivations were a choice of business ethics, and the need to adapt to the demands of the PA.

As far as the furniture sector is concerned, environmental awareness within companies seems to be the main motivation behind the choices of FURNITURE1 and FURNITURE2. In particular, FURNITURE1 stated that it has been engaged for years in projects to make furniture from recycled materials, that ensure circularity in the economy. The same company has also been critical of PA employees, who do not seem to have the same basic environmental awareness, but are rather interested in mere fulfilment of criteria. FURNITURE2 replied that the motivation for a more sustainable business model was mainly ethical, along with the need for a more modern development. For FURNITURE3 and FURNITURE4, corporate ethics and awareness were also partly relevant to the adoption of a greener business model, however less important than the need to keep doing business with PAs. In fact, for FURNITURE3, it is above

all a business matter, because it is a prerequisite for working with the public sector, while FURNITURE4 stated that, if a company had to change everything just because of environmental conscience, it would be too expensive.

The motivations of companies in the textile and footwear sector are similar. For TEXTILE2 and TEXTILE3, it is mainly about environmental awareness within the companies. Moreover, TEXTILE2, which mainly supplies textile materials for kindergartens (such as bibs or blankets), believes it is important to supply high quality items, because their articles are in direct contact with children. TEXTILE3 also stated that it adopts small environmental measures within the company (such as the use of stationery made of recycled material), and that it also has a social awareness. Finally, for TEXTILE1, the main motivation was the demand for more sustainable clothing from public authorities, but also from private individuals.

Table 9: Reasons for adopting a sustainable business model

FURNITURE SECTOR	
FURNITURE1	<ul style="list-style-type: none"> • Strong environmental awareness within corporate group
FURNITURE2	<ul style="list-style-type: none"> • Ethical motivations • Need for a ‘modern’ development
FURNITURE3	<ul style="list-style-type: none"> • Mainly a business matter, to be able to work with PAs • Partially a matter of corporate ethics
FURNITURE3	<ul style="list-style-type: none"> • It is required in many public tenders • Environmental conscience within the company
TEXTILE AND FOOTWEAR SECTOR	
TEXTILE1	<ul style="list-style-type: none"> • Growing attention given in recent years to environmental issues • Demands from PAs but also private individuals
TEXTILE2	<ul style="list-style-type: none"> • Environmental awareness within the firm • Desire to offer a product that meets high-quality standards
TEXTILE3	<ul style="list-style-type: none"> • Corporate choice • Attention to environmental and social issues

3.8.3 Changes or investments to participate in public tenders

Another important aspect investigated in the interviews was the need for companies to make changes or investments in order to be able to participate in public tenders (e.g., purchase or development of new machinery, acquisition of new certifications, setting up of specific training courses for staff).

In this case, the experiences of the various companies in the furniture sector were quite similar with regard to certain aspects. For example, with regard to the supply of raw materials, FURNITURE1 and FURNITURE4 had to request environmental certification from their suppliers, while FURNITURE3 had to look for new ones. In addition, both FURNITURE1 and FURNITURE3 organised training courses for their staff, relying on external bodies, while FURNITURE4 did not feel the need to organise training courses. As far as investments in machinery are concerned, no changes were necessary for FURNITURE1, FURNITURE3 and FURNITURE4, since the production process is very basic and it was sufficient to request certifications of individual components from their suppliers. FURNITURE2 only stated that all the investments made in terms of new machinery, certifications or training courses, were made not only for the purpose of participating in the tenders, but in general with a view to business development.

For textile and footwear companies, in general no major changes were necessary within the companies. In fact, for TEXTILE1 it was only necessary to ask for certifications to the external laboratories in charge of material production. A similar situation applies to TEXTILE2, which selected suppliers able to guarantee a production process that meets the required standards. The experience of TEXTILE3, however, was a slightly different one, since it had to acquire new certifications and installed a dust recovery system in its production plant.

Table 10: Changes or investments to participate in public tenders

FURNITURE SECTOR	
FURNITURE1	<ul style="list-style-type: none">• No major changes in machinery• Changes in raw materials• Training courses for staff• Acquisition of certifications

FURNITURE2	<ul style="list-style-type: none"> • New machinery • Certifications • Training courses
FURNITURE3	<ul style="list-style-type: none"> • Training courses for staff • Change of suppliers
FURNITURE3	<ul style="list-style-type: none"> • No changes within the company • Request of certifications from suppliers to meet MECs
TEXTILE AND FOOTWEAR SECTOR	
TEXTILE1	<ul style="list-style-type: none"> • No need for investments within the company • Certifications acquired through specialised laboratories • Keep up to date with processes required for certification
TEXTILE2	<ul style="list-style-type: none"> • Careful selection of suppliers • No need to spend money on new machinery or certifications
TEXTILE3	<ul style="list-style-type: none"> • Need to acquire new certifications (such as SA8000) • New machinery

3.8.4 Difficulties and benefits from the participation in public tenders

Other information gathered during the interviews concerns the benefits or difficulties encountered by companies as a result of participating in GPP calls for tenders. In this case, the companies' experiences appeared to be quite diversified, both in the furniture sector and in the textile and footwear sector.

In fact, FURNITURE1 was very critical of its experiences with the PA, stating that participation in calls for tenders is a necessary condition for being in the market, but that it often negatively affects the company's possibilities for research and development of new products. This occurs because there are still no certifications for innovative materials, and, on the other hand, you have to spend money to obtain the certifications requested. The same company also reported that the certifications submitted by the company are not considered during the awarding phase, and therefore have no real usefulness. The experiences of the other three furniture companies were overall more positive, since they involved some difficulties but also important benefits. For FURNITURE2, the difficulties were often economic, since it believed that environmental

sustainability is not compatible with 'lowest price' negotiations. However, there were benefits in terms of business visibility and certainty of payments. FURNITURE3 stated that the biggest difficulty was to keep up to date with new regulations and new characteristics required, but acknowledged that there are benefits in terms of a greater chance of winning tenders if your company is able to meet the necessary requirements. On the other hand, FURNITURE4 stated that it had some difficulty in building non-catalogue models to meet the requirements, but was satisfied with the possibility of selling its products throughout the whole of Italy.

The possibility of participating in tenders throughout Italy was also perceived as an important benefit for two out of three textile and footwear companies, namely TEXTILE2 and TEXTILE3. However, TEXTILE2 added that this also led to a downside, as contact with the purchasing department of public offices is much less direct than in the past. TEXTILE3 also declared that difficulties were encountered in terms of the documentation required to participate in tenders. Finally, according to TEXTILE1, the experience with PAs has been negative overall, as the PA's budget for their products has been reduced over the years, and therefore a certified product with higher quality is required at lower prices than before.

Table 11: Difficulties and benefits of participating in public tenders

FURNITURE SECTOR	
FURNITURE1	<ul style="list-style-type: none"> • Negative impact on the R&D path of the company because resources are spent to obtain certifications • Lack of verification of documents submitted
FURNITURE2	<ul style="list-style-type: none"> • Difficulty of winning lowest price negotiations • Benefits in terms of visibility and security of payments
FURNITURE3	<ul style="list-style-type: none"> • Benefits in winning tenders thanks to the requirements met • Difficulty to keep up with new regulations and characteristics required
FURNITURE3	<ul style="list-style-type: none"> • Difficulties in building non-catalogue models to meet requirements • Benefit of selling products throughout Italy
TEXTILE AND FOOTWEAR SECTOR	
TEXTILE1	<ul style="list-style-type: none"> • No real benefits because of low budgets of PAs

TEXTILE2	<ul style="list-style-type: none"> • Great benefit of participating in tenders throughout the whole country • Difficulty of not having a direct contact like in the past
TEXTILE3	<ul style="list-style-type: none"> • Considerable difficulties in terms of documentation to be submitted • Benefits from an economic point of view – possibility to participate in many tenders

3.8.5 Advice for other companies

The interviews were concluded by asking for advice for companies wishing to participate in public tenders.

Of the furniture companies, FURNITURE1 was by far the most critical towards the relationship with the PA, and advised other potential investors against entering this sector, due to the low profit margins and high costs of obtaining certifications. On the other hand, FURNITURE2 and FURNITURE3 agreed that, in order to participate in public tenders, it is important that the products reflect the required characteristics. Even for FURNITURE4, it is necessary to be familiar with the required criteria and to pay attention to the documents provided to the PA, otherwise you may risk being excluded because of a document that has not been uploaded or filled in correctly. Another suggestion given by FURNITURE4 is to have a wide range of products in the catalogue that can meet the requirements of the PA.

In contrast to the above suggestion, the textile and footwear TEXTILE1 advises to specialise in a specific product category in order to focus on product quality, and to be well informed about the various regulations, given the growing demand for documentation from the PA. Similar advice is given by TEXTILE2, which considers the quality of the products very important in order to be contacted for future tenders. Finally, TEXTILE3 suggests having your products certified, even if you are a small company, pointing out that this is the right way to go if you want to improve the way the company carries out business.

Table 12: Advice for other companies

FURNITURE SECTOR	
FURNITURE1	<ul style="list-style-type: none"> • Do not invest in this sector, because of low margins and high costs of certifications

FURNITURE2	<ul style="list-style-type: none"> • Be professional • Offer products that meet the requirements
FURNITURE3	<ul style="list-style-type: none"> • Study regulations well • Make sure that products meet all requirements
FURNITURE3	<ul style="list-style-type: none"> • Read carefully all requirements • Pay attention to the documents you upload • Have many catalogue models
TEXTILE AND FOOTWEAR SECTOR	
TEXTILE1	<ul style="list-style-type: none"> • Specialise in a specific product category • Focus on product quality • Be well informed with regard to regulations
TEXTILE2	<ul style="list-style-type: none"> • Offer quality products
TEXTILE3	<ul style="list-style-type: none"> • Have products certified, even if you are a small company

3.9 Observations and conclusions

From the information gathered in the interviews, it is possible to draw some important conclusions, which partly confirm and enrich what was discussed at theoretical level and in the survey analysis.

The following considerations can be made regarding the adoption of sustainability criteria by companies: in general, many of the companies in both the furniture and textile and footwear sectors were already offering some products for which environmental sustainability certifications existed. However, considering the firms of the furniture sector, for some products companies have had to require certifications from their suppliers, and, for one company in particular, the introduction of these criteria has forced company and suppliers to comply with them. It is therefore clear that the demands of public administrations in terms of environmental criteria to be met are crucial for companies wishing to sell their products to the public sector. Companies in the textile sector, as well, already held certain types of certifications (such as OEKO-TEX), and two out of three companies stated that they increasingly require their suppliers to comply with the criteria as well.

Moving on, the analysis of the survey data in Chapter 2 showed that the main motivations for companies to adopt a sustainable business model were corporate ethics and social responsibility, the higher value of products, and the growing interest from consumers. Also from what emerged from the interviews, the choice of a more environmentally friendly business model is due mainly to reasons of corporate conscience, but also to the need to be able to continue working with PAs, and to offer products with higher quality standards. The experiences of the furniture and textile companies that won the tenders of the municipality of Padua, therefore, seem to be in line with the motivations of the Compraverde award winners.

With regard to the changes that companies had to make in order to participate in the calls for tenders, there are some common points with what emerged from the questionnaire. In fact, the data from the survey showed that for 13 out of 18 companies (72%) it was necessary to request for sustainability certifications from suppliers, and 12 companies out of 18 (67%) had to look for new sustainable suppliers in addition to existing ones. Also for almost all of the companies interviewed, the relevant changes concerned activities outside the company, such as the need to require new certifications from their suppliers, or to select different ones for the supply of raw materials. It should be noted, however, that for these types of companies the production processes are quite basic, and therefore changes mainly concern the choice of materials purchased from third parties rather than investments in new machinery. In fact, for most of the interviewed companies, no in-house investments were necessary. Other investments have been made for staff training by 3 out of 4 furniture companies, whereas the textile and footwear companies have not felt this need. Moreover, one textile company stated that it has invested, on its own initiative and not because it was requested by the authorities, in a machine that allows the recovery of dust generated in its production process.

Concerning the difficulties of participating in public tenders, it is clear that for the companies belonging to both sectors there is still a need for simplification of regulatory aspects. This problem also emerged from the answers to the questionnaire, where the major challenge for respondents was to comply with the regulatory aspects required by the PAs. In fact, for one furniture company the greatest difficulty was to always keep up with new regulations and characteristics required by PAs, whereas another respondent of the furniture sector believes that the problem with the documentation is that it is not verified in the final act, and is therefore felt to be unnecessary. Also one textile company declared that the main difficulties were encountered in terms of the documentation required to participate in tenders.

Two furniture companies and one textile company also complained that budgets for the purchase of products by public administrations are very tight, which means that there is not a

great profit margin in this sector. Other problems encountered for two furniture firms were the need to invest funds in certifications, thus subtracting them from expenditure on research and development of new products, and the need to create out-of-catalogue product models to meet the needs of administrations, whereas one textile company lamented the lack of direct contact with public administration officials.

With regard to the benefits of participating in public tenders, not all companies feel they have gained some, while the most important advantaged acknowledged by companies in both sectors was the possibility of participating in tenders in order to sell their products throughout the whole of Italy, which was not possible in the past. In addition to the economic benefits of this opportunity, there was also one furniture company that reported benefits in the form of visibility of its products and security of payments.

Finally, opinions and advice were collected for other companies wishing to participate in public tenders. The majority of respondents emphasised the importance of being familiar with the requirements of the administrations, and of being able to offer products that meet them. In addition, the advice of one furniture company was to have many products in the catalogue that would meet the criteria, whereas, on the contrary, one textile company specified the importance of concentrating on a single product category and focusing on quality. However, one furniture company advised against entering this sector for firms that are not already in the industry, because of the low profits and high initial investments required to certify the products.

Conclusion

The aim of the thesis was to outline the most important aspects of firms' engagement with GPP, focusing mainly on the experiences of some Italian companies. Starting from a review of the literature, the importance of this tool to counteract the effects of climate change was outlined, and in particular the environmental, economic, social and cost-saving benefits it provides.

The work then focused on the main European and Italian regulations governing its application, and proceeded to analyse the macro and meso factors influencing GPP, i.e., the factors of its adoption which are not strictly related to the characteristics of the contracting unit itself.

The focus was then on the factors within public administrations that influence the uptake of GPP. In this context, it was observed that the main barriers limiting the application of sustainability criteria within administrations were the lack of environmental knowledge of public officials, insufficient employee training to compensate for this lack of knowledge, the tight budgets and perceived higher costs of green products, and the lack of managerial support. It was also seen that PAs with values that emphasise equity, social responsibility and environmental sustainability are more likely to enhance employee training (through workshops or conferences) to help them develop the skills needed to address particular issues.

Similarly, an attempt has been made to analyse the factors within companies that facilitate or limit participation in GPP. Enabling factors included employee motivation and a corporate culture sensitive to the issue of environmental sustainability, and the duration of contracts with administrations that allows firms to bear the initial costs of greening their products. However, barriers included a lack of helpful feedback from administrations after participation in the calls, scepticism about lower costs and higher profitability of a more sustainable production, and a high administrative effort.

In order to enrich what has been presented in the literature, an empirical analysis was carried out by means of a questionnaire sent to a sample of 50 companies. The companies were identified in the context of the Compraverde Forum as winners of one of the awards assigned in the past years. The analysis of the answers to the questionnaire allowed to deepen the experiences of these companies, which stand out for their initiatives in the field of sustainable production.

In this context, it was possible to confirm some aspects that were already known in the literature, namely that many companies that responded to the questionnaire had difficulties in participating

in GPP calls due to low technical knowledges within PAs, and the regulations which were not always clear.

However, new aspects have emerged regarding the necessary changes that companies need to make in order to adopt a more sustainable business model, and the motivations behind these changes. In fact, the results showed that the respondents, in order to modify their products, had to make changes, especially with regard to the choice of suppliers. It was observed that many companies had to ask suppliers to adapt to the criteria required by the administrations, providing certifications for their products, or in some cases they had to change suppliers.

As far as the motivations for these choices are concerned, the most important one is certainly a matter of corporate ethics, and this is coherent with what was found in the literature review in the first chapter, where it was seen that environmental awareness within the company, and also the motivation of managers and employees, are among the main factors for the engagement in sustainable practices. One contribution made by the responses to the questionnaire on this issue was to reveal the importance of other motivations that drive a company towards environmental sustainability, such as the perception of a higher value of its products compared to those of its competitors, and the growing demand for green products on the market.

Finally, the qualitative analysis carried out in the third chapter has enabled a further description of the experiences of companies involved in product supply tenders. For this study, the municipality of Padua was chosen as a reference point, due to the commitment and importance given at municipal level to GPP initiatives and the various awards received over the years.

The winners of the supply calls for products in two different sectors (furniture and textile and footwear) were identified, so that a comparative analysis of the companies' experiences in the chosen sectors could be carried out. As in the case of the results of the questionnaire, it was possible, by conducting interviews with open-ended questions, to trace some characteristics of the relationship of enterprises with public administrations.

Again, the interviews revealed that it is often a matter of ethics and corporate conscience that drives companies' choice towards more sustainable business models, as well as the perception of offering a product of higher quality standards. Furthermore, the interviews confirmed what emerged from the questionnaire, i.e. that, in order to change their products, the firms had to make different choices regarding the purchase of raw materials, and therefore the need to change suppliers or choose new ones.

The interviews also revealed that the greatest difficulties with regard to participation in tenders relate to administrative efforts, in terms of keeping up to date with new regulations, having products certified, and in terms of documentation to be submitted. Moreover, for some companies the usefulness of such detailed documentation is not perceived, because there is no verification at the award stage. However, the interviews also revealed new aspects regarding the benefits for companies participating in GPP calls, such as the possibility to sell products all over Italy, which was not possible before, and also the security of payments from the PA.

Finally, the companies interviewed were asked to offer advice to those wishing to participate in GPP calls for tenders, to add to what had previously been found. The most frequent advice was to be well informed about the documentation required by administrations, and to offer quality products.

Despite the new information that emerged from the questionnaire and interviews, it has to be said that there are some limitations of this study, and therefore important questions remain to be analysed.

For example, with regard to the questionnaire, the sample of companies considered was chosen because they were winners of awards concerning environmental sustainability, but not all the companies contacted had participated in GPP public calls for tender. This allowed only for a partial analysis of the results, since the section concerning the relationship with administrations was only filled in by some of the companies in the sample.

In addition, for this analysis, companies that had won an award as long as ten years ago were contacted, so it was not always possible to obtain answers due to personnel turnover within the company, while in other cases the company had ceased to exist. The importance of regular monitoring over the years should therefore be highlighted, so as to maximise the possibilities of obtaining information from companies, and also to enable a comparative analysis that shows changes over the years.

In addition, it should be noted that most of the companies that took part in the questionnaire and all the interview respondents, were traditional firms that operate in low-tech industries. For this reason, the results might not hold for firms with more knowledge intensive manufacturing, or service industries. Based on these insights, it might be interesting for future research to analyse the point of view of companies in other sectors, such as suppliers from whom manufacturing companies demand the environmental certifications necessary to comply with PA criteria.

Another interesting issue to be analysed, in light of the findings of this study, is the point of view of public administration officials, who are responsible for the formulation and verification of sustainability criteria. In fact, the analysis has shown that low technical knowledge within PAs is often a problem for companies, therefore it would be important to understand what the biggest impediments are in the various cases, and how to solve them.

Finally, the various reasons that motivate companies to opt for business models compatible with environmental sustainability have been investigated, but the reasons that preclude them from doing so have not been explored. An important contribution to the literature would be to understand what incentives are relevant for companies to move in that direction.

References

- Appolloni, A., D'Amato, A., & Cheng, W. (2011). Is Public Procurement Going Green? Experiences and Open Issues. *SSRN Electronic Journal*
- Aragón-Correa, J. A., Hurtado-Torres, N., Sharma, S., & García-Morales, V. J. (2008). Environmental strategy and performance in small firms: A resource-based perspective. *Journal of Environmental Management*, 86 (1), 88–103.
- Aschhoff, B., & Sofka, W. (2009). Innovation on demand-can public procurement drive market success of innovations? *Research Policy*, 38 (8), 1235–1247.
- Bala, A., Muñoz, P., Rieradevall, J., & Ysern, P. (2008). Experiences with greening suppliers. The Universitat Autònoma de Barcelona. *Journal of Cleaner Production*, 16 (15), 1610–1619.
- Beuve, J., Moszoro, M. W., & Saussier, S. (2019). Political contestability and public contract rigidity: An analysis of procurement contracts. *Journal of Economics & Management Strategy*, 28(2), 316–335.
- Björklund, M. (2011). Influence from the business environment on environmental purchasing—Drivers and hinders of purchasing green transportation services. *Journal of Purchasing and Supply Management*, 17(1), 11–22.
- Bouwer et al. (2006) - Green Public Procurement in Europe - Conclusions and recommendations
- Brammer, S., & Walker, H. (2011). Sustainable procurement in the public sector: An international comparative study. *International Journal of Operations & Production Management*, 31(4), 452–476.
- 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.
- COM (2003) 302 - COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT – ‘Integrated Product Policy - Building on Environmental Life-Cycle Thinking’
- COM (2008) 400 - COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS – ‘Public procurement for a better environment’

- COM (2008), 400 – COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS – ‘Public procurement for a better environment’
- Darnall, N., Stritch, J. M., Hsueh, L., & Bretschneider, S. (2018). A Framework for Understanding Sustainable Public Purchasing. *Academy of Management Proceedings*, 2018(1), 15677.
- Del Brío, J. Á., & Junquera, B. (2003). A review of the literature on environmental innovation management in SMEs: implications for public policies. *Technovation*, 23 (12), 939–948.
- DIRECTIVE 2014/24/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
DIRECTIVE 2014/25/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC
- European Commission (2015) ‘Circular economy action plan – for a cleaner and more competitive Europe)
- European Commission (2017) ‘PUBLIC PROCUREMENT FOR A CIRCULAR ECONOMY – Good practice and guidance’
- European Commission, 2008 – ‘Attitudes of European citizens towards the environment’
- European Commission, 2010 – ‘EUROPE 2020 - A European strategy for smart, sustainable and inclusive growth’
- European Commission. Directorate General for the Environment., & ICLEI – Local Governments for Sustainability. (2016). *Buying green! :A handbook on green public procurement : 3rd edition*. Publications Office.
- Green Public Procurement in Scotland
- Halkos, G. E., & Paizanos, E. A. (2013). The effect of government expenditure on the environment: An empirical investigation. *Ecological Economics*, 91, 48–56.
- Kaye Nijaki, L., & Worrel, G. (2012). Procurement for sustainable local economic development. *International Journal of Public Sector Management*, 25(2), 133–153.
- Lee, S.-Y., & Klassen, R. D. (2008). Drivers and enablers that foster environmental management capabilities in small-and medium-sized suppliers in supply chains. *Production and Operations Management*, 17 (6), 573–586.

- Legge 28 dicembre 2015, n. 221 - Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali
- Liu, J., Shi, B., Xue, J., & Wang, Q. (2019). Improving the green public procurement performance of Chinese local governments: From the perspective of officials' knowledge. *Journal of Purchasing and Supply Management*, 25(3), 100501.
- Loader, K. (2011). Are public sector procurement models and practices hindering small and medium suppliers? *Public Money & Management*, 31 (4), 287–294.
- Mebratu, D. (n.d.). *SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT: HISTORICAL AND CONCEPTUAL REVIEW*
- Mélon, L. (2020). More Than a Nudge? Arguments and Tools for Mandating Green Public Procurement in the EU. *Sustainability*, 12(3), 988.
- Michelsen, O., & de Boer, L. (2009). Green procurement in Norway; a survey of practices at the municipal and county level. *Journal of Environmental Management*, 91(1), 160–167.
- Nissinen, A., Parikka-Alhola, K., & Rita, H. (2009). Environmental criteria in the public purchases above the EU threshold values by three Nordic countries: 2003 and 2005. *Ecological Economics*, 68(6), 1838–1849.
- Nissinen, A., Parikka-Alhola, K., & Rita, H. (2009). Environmental criteria in the public purchases above the EU threshold values by three Nordic countries: 2003 and 2005. *ECOLOGICAL ECONOMICS*, 12.
- Nogueiro, L., & Ramos, T. B. (2014). The integration of environmental practices and tools in the Portuguese local public administration. *Journal of Cleaner Production*, 76, 20–31.
- of 26 February 2014 on public procurement and repealing Directive 2004/18/EC
- Pacheco-Blanco, B., & Bastante-Ceca, M. J. (2016). Green public procurement as an initiative for sustainable consumption. An exploratory study of Spanish public universities. *Journal of Cleaner Production*, 133, 648–656
- Parker, C. M., Redmond, J., & Simpson, M. (2009). A review of interventions to encourage SMEs to make environmental improvements. *Environment and Planning C: Government and Policy*, 27 (2), 279–301.
- Perez- Sanchez, D., Barton, J.R., & Bower, D. (2003). Implementing environmental management in SMEs. *Corporate Social Responsibility and Environmental Management*, 10, 67-77.

- Preuss, L. (2007). Buying into our future: Sustainability initiatives in local government procurement. *Business Strategy and the Environment*, 16(5), 354–365.
- Rainville, A. (2017). Standards in green public procurement – A framework to enhance innovation. *Journal of Cleaner Production*, 167, 1029–1037.
- Renda, A., Pelkmans, J., Egenhofer, C., Schrefler, L., Selçuki, C., Ballesteros, J., & Zirnhelt, A.-C. (2012). *Centre for European Policy Studies (CEPS)*. 52.
- Revell, A., & Blackburn, R. (2007). The business case for sustainability? An examination of small firms in the UK's construction and restaurant sectors. *Business Strategy and the Environment*, 16 (6), 404–420.
- Rosa, W. (Ed.). (2017). Transforming Our World: The 2030 Agenda for Sustainable Development. In *A New Era in Global Health*. Springer Publishing Company.
- Rosell, J. (2020). Getting the green light on green public procurement: Macro and meso determinants. *Journal of Cleaner Production*, 279, 123710.
- Semenova, D. N. (n.d.). *Paola Acosta, Bogran Daria Džaja*. 114. How do SMEs engage in Green Public Procurement? An exploratory study of SMEs' barriers and enablers for
- Sönnichsen, S. D., & Clement, J. (2020). Review of green and sustainable public procurement: Towards circular public procurement. *Journal of Cleaner Production*, 245, 118901.
- Testa, F., Grappio, P., Gusmerotti, N. M., Iraldo, F., & Frey, M. (2016). Examining green public procurement using content analysis: Existing difficulties for procurers and useful recommendations. *Environment, Development and Sustainability*, 18(1), 197–219.
- Testa, F., Iraldo, F., Frey, M., & Daddi, T. (2012). What factors influence the uptake of GPP (green public procurement) practices? New evidence from an Italian survey. *Ecological Economics*, 82, 88–96.
- Uyarra, E., Edler, J., Garcia-Estevez, J., Georghiou, L., & Yeow, J. (2014). Barriers to innovation through public procurement: A supplier perspective. *Technovation*, 34 (10), 631–645.
- Varnäs, A., Balfors, B., & Faith-Ell, C. (2009). Environmental consideration in procurement of construction contracts: Current practice, problems and opportunities in green procurement in the Swedish construction industry. *Journal of Cleaner Production*, 17(13), 1214–1222.
- Vasilenko, L., Arbačiauskas, V., & Staniškis, J.K. (2011). SMEs: barriers and incentives. *Environmental Research, Engineering, and Management* 3 (57), 46–66.

- Walker, H., & Brammer, S. (2009). Sustainable procurement in the United Kingdom public sector
- Walker, H., & Preuss, L. (2008). Fostering sustainability through sourcing from small businesses: public sector perspectives. *Journal of Cleaner Production*, 16 (15), 1600–1609.
- Walker, H., Di Sisto, L. & McBain, D. (2008). Drivers and barriers to environmental supply chain management practices: lessons from the public and private sectors. *Journal of Purchasing and Supply Management*, 14, 69-85.
- Zheng, J., Walker, H., & Harland, C. (2006). The role of SMEs in public procurement: a review of literature and research agenda. In: *15th International Annual IPSERA Conference*, San Diego, USA, April 6-8.
- Zhu, Q., Geng, Y., & Sarkis, J. (2013). Motivating green public procurement in China: An individual level perspective. *Journal of Environmental Management*, 126, 85–95.

Sitography:

European Commission website on GPP: https://ec.europa.eu/environment/gpp/index_en.htm

Appendix

Interview questions:

1. Did your company already comply with the sustainability criteria required by the PA, or was the call for tenders an incentive to review your products or processes?
2. What are the reasons that led you to adopt a business model based on environmental sustainability?
3. In order to participate in public tenders related to GPP, did your company have to make any changes/investments (e.g. purchase or develop new machinery, acquire certifications, set up specific training courses for staff)?
4. Did the participation in public tenders related to GPP lead to difficulties or benefits for your business? If so, which ones?
5. What advice would you give to companies wishing to participate in public tenders?

Interview with FURNITURE1

Interview conducted on 25 May 2021 via ZOOM video call

Answer 1. *Our company has always complied with the environmental criteria required by the public sector, as we are 97% committed to the public market. Therefore, we are almost obliged to review the certification requirements every year. If we are on the market today, it is because we have the ability to meet all the needs required by the PA in terms of development.*

Answer 2. *Environmental awareness within our corporate group is certainly important. The parent company, iMilani, has been producing plastic totes for logistics for 70 years, and for over 20 years has been producing containers made of recycled plastic that ensure circularity in the economy. We ourselves make products from recycled plastic, such as a project we have carried out in recent years of a seat with a shell made entirely of recycled material (polypropylene), so within the framework of school education, as a company, we introduce objects which also have a certain environmental ideology.*

On the other hand, as far as PAs are concerned, they only stick to criteria written in terms of tender specifications or MECs. They are only interested in the sheet of paper with the guarantee

of compliance with these criteria, but there is no conscience that arouses demand from the public side for products with certain characteristics to develop a green economy path. The problem is that, in the public sector, we have to deal with all-knowing people, in the sense that officials in the technical offices of the municipality buy various types of materials, such as school furniture but also manhole covers for roads, new planting for flowerbeds and so on, but they are not trained in this awareness, they do it more for an imposed condition. I'll give you an example: sometimes the problem with recycled plastic objects is the colouring, in the sense that the chemical composition of the recycled material might be a more faded colour (perhaps a brick red colour and not a bright red). When you explain this to officials, but they still don't want the chair in a faded colour but they want it in a brighter colour, it is clear that there is a lack of basic awareness.

Answer 3. *As far as machinery is concerned, no major changes were necessary since the processing cycle of our products is very basic.*

We can rather talk about changes in raw material, which has been revised in the input, requiring the primary sources of acquisition (the big forestry companies) to have panels that meet formaldehyde emission requirements or FSC (Forest Stewardship Council) certification to control the supply chain.

With regard to the certifications that have an impact on the award criteria of the calls for tenders, we are a company that averages 10-12 million euros a year in supplies, and 50 or 60 thousand a year are spent on certifications to adapt product lines or new products to environmental requirements.

As far as staff training is concerned, we have consultancy contracts with specific companies in the environmental field with regard to company certifications involving ISO 14001 and FSC. These companies often come to the company to carry out audits, but in that case also to provide a minimum of training for the staff, for the head of the technical department, or to adapt all the forms and the part relating to the process of creating and complying with the required standards. The audit comes to verify that the company follows a process between purchasing, transformation and sale that must step by step comply with certain criteria. It's almost like self-training because there are no tangible references - the certifying bodies don't tell you what the path is that can best structure you by also training the staff. Let's say that intrinsically a conscience is born and the people in the company (which in this case are 2 or 3) have trained themselves over the last 5 years on the environmental issue of the product or tend to adapt because the specifications or the compilation of forms are always changing, as will also be the case for the next MEC decree – also in this case we are not training but introducing a new figure in the company, a management engineer who will follow the impact part of this new

request from the ministry in relation to each individual product, creating ecological compatibility or environmental impact sheets for each individual component of the product itself.

The problem for the company is that we feel that these documents that are filled out, the PA officials themselves don't know what they mean. It is very rare to find a public body that has in-house training. They issue notices referring to ministerial decrees or similar, but for the technical staff who have to carry out the evaluation of the notice itself, the more paperwork you provide, the better. But in general, we receive little feedback from the administrations, in the sense that it has never happened that anyone has called us to ask for clarification of the papers we have provided. That's why, in my opinion, there are not always verifications by the PA.

Unfortunately, in the world of public entities, the Ministry of the Environment issues a decree that impacts the entire supply chain and the structure of public tender management, asking for sacrifices from companies, which these companies can make according to their availability. We are a structured company with a good annual marginality, so we have the possibility to invest year by year on the needs that the market places on us and on the development of new products, but there are also one-man companies that cannot sustain these costs. Even for the Municipality of Padua, the company that wins the tender is often the one that wins on price. The impression is that, when there is convenience for the municipality, there is often little incentive to look at the other papers as well, and appeals don't happen because the amounts of the contracts are in some cases so low that they would simply be too onerous.

Answer 4. *Neither one nor the other. It is a necessity to be in the market, a 'duty to pay' that sometimes has a negative impact on the company's research and development path. Sometimes we subtract economic resources from the possibility of innovating and developing because the annual budget we allocate to regulatory compliance aspects in order to participate in public tenders is often deducted from the expenditure on research and development of products and even raw materials. Therefore, it is often difficult to innovate. I will give you an example of an innovative composite product, normally used in the recreational vehicles industry. It is a recycled material with two external layers of wood fibre material and an internal cavity of recycled expanded polystyrene, which provides the same technical guarantee as a normal panel, but reduces the weight of the panel by 45%, thus allowing a lower environmental impact in terms of materials consumed for production, and therefore fewer emissions and less exploitation of resources in general. The problem is that the product has not yet been introduced to the public market because it cannot be tested. On the contrary, the company has to spend money to obtain other certifications.*

Answer 5. *If I had to give advice to a new entrepreneur to invest in this sector, I would advise against it a priori. The problem is that there is a low margin in transactions with public bodies. Those who are in it now stay in it, perhaps trying to diversify the market, perhaps going abroad as we are doing, participating in European calls for tenders in Brussels, where the European economic community guarantees its employees the use of educational services for their children. This was a 1.2-1.3 million euros tender, and there are virtually no certifications required. There were certain company certifications required, but no product or material certifications. This is different from Italian tenders, where so many certifications are required for much lower value supplies. I don't think that fewer certifications means buying products that are less safe, they probably know that, in order to leave competition free, you mustn't restrain it with documentation and certifications, which in Italy has reached exasperating levels. Therefore, today, an entrepreneur who decides to enter this sector would have to invest 200-300 thousand euros just to think that one day he/she could participate in calls for tenders. This is a situation that doesn't exist in any other economic sector: I have worked for 25 years dealing with very large industries such as Fiat or Magneti Marelli, in various sectors I have always sold safe and durable products. Why have I never been asked for certification to sell them? I believe the difference is that the bureaucrats in the public offices need to protect themselves against risks. In some cases, when companies produce in accordance with the standards, a self-declaration by the manufacturer could be sufficient, instead of paying for certifications that are ultimately not verified.*

To conclude, the problem is that there is a lack of verification of the documents required in the final act. I believe that administrations should invest in this: creating systems to verify compliance with the rules. I'll give you an example with regard to playgrounds: in these cases, there are companies that do sales activities like ours, but when children's toys are installed in a public park there is a third-party verifier who assesses that each individual product meets the standards, for example of safety. This does not happen in our sector: administrations trust the documents that companies provide, which are hardly verified.

Interview with FURNITURE2

Answers received by email on 27 May 2021

Answer 1. *The introduction of the criteria has forced both us and our suppliers to comply with them in every aspect. They have therefore been a stimulus to review the production process at least for PA products.*

Answer 2. *I would say ethical motivations, combined with the need for 'modern' development.*

Answer 3. *All these things were not done solely to participate in tenders, but with a view to business development.*

Answer 4. *The difficulties are often economic: I personally believe that environmental sustainability is not compatible with 'lowest price' negotiations. The benefits are primarily visibility. Nowadays it must also be said that PA means security of payment (something that could not always be sustained in the past).*

Answer 5. *It is difficult to advise: there are many aspects, and often you just risk wasting time. However, I think the important thing is to be professional and to be able to offer a product that really succeeds in meeting the criteria and requirements.*

Interview with FURNITURE3

Telephone interview conducted on 27 May 2021

Answer 1. *We had already taken this step because, in recent years, public authorities have been demanding certain criteria in order to participate in tenders and 80% of our products are aimed at the public sector. However, as a company, we were already keen to offer products that met the sustainability criteria.*

Answer 2. *It is mainly a business matter because, in order to work with the public administration, it is a fundamental requirement. Therefore, it was necessary to change the type of products offered, in order to be able to work with the public sector. It must be said that it is also a matter of ethics and corporate conscience.*

Answer 3. *Investments have certainly been made to set up training courses, which we have entrusted to external bodies. In addition, we have had to look for new suppliers.*

Answer 4. *Benefits have been felt in terms of participation in tenders, as companies that are first to meet the PA's requirements have a better chance of winning the contract. As far as difficulties are concerned, you always have to keep up to date with new regulations and new characteristics required, but this is part of the job itself.*

Answer 5. *I believe it is important for companies to study the regulations well and to be prepared with regard to sustainability criteria, otherwise there is a risk of participating with*

products that do not meet the requirements, and of making investments and not being able to win the contract.

Interview with FURNITURE4

Telephone interview conducted on 28 May 2021

Answer 1. *For some of them we already complied with, for example those on coatings, cardboard, or the presence or absence of harmful components in materials. For other criteria we had to ask our suppliers for declarations, and based on those we made declarations that our products complied with the MECs.*

Answer 2. *Our main motivation was the fact that respect for environmental sustainability is required in many public tenders, and we are sure that it will be increasingly required in the future. Of course, there is also an environmental conscience within the company, but this is less important, because I believe that, if a company had to change everything just because of environmental conscience, it would be too expensive.*

Answer 3. *We didn't have to change anything within the company. What we did was to request declarations of compliance with the MECs from our suppliers, therefore we have certifications of individual components but not of the total product. As far as training courses for personnel are concerned, we have never felt the need to activate them.*

Answer 4. *We have had some difficulty in building non-catalogue models to meet the requirements, which are sometimes not exactly those of the models we normally produce. On the other hand, one of the benefits is certainly the possibility of selling products all over Italy, even far away from the area where we are located, which was not possible in the past.*

Answer 5. *I would advise reading carefully all the requirements, which are often many and maybe not corresponding to the characteristics of the final product, because the person in charge of purchasing is not always aware of all the characteristics that a product must have. For example, it may happen that many people request the CE marking on the product, but this should only be put on certain types of product (such as electronic products), not on office furniture. In my opinion, this is an imprecise request from someone who is not very familiar with the product. I would also recommend paying attention to the documents you upload: many times, you are excluded because you forget a document or upload one that is not filled out properly. One last piece of advice I would give is to have many models in the catalogue that meet the requirements of the PA, which often make similar requests for products, and if a*

company does not have them in the catalogue it must modify them in order to participate in the calls for tender.

Interview with TEXTILE1

Answers received by email on 1st June 2021

Answer 1. *For some years now, the majority of fabrics have been produced in accordance with all sustainability regulations, and all of them are OEKO-TEX certified. This means that some products meet the sustainability criteria, while others do not, especially in the area of high visibility clothing. In the next few years it will be compulsory to have certified products because PAs increasingly demand products with certain sustainability characteristics.*

Answer 2. *Both the increasing attention given in recent years to the environmental issue and the demands from public authorities, but also from private individuals, for sustainable clothing produced with certain production processes.*

Answer 3. *Our company relies on external laboratories for production, so we haven't made many investments. Let's say that certifications have to be acquired through specialised laboratories. Then you have to keep up to date and learn all the new regulations on sustainability and the processes required to obtain certifications. No further investments have been made.*

Answer 4. *There have been no benefits because there is a fundamental problem: clothes with certain certifications naturally cost more, while over the years the public administration has reduced its budget for the purchase of clothing. Therefore, a product with higher quality and certifications is required at lower prices than before. In addition, many companies still do not have these certifications, so it is also difficult to fulfil certain requests.*

Answer 5. *I would suggest to specialise in a specific product category and focus on product quality because, in recent years, the profit margin has decreased more and more and competition has increased. It is also necessary to be well informed about the various regulations given the growing demand for documentation from the PA.*

Interview with TEXTILE2

Telephone interview conducted on 1st June 2021

Answer 1. *For five to six years now, our company has been opting for environmentally sustainable products. These criteria are ecolabel criteria that must be met by the companies we work with (dry cleaners, yarns, packaging and everything related to the textile chain). Moreover, in Lombardy, and mainly in the province of Varese (where the company is based), companies have been required to comply with certain ecological standards for at least 30 years, since the province of Varese has always been very attentive to the sustainability criteria to be met. I would mention, for example, the Cotton Textile Centre, which is the qualified body to issue Oeko-Tex certification, which is located in Busto Arsizio, in the province of Varese. We ourselves always try to work with companies that comply with environmental criteria, and that have Oeko-Tex certifications, even though the cost of the product may be higher than those produced by companies that do not have to comply with certain characteristics.*

Answer 2. *The motivation for adopting this business model is an awareness of the environment and the desire to offer a product that meets high quality standards. In fact, our company works mainly with public bodies such as nursery schools, to whom we supply products such as bibs, sheets and blankets. We therefore try to offer appropriate products because these types of items are in direct contact with children. Of course, we always try to improve the quality of our articles because, if you want to work with the public administration, this is always important.*

Answer 3. *We have had to make a careful selection of our suppliers, trying to pick those who can guarantee a production process that meets the required standards, even though it is possible to find products on the market at much more competitive prices. As a manufacturing and trading company, working mainly with subcontractors, we did not have to spend money on buying new machinery or acquiring new certifications. One step we would like to take in the next few years is to have our products Oeko-Tex certified in our own name, and not in the name of the suppliers we work with.*

Answer 4. *I would say that, for us, it has mainly brought benefits. It is true that we have had to face a considerable change, because until six years ago, the relationship with the purchasing department of the public body was much more direct, in the sense that there was a telephone contact or a meeting to get to know them, but the range of action to offer your product was much more limited. For several years now, however, it has been possible to participate in tenders throughout the whole national territory, and this is a great benefit, although there is*

still the downside of not having such direct contact with your interlocutor, as there was a few years ago.

Answer 5. *I believe that, in order to participate in public tenders, you have to offer quality products. If the article does not meet the customer's expectations, it is difficult that the PA will call you back for a second procurement. On the other hand, if the PA is satisfied with your products and services, they are likely to come back and invite you to tenders.*

Interview with TEXTILE3

Telephone interview conducted on 4 June 2021

Answer 1. *We try to do what we can to meet the sustainability criteria, even though we have seen that PAs, at least for our sector, do not require them. Therefore, it is a voluntary choice that we have adopted. As for the municipality of Padua, it has always been very attentive to the quality of fabrics, for which it initially required Oeko-Tex certification. However, they have not yet required fabrics made of recycled or recyclable materials, although our company is moving in that direction, requesting these materials from our suppliers. Even the pens we use in the office are made of recycled material.*

Answer 2. *It was a corporate choice, even though we are aware that these are more expensive choices. We try to work on many corporate behaviours, for example using pens made of recycled material in the office, or replacing plastic coffee cups. We also ask our suppliers for lists of products that meet sustainability criteria, both environmental and social.*

Answer 3. *Yes, of course. We had to acquire new certifications, such as SA8000, which certifies certain aspects of company management relating to corporate social responsibility. In addition, we have installed a semi-automatic dust recovery system in the workshop.*

Answer 4. *It has led to considerable difficulties in terms of the documentation to be submitted in order to participate in the calls for tenders. On the other hand, it has also brought benefits, especially from an economic point of view, because there is the possibility to participate in many tenders. In addition, through the Mepa platform, we have the possibility of selling all over the country, whereas before we only worked in Padua and its province. I believe that to work at these levels you definitely need a well-structured company that has the necessary certifications and produces high-quality products.*

Answer 5. *My advice is to have your products certified, even if you are a small company. The important thing is to do it in the right spirit, i.e. to want to change your way of working and*

improve it. Some people think that certifications are useless, and that they are just a waste of money because they are not requested. In my opinion, if everyone worked with the spirit that we have, things could change for the better. It is true that it costs money to obtain certifications, but once you have obtained them, the benefits are noticeable.