

# **The Applied Law and Economics of Public Procurement**

**Edited by Gustavo Piga and  
Steen Treumer**

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# 8 Is public procurement going green?

## Experiences and open issues

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### 1 Introduction

Since the 1992 Conference on Environment and Development of the United Nations in Rio de Janeiro, sustainable development has been considered as a common goal for human beings by many countries throughout the world. Green Public Procurement (GPP) has been brought up for its remarkable potential contribution to such a goal. Green Public Procurement/Purchases encompasses all activities that aim to integrate environmental concerns into the purchasing process of public entities, which in turn impacts the whole production chain.

GPP means that purchasing agencies take into account environmental aspects when purchasing goods and services (Nissinen *et al.*, 2009) and, as a subset of sustainable procurement, it is considered as one of the key policies to promote changes of unsustainable consumption and production patterns (Tukker *et al.*, 2008; Clark, 2007).

Public purchasing is indeed a promising tool to boost the development of green procurement, as public authorities are at the same time responsible for environmental policy design and significant actors in green markets. In the latter respect, public purchasing accounts for around 16 per cent of the EU's GDP, with much larger shares in specific sectors, such as, for instance, IT, energy-efficient buildings and public transportation. Turning to single countries, in 2006 the Swedish authorities purchased goods and services totalling between 450 and 535 billion SEK, which corresponds to 15–18 per cent of annual GDP (Brännlund *et al.*, 2009). GPP development has another striking example in Germany where practical GPP guidelines have existed for almost 20 years (Gunther and Scheibe, 2006).

The European Commission (EC) is encouraging the deployment of cost-efficient GPP (European Commission, 2008a) and, in compliance with the EU's Integrated Product Policy (IPP), Member States have been encouraged to develop national action plans. As a result, the role that authorities play in procurement has grown in importance, at both national and EU levels. Nowadays, many countries have already adopted (at least preliminary) steps in the direction of greening public purchases (Li and Geiser, 2005). Crucial research questions arise:

- 1 Is GPP indeed an effective environmental policy rule?



- 2 How to shape GPP institutions in the broader public procurement setting?
- 3 How to measure the degree of 'greenness' of public procurement?

Starting from these questions we aim to provide food for thought on the design of public procurement and, where possible, to identify the relevance of such questions in the application of GPP by Italian authorities. Our focus cannot be on a comprehensive and detailed analysis of what is green and what is not in Italy. However, we will make a preliminary step in this direction, by summing up some desirable GPP experiences in the EU and in Italy and by highlighting some crucial open issues.

## 2 The legislation status

### 2.1 At the European Union (EU) level

In 2001, EU published the Green Paper on Integrated Product Policy (IPP) and raised interest towards product-oriented environmental focus (European Commission, 2001). The aim of IPP is to reduce the environmental impacts of products throughout their life cycle, taking into consideration also the market and competitiveness concerns (European Commission, 2001, p. 6). Increased demand for greener products by GPP, in competition with the more traditional products, is well suited to this market oriented approach of IPP. Environmentally responsible public procurement can also be seen as a driving force in the integration of environmental policy instruments in the purchasing process (Li and Geiser, 2005). The preparation of new related directives in the EU between 2001 and 2004 fostered active debate regarding the possibility to use environmental grounds in public purchasing, and also the Organization for Economic Co-operation and Development provided a recommendation on GPP in 2002 (OECD, 2002), according to which the OECD member countries agreed to improve the environmental performance of public procurement.

In 2004, Directives 2004/17/EC and 2004/18/EC were approved by the European Parliament and the European Union Council of Ministers, with the aim of simplifying and modernizing procurement procedures, increasing competition and transparency, and explicitly including environmental criteria in the public purchases procedures. The very recent EU Public Procurement Directive Proposal (European Commission, 2011), which is expected to replace the 2004 Directives, reinforces the role of GPP as a key part of the Europe 2020 strategy and as one of the market-based instruments aimed at supporting a shift towards a resource efficient and low-carbon economy.

Also relevant to GPP is the publication of the Communication on Public Procurement for a Better Environment (European Commission, 2008a), which sets out 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'. Such Communication established, in particular, an ambitious (though indicative) target according to which 50 per cent of all public tendering procedures should have been compliant with core EU GPP criteria by 2010.

After such Directives and Communications, the EU renewed the Sustainable Development Strategy in 2006, and in 2008 the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan was published, aiming at improving the energy and environmental performance of products and at increasing the demand for more sustainable goods and production technologies. Along with the EU 2020 strategy, the Action Plan has set specific goals for the GPP in terms, for example, of energy saving and energy efficiency. More generally, the EU legislation on environmentally sustainable consumption and production has evolved rapidly in the last few years, together with the related (explicit or implicit) obligations for the public sector. Relevant examples include:

- energy end-use efficiency and energy services Directive (2006/32);
- waste Directive (2008/98), explicitly underlying the role played by public purchasing authorities in waste reduction and management;
- Directive on the promotion of clean and energy efficient road transport vehicles (2009/33);
- COM (2011) 109, setting out an energy efficiency plan explicitly accounting for a key role to be played by public purchasing authorities and with a particular focus in public building restructuring and adoption of sustainability enhanced criteria.

Besides the guidelines, which aim at instructing the practices of GPP, in 2006 Public Procurement Remedies Directives (Directives 89/665/EEC and 92/13/EEC) have been revised, in order to improve the effectiveness of national review procedures for the award of public contracts. Directive 2007/66/EC provides for rules aiming at obtaining a clear and effective procedure for bidders who consider contracts have been unfairly awarded to seek redress. The Directive gives to the rejected bidders the opportunity to start an effective and timely review procedure, when unfair decisions can still be corrected, and also seeks to combat illegal direct awards of public contracts, considered as the most serious infringement of EU procurement law.

Clearly, a crucial issue in the process of reshaping public purchases is related to the assessment of what can be considered good or acceptable under an environmental perspective (Larsen and Svane, 2005) and to the evaluation of whether such assessment should be expanded to other relevant dimensions. Significant complications would indeed arise as a result of a wider focus, taking into account a broader set of objectives. The tools to be developed are expected to vary, for example, if we somewhat limit our attention to issues related to environmental consciousness in public purchases or if, more broadly, we choose to also account for other social and ethical problems, such as deprivation, human health etc.

The appropriate definitions as well as the optimal degree of integration of environmental issues in the more general development strategies of countries are outside the scope of this chapter. We only point out that the more ambitious the definition, the more difficult the related implementation. Indeed, we can expect that a broader set of objectives might be related to a larger complexity and to the possibility of several trade offs arising.

Although we recognize that the environment is not the only crucial dimension to be accounted for in discussing the desirable design of public procurement procedures, we deem the achievement of an overall rethinking of public purchases as a long-term objective, and we will focus our attention on the ‘narrower’ concept of GPP in the rest of our work.

## 2.2 Domestic laws and regulations

In Italy, the Public Procurement Code (approved by Legislative Decree April 12, 2006, no. 163, which entered into force on July 1, 2006 – hereinafter referred to as the ‘Code’) governs public procurement. The Code has put together the previous Italian pieces of legislation on public procurement into one single text. As far as its scope is concerned, the Code covers public works contracts, public supply contracts and public service contracts.

Coherent with the EU legislation, a National Action Plan (NAP) on GPP has been adopted in 2008; this plan is being implemented by an inter-ministerial committee and is being supported by an advisory board consisting of a body of representatives which includes scientists and stakeholders from all the involved sectors. The NAP establishes three main goals for GPP in Italy:

- efficient usage and saving of natural resources, especially energy;
- waste reduction;
- reduction in hazardous substances use.

Also, it requires that at least 30 per cent of goods purchased by public administration comply with ecological criteria and at least 30–40 per cent features reduced electricity consumption. The NAP defines strict core criteria for GPP, leaving however space for adjustment through specific requirements concerning single issues (tender design, minimum requirements, etc.). Subsequent decrees by the Italian government introduce explicit provisions concerning tender design issues.

Relevant examples in this respect include:

- D.P.R. n. 205/2010: art. 6 amends the Code by introducing art. 180 bis concerning the role of public administrations in promoting initiatives to boost reuse and recycling of waste.
- D.P.R. n. 207/2010: art. 120 introduces the obligation for public purchasers to include environmental criteria in evaluating the most economically advantageous offer (see below).

Other decrees were also approved between 2009 and 2011, to ratify existing EU Directives as well as to regulate specific issues (for example in October 2010 and in February 2011 minimum requirements concerning specific goods and services were introduced).

### 3 Is GPP an effective environmental policy tool?

A first broad question which is somewhat in the background of our chapter is related to the effectiveness of GPP in obtaining environmental policy objectives (energy savings, waste and pollution reduction, etc.) As Brännlund *et al.* (2009) underline, though generally regarded as an effective means to secure environmental improvements, GPP has been little studied within a framework of welfare economics. From this perspective the authors assess GPP as an environmental policy tool and compare it to other tools, such as taxes. Effectiveness and efficiency of environmental policy instruments is the subject of a substantial amount of literature (see, among others, Tietenberg and Lewis, 2009). Brännlund *et al.* (2009) show that the standard cost-effectiveness argument (equalization of marginal costs of environmental care) is likely to be violated by GPP procedures, while other instruments (pollution permits, environmental taxation) are, at least theoretically, capable of achieving an efficient (i.e. least cost) outcome, for a given environmental target. An example in this respect can be based on the uniformity of environmental requirements across potential tender participants. As a result of such uniformity heterogeneities across participants are not exploited and marginal costs are not equalized. Such inefficiency is however somewhat reduced if we focus on awarding criteria: giving the same weight to environmental performance implies that firms featuring smaller marginal costs of environmental protection will be able to offer, *ceteris paribus*, a better deal, improving the efficiency of the tendering process.

Turning to the impact of GPP on market competition, Brännlund *et al.* (2009) have underlined that it is a purely empirical question. The net outcome is in fact difficult to establish theoretically, and it is likely to be market specific. Also, the impact on price can be counterintuitive, i.e. a larger competition might be coupled with higher prices, due, for example, to adjustment costs by bidding firms. Reverting again to the environmental requirements example, stricter environmental conditions will imply more or less competition depending on the number and size of firms that gets out of the tendering process (as they do not meet the required standards) or choose to participate (as they are capable of complying with the standards).

Finally, in the reduction of the environmental impact of public purchases the authors show that GPP can be linked in a very weak way to environmental improvements, as procurement procedures are likely to account for such improvements in an 'indirect way'.

These considerations suggest that further theoretical and empirical research is needed to investigate the proper role of public procurement in coping with environmental issues. As Walker and Phillips (2006) underline, the majority of sustainable supply research has been conducted in the private sector, though (mainly empirical) literature on the greening of public purchase is growing.<sup>4</sup>

A general conclusion would suggest that GPP is more likely to be an efficient policy choice in sectors where standard environmental policy instruments are difficult to be implement and/or are in their very early stages. Also, we can expect it to be fruitful when it is introduced in sectors characterized by relatively

new technologies (recycling, renewable energy), where the exploitation of economies of scale and scope is necessary to improve the competitiveness of firms operating in such sectors. On the other hand, we deem as very unlikely the chance for GPP to be an effective policy tool in sectors where public intervention is already well established. However, as the judgment of GPP as an effective and efficient policy tool is necessarily based on a case-by-case analysis, we can conclude that a first open issue arising from our chapter is related to the need of assessing welfare effects of existing and future GPP practices in Italy.

## 4 Green practices in the EU and in Italy

### 4.1 Good environmental GPP practices in the EU

Several examples of GPP implementation in the EU suggest that a significant effort is being devoted to progress along the GPP pathway.

The EU Commission has published a guidebook in several languages (European Commission, 2004), and national guidebooks have also been published (e.g. in Finland in 2004).

Also, the EC with Communication 400 in 2008 focuses on the removal of obstacles to a full implementation of GPP procedures in the EU. Several hurdles are identified under this respect, including:

- limited established environmental criteria for products/services as well as the absence of publicity mechanisms;
- insufficient information on life cycle costing of products and the relative costs of environmentally friendly products/services;
- low awareness of the benefits of environmentally friendly products and services;
- uncertainty about legal possibilities to include environmental criteria in tender documents;
- lack of political support and resources.

The Communication then sets out objectives, funding as well as core sectors. In targets setting, a major role is acknowledged to several Member States who took the lead in promoting GPP practices. For example, the Dutch government has set a 100 per cent Sustainable Procurement target to be reached by 2010; the Austrian government has identified ambitious targets to be met by 2010 for relevant sectors, such as IT, electricity and paper. France has set equivalent, though apparently less ambitious, targets in terms of 'clean' vehicles. Finally, the Sustainable Procurement Action Plan in the UK aims to reduce the government's carbon emissions by 30 per cent by 2020.

Significant guidance is provided by the EU. We do not go into details.<sup>5</sup> However, it could be useful to provide additional details on the actual implementation status in the EU as well as to exemplify how green criteria are currently integrated into the public procurement procedures (see Table 8.1).

Table 8.1 Priority sectors and green criteria in selected sectors

<i>Product group</i>	<i>Product</i>	<i>Core criteria</i>	<i>Comprehensive criteria</i>
1	Cleaning products and services	Cleaning services (including cleaning products)	<ul style="list-style-type: none"> <li>• Use of cleaning products without hazardous substances</li> <li>• Training of employees</li> <li>• Use of reusable microfibre clothing and/or dry-cleaning techniques</li> </ul>
2	Construction	New buildings and offices	<ul style="list-style-type: none"> <li>• Consideration of energy – saving measures in design and usage phase of building</li> <li>• Use of localization renewable energy sources</li> <li>• Water-saving technologies in kitchen and sanitary facilities</li> <li>• Use of material without hazardous substances</li> <li>• Use of timber from legal sources</li> <li>• 50% of higher electricity from renewable energy sources</li> </ul>
3	Electricity	Electricity	<ul style="list-style-type: none"> <li>• 100% electricity from renewable energy sources</li> </ul>
4	Catering and food	Catering services (including food)	<ul style="list-style-type: none"> <li>• Organic production of food products</li> <li>• Use of seasonal fruit, vegetable and fish</li> </ul>
5	Gardening	Gardening services and machinery	<ul style="list-style-type: none"> <li>• Fuel type use of gardening machines</li> <li>• Use of soil improvement without peat and sewage sludge</li> </ul>
6	Office IT equipment	Computers (desktops and laptops) and monitors	<ul style="list-style-type: none"> <li>• Energy star standards</li> <li>• Accessibility and changeability of memory hard disks and/or CD/DVD drives</li> </ul>
7	Paper	Copying and graphic paper	<ul style="list-style-type: none"> <li>• Production from recovered paper fibres</li> <li>• Use of ECF/TCF paper</li> <li>• Pulp production from sustainable managed forests for paper based on virgin fibres</li> </ul>
8	Textiles	Clothing	<ul style="list-style-type: none"> <li>• Oko-Tex Standard 100</li> </ul>
9	Transport	Passengers cars and light duty vehicles	<ul style="list-style-type: none"> <li>• Maximum CO<sub>2</sub> emission per vehicle segment</li> </ul>
10	Furniture	Office furniture	<ul style="list-style-type: none"> <li>• Euro 5 standard</li> <li>• Use of wood from legally sources timber and sustainably managed forests</li> </ul>

Source: PricewaterhouseCoopers *et al.* (2009).

Table 8.1 sums up core and comprehensive criteria related to a selected set of sectors and green environmental targets. Core targets address the most significant environmental impacts, and are relatively easily verifiable, while comprehensive targets are related to the achievement of more ambitious objectives which require more effort and more difficult verification. Such targets are coherent with the GPP training toolkit developed by the EU.

PricewaterhouseCoopers *et al.* (2009) provide details on the status of actual implementation of GPP practices in the so-called Green-7 countries (Austria, Denmark, Finland, Germany, the Netherlands, Sweden and the UK). Figures 8.1 and 8.2 represent the relative relevance of core and comprehensive criteria in terms of value and the number of contracts respectively.

As it clearly emerges, the Green-7 countries accounted, on average, for around 45 per cent of the total value and 55 per cent of the total number of contracts in 2006/7.

The same report underlines how GPP procedures in the Green-7 have generated significant environmental gains, at least in terms of CO<sub>2</sub> emissions, that on average have been reduced by 25 per cent with a maximum of -47 per cent in the Netherlands (see Figure 8.3).

Also, we can conclude that the evaluated GPP procedures have made win-win improvements in several cases, i.e. they also generated significant financial gains in terms of cost reduction.

Finally, PricewaterhouseCoopers *et al.* (2009) focus on the combination of CO<sub>2</sub> and financial impact, and conclude that transport, construction and electricity

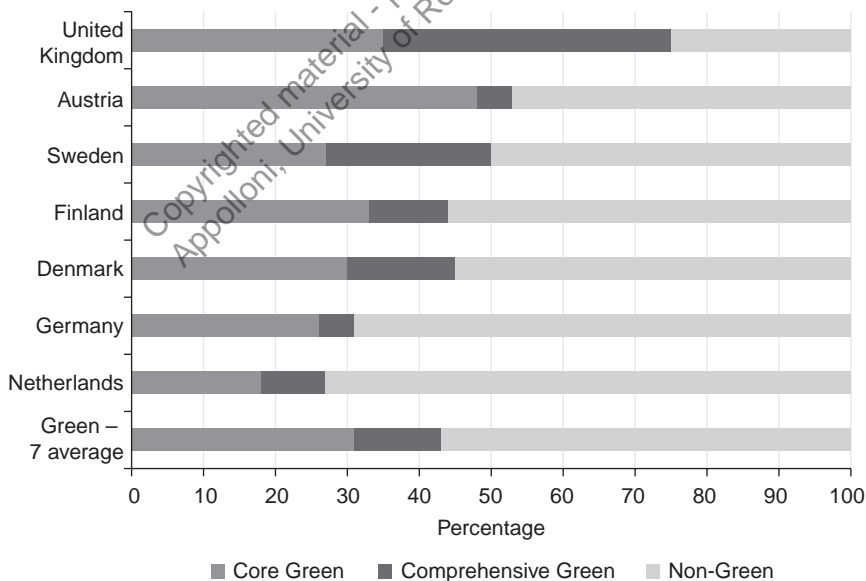


Figure 8.1 Relevance of GPP on total public procurement in terms of value (source: PricewaterhouseCoopers *et al.*, 2009).

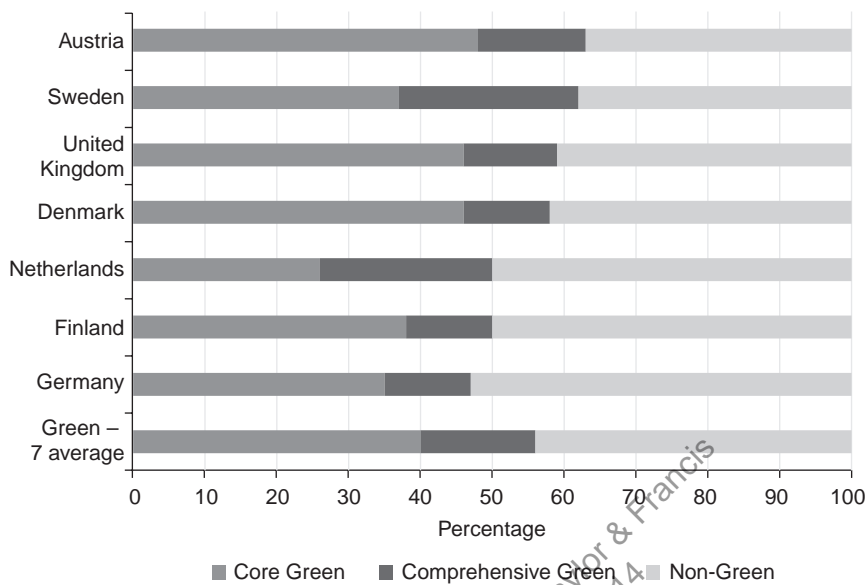


Figure 8.2 Relevance of GPP on total public procurement in terms of the number of contracts (source: PricewaterhouseCoopers *et al.*, 2009).

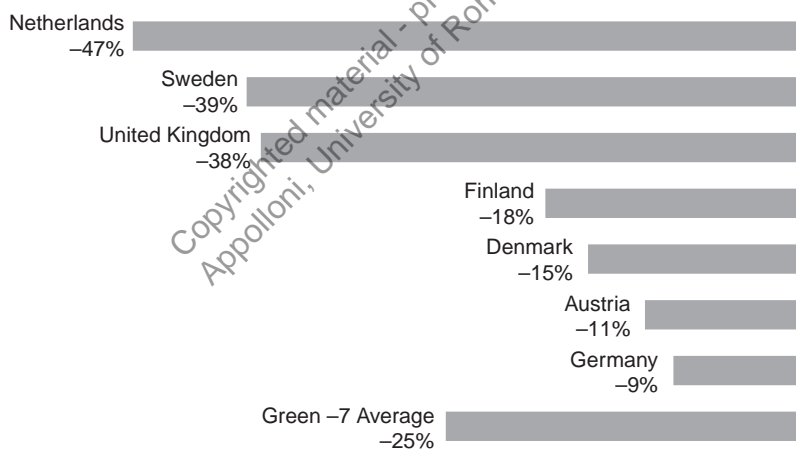


Figure 8.3 CO<sub>2</sub> impact of GPP per country (source: PricewaterhouseCoopers *et al.*, 2009).



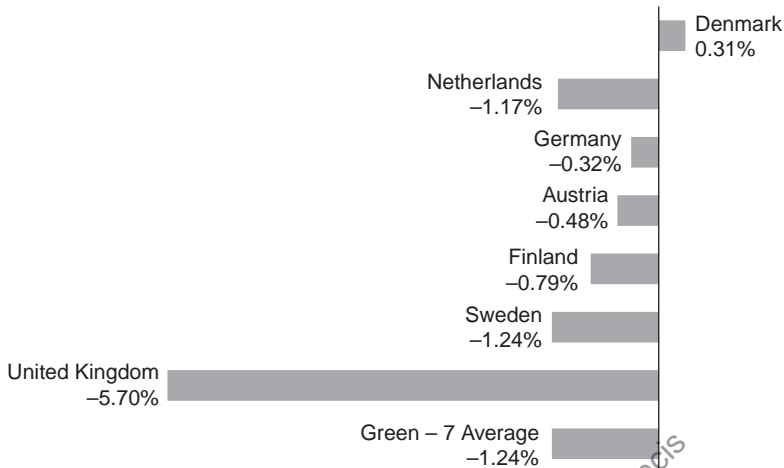


Figure 8.4 Financial impact of GPP per country (source: PricewaterhouseCoopers *et al.*, 2009).

are sectors that deserve attention from the public procurement authorities, as they appear to be the most cost-effective in terms of the reduction of environmental impact per euro spent. Additional, more detailed assessments of the status of GPP implementation in the EU are out of the scope of this chapter, and can be found, among others, in AEA (2010), while a detailed analysis of the related costs and benefits can also be found in Öko-Institut E.V. and ICLEI (2007) with reference to 2006/7.<sup>6</sup> Also, additional evidence, mainly referring to the Nordic countries, will be presented in section 5.3.

#### 4.2 GPP implementation in Italy

As the last section has clarified, GPP brings about significant environmental benefits that might well be coupled with financial gains to contracting authorities. Turning to Italy, legislation has progressed towards a larger implementation of GPP, and several aspects of public purchases are now subject to environment related regulation and incentives. The current status of GPP in Italy appears, however, scattered, with several virtuous cases but compliance and management efforts that still appear weak and lacking a kind of national coordination. As a result, it is difficult to provide a comprehensive idea of the development of GPP in Italy. However, several examples can be provided, to give a flavour of how matters are developing.

Consip S.p.a. is a first significant example; Consip is a public stock company owned by the Italian Ministry of the Economy and Finance (MEF) that operates on behalf of the state, within the framework of the strategic guidelines and tasks given by MEF itself.<sup>7</sup>

Consip has no profit goals and deals with two main fields of action:

- 1 consultancy on technical and organizational projects;
- 2 set up, diffusion and support on e-procurement system and tools.

Under an environment/sustainability point of view, several specific initiatives have been undertaken over time by Consip, including IT and energy efficiency related projects. Table 8.2 shows an application of environmental criteria to IT procurement according to Consip strategies. As it clearly emerges, sustainability criteria are accounted for in the whole life cycle of IT machineries, from the design and the production phase, down to the end of life and the management of the related waste.

The estimated environmental impact and cost savings are significant. For example, improved energy efficiency is expected to bring about around €1,575 million in terms of cost savings.<sup>8</sup>

Another example might be found in the framework contract on 'Integrated Energy Management Services' (heating services including improvement of energy efficiency, consumption reduction and CO<sub>2</sub> emissions avoidance) launched by Consip<sup>9</sup> in 2006. The tendering process was an open procedure with 12 lots awarded to five different suppliers; the framework was awarded on the basis of the most economically advantageous tender (MEAT), with 70 per cent of marks allocated to price and 30 per cent to quality. Significant effects have been obtained both in terms of cost savings (27 per cent, involving approximately 5,000 buildings) and in terms of energy savings (around 6,000 tonnes of oil equivalent).

Several other GPP initiatives have been implemented in Italy. These include, among others:

- The ARPAT (Agenzia Regionale per la Protezione Ambientale della Toscana, the Environmental Protection Agency in Tuscany), where a pilot GPP project for cleaning services for two of its 19 offices was introduced in 2004. Due to the results, in March 2009, the procedure was replicated on a broader scale to encompass all of its offices. The procurement was an open procedure for a three-year contract worth €2.2 million – 11 bids were submitted.

Table 8.2 Consip approach to GPP in IT public procurement

Design	Production
<ul style="list-style-type: none"> <li>• Increase of energy efficiency</li> <li>• Cost reduction</li> <li>• Environmental impact reduction</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction/elimination of use of hazardous substances</li> <li>• Decrease of environmental impacts</li> <li>• Optimization of carriage packaging</li> </ul>
Use	End of life
<ul style="list-style-type: none"> <li>• Correct energy use management</li> <li>• Information management on environmental impacts</li> <li>• Use of alternative sources of energy</li> </ul>	<ul style="list-style-type: none"> <li>• Reuse</li> <li>• Recycling</li> <li>• Disassembly of equipment</li> <li>• Recycling of consuming materials</li> </ul>

Source: Capparelli (2011).

- The Municipality of Rome, in 2001, began a programme called 'Sustainable Food Procurement for Schools in Rome' in 2001 which aimed to support organic agriculture and organic food chains, and its most recent call for tender for the school food service covers the period September 2007 to June 2012 and has a base value of approximately €355 million. This programme has improved the market in terms of sustainability by procuring organic agriculture products and in turn has reduced the environmental impact of food production and the related activities.<sup>10</sup>

All the above pieces of evidence, though not exhaustive, have the merit to show that GPP is increasingly adopted in Italy.<sup>11</sup> On the other hand, several issues have yet to be addressed.

## 5 GPP: open issues

### 5.1 *The degree of centralization*

#### 5.1.1 *GPP and functional centralization*

According to Martimort (1996), the allocation of jurisdictions across governmental agencies can be analysed by means of models dealing with multiple principals in the presence of asymmetric information.

Indeed, government authorities cannot be viewed as a unique body pursuing a common objective but, rather, as a set of entities with different and somewhat diverging objectives. Also, the design of regulatory tools must be implemented in the real world, where there are significant informational asymmetries between regulated firms and government bodies.

In this respect, the example of GPP is straightforward: price reduction and environmental quality of tender outcomes are competing objectives that might be potentially pursued by competing authorities. It is therefore meaningful to investigate the costs and benefits related to the separation of duties among several regulators and/or the integration of functions in a single authority.

Baron (1985) models a regulatory setting close to the US framework, where a Public Utility Commission is interested in the welfare of an individual state's consumers and taxpayers but is also interested in the profit of the regulated firm(s) located in the same state, while a Federal Environmental Protection Agency is interested in welfare effects related to the environmental impact of regulated firms' activity at the whole country (i.e. federal) level. In Baron's setting an institutional ordering of jurisdictions is assumed, so that the Environmental Protection Agency is capable of free-riding on the regulatory design (and costs) imposed at a state level by the Public Utility Commission; as a result, environmental protection is stronger when the two authorities act in an independent way. Opposite results are obtained by Martimort (1996), where no ordering of jurisdictions is introduced: in a hidden information (i.e. adverse selection) context, both regulators design their intervention in order to free-ride as much as

possible on the capability of the other regulator's contribution to guarantee that a socially desirable project is indeed undertaken, leading to suboptimal equilibria and a lower likelihood that the beneficial project is performed.

D'Amato (2006) models a GPP setting (including also the possibility of moral hazard), where the environmental quality of public purchases changes under two possible institutional frameworks: a centralized one, where a single regulator is in charge of both production efficiency and environmental quality, and a decentralized one, where two separate bodies operate, namely an environmental agency securing environmental quality and a procurement agency pursuing efficiency. The main conclusion is that decentralization results in a downward distortion in environmental quality as compared to the case of a single integrated authority.

A conclusion stemming from the above papers is, again, that more applied research is needed. Indeed, the institutional scenario might change across countries and sectors, so that countries like the United States feature a federal-level EPA and state-level public utilities regulation while in other countries such as Italy no such ordering exists. Further, some of the standards for environmental quality in GPP might be set at a EU level while other environmental as well as non-environmental requirements might be set by Italian and other Member States government bodies. The assessment of the optimal regulatory setting can therefore be expected to be country and sector specific, and the theoretical analysis presented can be deemed only as a starting point towards a full understanding of the needed steps to achieve the best possible integration of powers in GPP management and design.

### *5.1.2 GPP and 'demand' centralization*

Demand centralization/decentralization is another hot issue in the shaping of the Italian procurement procedures that might have a significant impact in terms of environmental quality. Currently, there is no constraint for public purchasers to act in a cooperative way. As a result, several local bodies might be in charge of public procurement to satisfy local needs.

According to Albano and Sparro (2010), the main economic justification for public purchases centralization can be found in the need to reduce the related costs. It is a fact that several countries feature government level procurement agencies (the United States and the UK being two important examples). Cost savings are mainly related to the ability to reduce the buying price as well as to the reduction in transaction costs.

Under the first respect, a major role is played by the possibility to exploit the significant economies of scale that tender participants are likely to experience due to a larger production level, as well as the increased bargaining power the contracting authority would get by holding a sort of monopsony power.

On the other hand, the reduction in costs might also be related to the achievement of transaction cost reductions related to 'optimal' procurement process via specialization, investments in infrastructures (for example e-procurement tools), etc.

The impact of public procurement centralization can be significant also in terms of innovation. Indeed, public procurement might 'correct' the market outcome by internalizing positive externalities stemming from innovation, in a kind of 'market pull' approach. Such an approach would have the merit of providing firms developing new products and processes with less uncertainty in their potential market, therefore reducing the risk related to R&D investments. In this respect, environmental innovations and the reduction in the related risk are an important example. Also, in the presence of network effects, green purchases might boost a 'new' and/or environmental market by sustaining a learning by doing process on the demand side. More generally, as already suggested, centralizing public purchases might make it more likely that minimum production scales are reached in innovative sectors.

Another impact of public procurement centralization in innovative sectors is related to the expenses in financing R&D as well as educational programmes, which needs substantial budgets to be properly implemented.

Other significant reasons that might affect the way in which GPP translates into a better environmental quality are linked to the degree of positive or negative externalities stemming from public purchases. A first consideration under this respect suggests that a local authority might be willing to internalize pollution damages only to a very limited extent when the pollution problem at hand is of a regional or global nature (such as CO<sub>2</sub>), i.e. it mainly generates damages far from the source. This raises significant free-riding incentives, leading to too little weight potentially given to environmental quality in the awarding criteria and too weak environmental requirements to access the tendering process.

Another important issue has to do with the time horizon of procurement authorities and to the weight assigned to future benefits and costs (as measured by the discount rate). Consider the example of the functional obsolescence of the objects of a tendering process. A small purchasing authority is very likely not to have the specialized and highly qualified know-how that would be needed to account for the proper discount rate to perform a rigorous analysis of the costs and benefits related to obsolescence. Also, we can expect a smaller authority to have a smaller time horizon with respect to a larger authority. This is likely to lead smaller authorities to choose a suboptimal obsolescence and to put an inefficiently small weight on the duration of the procured good, leading to a larger than efficient impact on the environment. A straightforward example is related to IT purchases. A too large discount rate (a larger impatience) and a smaller time horizon would lead to buying cheaper computers featuring a quicker obsolescence, implying larger impacts on virgin material as well as a larger waste production.

Of course, procurement centralization also features significant difficulties, including the possibility of larger tenders to exclude smaller firms and, above all, the risk of lock-in related to the repeated nature of the procurement process. Also, a centralized procurement design might imply a lower capability of public purchasing authorities to account for local specificities in demand. Costs and benefits must therefore be carefully evaluated. However, the environmental

benefits of centralization might be worth the effort of designing procurement procedures in such a way to avoid lock-in or ‘excess scale’ problems, for example through the adoption of multiple lots tenders and limits to the number of contracts that can be awarded to each winner.<sup>12</sup>

## **5.2 How to put the environment in public procurement strategies?**

According to Piga and Zanza (2004), the design of public procurement involves several steps, including the number of lots, the length of the contract as well as participation requirements and awarding criteria.

We will focus in this section on two crucial parts of the tendering process design in the shaping of GPP procedures, namely requirements and award criteria.

### *5.2.1 Selection of participants*

As Palmujoki *et al.* (2010) point out, a first possibility for public contracting authorities to include environmental quality in tendering processes is by setting it as a prequalification of bidders, as mandatory requirements for the contract, or as contractual terms. Some examples in this respect include:

- the exclusion of companies that have acted against environmental legislation or regulations;
- the inclusion of green considerations in the technical capacity criteria in terms of the past experience of companies and of the professional qualifications of their personnel;
- the inclusion of environmental management systems, such as EMAS, or other eco-labels, such as the EU Ecolabel, as a means of proof for that technical capacity.

More generally, the selection of participants is an important albeit complex phase of GPP design. Indeed, several difficulties can be identified. First of all, according to EU legislation, mandatory requirements cannot be discriminatory, so that if, for example, the technical specifications imply that the EU Ecolabel is enough to guarantee technical capability, potential participants must be admitted also on the basis of other, equivalent, proofs of the same capability.

The following table represents a good example of ‘green tenders’ design using the EU Ecolabel. As it clearly emerges from the table, the use of an Ecolabel must guarantee that no discrimination takes place among bidders based exclusively on the Ecolabel itself.

Also, important trade-offs are involved at this stage, the most relevant being tight requirements vs. competition; for example, stricter technical specifications might imply that potential bidders are excluded from the tender, reducing the number of potential participants and, therefore, the degree of competition. This is why, in some cases, the tendering process can introduce mild environmental

Table 8.3 Using the European Ecolabel in GPP

*Using the European Ecolabel in GPP*

	<i>Right</i>	<i>Wrong</i>
Specification	All offered cleaning must meet the ecological criteria of the European Ecolabel	All offered cleaning products must carry the European Ecolabel
Verification	Products carrying the European Ecolabel will be deemed to comply. Any other appropriate means of proof will also be accepted, such as the technical dossier of the manufacturer or a test report from a recognized body	The products must carry a European Ecolabel
Award criteria	Additional points will be awarded to products that meet the ecological criteria of the European Ecolabel	Additional points will be awarded to the products that carry the European Ecolabel

Source: EC (2008b).

prerequisites and choose, instead, to use stricter environmental standards in the awarding criteria. This has been the case in the design of recent IT tenders held by the Italian public purchasing agency CONSIP.

### 5.2.2 Awarding criteria

Turning to awarding criteria themselves, they are indeed viewed as a crucial step in the design of any public procurement tender, and they can be very fruitfully used to address environmental issues. The existing public procurement Directives clarify that contracts awarding might be based on two main options, i.e.:

- the lowest price;
- the most economically advantageous tender (MEAT).

The first one only awards the contract to the bidder that succeeds in making the least costly offer, while in the second case a ‘scoring rule’ can be implemented, including criteria other than the price in the score according to which the contract is awarded.

Clearly, if the environment is an issue, using the lowest price as the only awarding procedure requires the other phases of the tender to be properly designed (for example in terms of technical specifications), while the MEAT implies that bidding can be left open to competition while the environment can be judged in the awarding procedure. On the other hand, the MEAT appears to



leave discretionary power in setting the scoring rule, with the risk of not accounting for the environment properly. As a result, there is no one-size-fits-all solution under this respect.

If the environment is included in the awarding criteria according to the MEAT, then the contracting authorities have to set out both the environmental characteristics and their scores in the call for tenders. Such scores must be publicly available and transparent; also, they have to be objectively quantifiable. Though such goals make it clear how difficult setting awarding criteria can be, commonly used procedures exist. Indeed, as the EC (2008a) suggests, a widely used methodology is Life Cycle Costing (LCC), properly including:

- purchase and all associated costs (delivery, installation, commissioning, etc.);
- operating costs, including energy, spares and maintenance;
- end-of-life costs, such as decommissioning and removal.

The adoption of LCC and, more generally, a life cycle approach to GPP can lead to significant cost savings in the public procurement procedures, a higher energy efficiency of buildings and IT equipment being two possible examples.

An evaluation of the relevance of awarding criteria in environmentally related public procurement procedures can be found in Kippo-Edlund *et al.* (2005). Using data collected in spring 2003, the authors conclude that 58 per cent of the Swedish tender calls included some kind of environmental criteria, but only 36 per cent included environmental award criteria. Environmental aspects were considered also in selection criteria (36 per cent of tender calls), technical specifications (39 per cent) and contract clauses (12 per cent). Another contribution, more focused on the role played by environmental considerations in MEAT, is the one by Parikka-Alhola *et al.* (2006), using data collected in the period 21 July–29 September 2005 in three Nordic countries (Denmark, Finland and Sweden), the authors find that the total price of the purchase accounts (on average) for 50 per cent of the awarding scores whereas quality accounts for 37 per cent of the scores. In addition, delivery and contractual terms are worth 7 per cent of scores and the environment is weighted on average 3.3 per cent of the scores. This suggests the interesting result that a bidder that accounts properly for environmental criteria can on average charge a price that is 3.3 per cent larger than a bidder that does not achieve good environmental scores. This is relevant information, as it suggests that some (although limited) gain can be obtained from making a greener bid.

Other examples confirming the tendency of GPP to focus on awarding criteria as one of the tools to provide incentives to environmentally friendly bids can be found in examples already reported in Section 4.2. Having said of the relative weight of energy efficiency in the Consip framework contract on 'Integrated Energy Management Services', it is also interesting to note that in the GPP example related to sustainable food procurement for schools in Rome, the awarding criteria specify that slightly less than half of the score (49 points) is supposed



to be assigned according to quality, including environmental criteria. An even clearer example can be found in the copying paper procurement framework contract designed in the Lombardy region in Italy. Award criteria include in this case the possibility to assign 20 technical points to competitors offering:<sup>14</sup>

- paper with FSC, PEFC, Blaue Engel, EU Ecolabel, Nordic Swan or equivalent certification;
- advance notice of delivery by email;
- use of a delivery service with green vehicles assessed through random checks on registration documents;
- use of a delivery service with green pallets (FSC or equivalent certification).

Finally, as clarified in Table 8.3, it is crucial to underline the need for awarding criteria to be designed in such a way as to be non-discriminatory. The related considerations made in discussing participants' selection also apply here.

### **5.3 Measuring the 'greenness' of public procurement: methodologies and further research**

The last issue we are willing to address is related to the need to measure whether public procurement is indeed green or sustainable. This is a challenging task for several reasons, mainly related to the difficulties in providing an objective (e.g. monetary) measure for certain kinds of environmental damages, as well as to the complexities related to the need of disentangling green characteristics from 'non-green' ones. For example, while it is relatively easy to spread the good news about improved energy efficiency and in terms of reduced (estimated) CO<sub>2</sub> emissions, it is not as easy to disseminate evidence concerning reduction in life expectancy and the related social losses.

A somewhat different hurdle lies in the very limited amount of available literature on the topic. More precisely, while several papers address the qualitative impacts and the design of public procurement procedures, very little effort has been devoted to the measurement of the degree of 'greenness' of public (as well as private) purchases (Walker and Phillips, 2006). Significant exceptions, however, exist.

The received literature has measured the state of GPP through the use of environmental criteria in tender calls and documents (Bouwer *et al.*, 2005; Kippo-Edlund *et al.*, 2005); most of these contributions are, however, focused on Nordic countries. In a more recent contribution (Palmujoki *et al.*, 2010), the authors focus specifically on the existence and applicability of environmental criteria in the procurement contracts and discuss the comprehensiveness and enforceability of the drafted terms and conditions in the same contracts, highlighting the practices that appear as the most functional and practical from the procuring authorities' point of view. As the authors show, with reference to Sweden and Finland, the application of GPP is increasing over time. However, the inclusion of environmental clauses in procurement contracts is still not

widely used. Also, the clauses vary widely in terms of both accuracy and enforceability by the procurement authorities.

The above literature is mainly based on tender calls analysis. As Bouwer *et al.* (2005) underline, such analysis is mainly performed by gathering tender related documents along a chosen time span from a variety of public bodies (local authorities, central government, hospitals, etc.), and by classifying them according to product groups and according to the role played by environmental criteria in the tender documents, technical specification, awarding score and criteria, etc.

Though objective, such a methodology suffers from several limitations, including:

- 1 Information contained in the tender document has to be complemented by the actual awarding results (winner, value of purchases, etc.).
- 2 The publication of tenders is compulsory only above a certain tender value (so-called 'above the EU threshold' tenders). On the other hand, very limited information is available concerning smaller tenders.
- 3 Information on the purchasing body can be crucial in explaining green behaviour and in directing the related policy interventions. On the other hand, such information is in general not included in the tender and difficult to obtain.
- 4 The willingness to pay for greener public purchases might not be the only determinant of demand for sustainable goods/services by public bodies. Indeed, EU regulation and targets might affect the observed GPP related demand.

These difficulties suggest the need to complement tender documents analysis with interviews that complete the available information, including details both on the public bodies involved in the specific tender and on the final outcome of the tender itself. An online procedure based on questionnaires has been used, among others, by PricewaterhouseCoopers *et al.* (2009), in the report on GPP that was presented in Section 4.1 concerning the EU.

Of course, the use of questionnaires also has limitations, as they can lead to a bias in the respondent's reaction (they can state they are willing to pay for green purchases just to show they act in a socially responsible way, or they can give a distorted view of the purchasing organization they work for). Also, it is more likely that a selection bias takes place, as respondents are likely to come from organizations that are already involved, or more willing to be involved, in GPP.

## **6 Concluding remarks**

Green Public Procurement can be (and has proven to be) a potentially very effective tool in the context of environmental policy, leading in some cases to win-win situations where the reduction in environmental impacts of public purchases is coupled with a reduction in the related costs. This is, however, not a general conclusion, so that the opportunity of introducing GPP targets and incentives must be carefully

evaluated with sector and country specific analyses. Also, the performance of GPP depends in a crucial way on how it is designed and, specifically, on the degree of centralization and on the way environmental criteria are accounted for along the 'GPP chain'. In the latter respect, the inclusion of environmental considerations in awarding criteria can play a significant role and is, therefore, a sensitive issue for future research.

The main conclusion that stems from our work suggests the need to improve data availability to make GPP design and implementation more efficient. This is straightforward if we look at the Italian case: the building up of comprehensive datasets might be crucial in determining whether the current system is properly designed or if changes in design are needed, for example in terms of a larger degree of centralization. Also, measuring the degree to which GPP is indeed green and/or sustainable needs a substantial systematization of available information on tender calls, value and features of procurement contracts. This is a key issue to measure the state of the art of GPP implementation in Italy, and to suggest directions for future policies in the field.

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## Notes

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- 4 For detailed surveys, see the already cited Walker and Phillips (2006) and Brännlund *et al.* (2009).
- 5 To have an idea of how extensive EU guidance on GPP is, please refer to: [http://ec.europa.eu/environment/gpp/index\\_en.htm](http://ec.europa.eu/environment/gpp/index_en.htm).
- 6 Also, to have specific examples of GPP in EU countries please refer to: [http://ec.europa.eu/environment/gpp/case\\_en.htm](http://ec.europa.eu/environment/gpp/case_en.htm).
- 7 See [www.eng.consip.it/on-line/en/Home.html](http://www.eng.consip.it/on-line/en/Home.html).
- 8 For details see Capparelli (2011).
- 9 For this example, please refer to: [http://ec.europa.eu/environment/gpp/pdf/news\\_alert/Issue11\\_Case\\_Study27\\_Consip\\_Energy.pdf](http://ec.europa.eu/environment/gpp/pdf/news_alert/Issue11_Case_Study27_Consip_Energy.pdf). For details on framework contracts see Albano and Sparro (2010).
- 10 These two examples are, again, taken from [http://ec.europa.eu/environment/gpp/case\\_en.htm](http://ec.europa.eu/environment/gpp/case_en.htm).
- 11 For other detailed case studies see, for example, [http://focus-lab.it/public/Report\\_GPP\\_Province.pdf](http://focus-lab.it/public/Report_GPP_Province.pdf)
- 12 More details on the available solutions can be found, among others, Lewis and Yildirim (2006) and in Anton and Yao (1989).
- 13 See [http://ec.europa.eu/environment/gpp/case\\_en.htm](http://ec.europa.eu/environment/gpp/case_en.htm), Example 15.

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