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An Analysis of the Barriers to and Drivers of Green Public Procurement in Achieving a More Sustainable Construction Industry

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Abstract - The public sector in Ireland possesses enormous purchasing power which has the strength to affect production and consumption trends in all market sectors. Environmental purchasing tools such as Green Public Procurement (GPP) are seen by many as the solution to greener purchasing decisions in order to obtain and maintain not only a more sustainable construction sector but also a more sustainable economy.

The purpose of this research is to determine and examine the key barriers to and drivers of implementing GPP in public procurement departments in order to reduce the effect construction works have on the environment.

There was limited literature on the uptake of GPP in Ireland so the focus was on the uptake of GPP among EU member states. After analysing all aspects of GPP in the literature review, questionnaires were distributed to all key stakeholders of GPP to establish its uptake in Ireland while also indentifying its barriers and drivers. Finally, two interviews were carried out with industry professionals to add more depth to the questionnaire's findings.

In compiling the results and findings from these interviews and questionnaires it was apparent that the uptake of GPP as an environmental tool among public procurement departments is extremely slow and non-existent in most cases. The findings highlight the key barriers such as the perception that greener products and services are more expensive, lack of resources, lack of training and lack of support from higher authorities. However there does seem to be a drive from higher authorities towards implementing GPP in the form of regulations and legislation.

Keywords: *Green Public Procurement, Sustainable Development, Sustainable Construction*

I. INTRODUCTION

Over the past 15 years public procurement authorities in Ireland have been encouraged to include green criteria in their purchasing of goods and services. European public authorities spend in the region of 2 trillion Euros annually [19] while the public purchase of goods and services has been estimated to account for 16% of EU GDP [6]. With these figures in mind it is easy to see why the European Commission (EC) has stated that public authorities hold significant spending power and influence in achieving a more sustainable environment.

There are individuals who are campaigning on behalf of nature by introducing sustainable practices and tools in their workplace and everyday lives by increasing awareness of the

damage we are inflicting on nature, all in the hope of decreasing our reliance on nature's natural resources. Williams & Millington [17] state that *'rather than adapt the earth to suit ourselves we must adapt ourselves to meet the limits of nature'*. One such tool in achieving this is sustainable development. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs [18].

Public sectors have a significant role to play in the sustainable development of their countries. Their most powerful tool in achieving this is their spending power which can influence numerous sectors including the private sector.

Local authorities spend an enormous amount of the country's national income on services they provide to communities [11]. Ireland's public sector spends in the region of €17 billion on goods and services each year. Over the past decade or so €70 billion has been invested by the government in the infrastructure and productive sector alone [2].

Public procurement can affect production and consumption trends while at the same time creating substantial demand for greener products and services. Subsequently the increased demand will enlarge markets for environmentally friendly products and services [3]. It is essential that the Irish public sector plays an exemplary role in greener purchasing by exercising its purchasing powers.

The construction industry is estimated to account for 40% of all energy use and 36% of CO₂ emissions within the EU [7] while the industry itself accounts for more than 10% of the EU's GDP. Sustainable construction is about achieving a balance between the social, economic and environmental aspects of construction so that costs and the benefits, evaluated along these three dimensions are optimised [12]. This can be achieved in all phases of the life cycle of a building which includes the planning and design phase, construction, renovation, building use and the disposal or deconstruction of the building at its end of life stage. Therefore environmental criteria must be included in construction contracts at a certain level. There are several possible areas in the construction process where environmental criteria can be included in tender documents such as the subject matter, technical specifications, selection criteria, award criteria and contract performance clauses.

Public and private procurement bodies are becoming more aware of the environmental and social implications of their

projects but it is how they integrate these actions while still considering best value over lower costs that ultimately results in sustainable procurement. Sustainable procurement is an increasing practice among businesses with an emphasis no longer on capital costs but more on the operational costs of the building. There are many innovative procurement tools available that can balance capital costs with operational costs. One such tool is GPP.

GPP is the approach by which public authorities integrate environmental criteria into all stages of their procurement process, thus encouraging the spread of environmental technologies and the development of environmentally sound products, by seeking and choosing outcomes and solutions that have the least possible impact on the environment throughout their whole life-cycle [1].

Tarantini et al [13] goes further than Bouwer when he states that GPP is 'a significant policy tool for reducing the environmental impacts of services and products throughout their whole life cycle'. Whereas Tarantini puts more emphasis on the power GPP has as a policy tool than Bouwer's definition, Bouwer does somewhat cover this with the words 'thus encouraging the spread of environmental technologies'.

The high purchasing power of public authorities is a market factor with enormous potentialities [14] and this purchasing magnitude can prove to be a significant policy instrument [19]. Authorities who implement GPP will be better equipped to meet evolving environmental challenges [5] and by purchasing environmentally sound products and services public authorities not only boost production of those goods directly but also influence the accessibility of those products and lower their price [19].

GPP is essentially one of the many tools in the process of achieving a sustainable construction sector. The running costs of publicly owned buildings are a significant drain on public finances and so it is crucial to improve environmental performance in this sector, where GPP can function as an important incentive [17].

GPP was a concept adopted by the OECD in 2002 and was subsequently confirmed by the EC and by laws of member states. In 2008 the EC set an ambitious target that by 2010, 50% of all public tendering procedures should be green where 'green' means tendering procedures must comply with endorsed common core EU GPP criteria for ten priority product/service groups [4].

A survey by Renda *et al* [10] sought to find out if the GPP targets were being met. The study only considered a contract to be a 'green contract' if it included all of the surveyed EU core criteria (there were 10 core criteria at the time this survey was conducted). The study showed that 26% of the contracts examined included all of the EU's core GPP criteria which is significantly less than the EU's 50% target set for 2010. However, the findings show that 55% of these contracts included at least one of the EU's core GPP criteria which at least show that the public authorities are considering green procurement at some level. Only four countries have succeeded in reaching the EU's target of 50% of all public procurement procedures including common core GPP criteria by 2010 with

the top performers being Belgium, Denmark, the Netherlands and Sweden. The next level includes 11 countries which range between 20% and 40% and the bottom level includes the remaining 12 countries where the level of EU GPP uptake is less than 20%.

Organisations who attempt to implement GPP into their purchasing procedures often face similar barriers. There have been numerous studies and surveys carried out to identify the perceived barriers that limit the implementation of environmental criteria into public procurement procedures.

In a survey of GPP practices by Bouwer *et al* [1] there were three major obstacles identified by public authorities regarding the implementation of GPP:

- 44% had the perception of increased costs associated with green products compared to their common alternatives
- 35% complained about a lack of resources and promotion of policies for GPP
- 25% complained about a lack of GPP tools and the lack of training involved
- 35% suggested there was a lack of competence in environmental matters and in establishing environmental criteria

From the surveys conducted since GPP's introduction to public authority departments it is clear that there seems to be a knowledge deficit on the topic of GPP which poses a major constraint on the understanding and implementation of GPP practices. Lack of resources may contribute to the knowledge deficit as GPP requires a lot of expertise both in the legal and technical contexts of procurement and this involves a significant amount of up skilling or increased employment which can be a time and cost consuming strain on some departments. Increased costs and a slow return on investment are seen as an economic disadvantage to purchasing environmental products and services. Procurement officers' mindset may be on a quick return on investment and this needs to change if GPP is to be fully appreciated.

There are numerous drivers of GPP when considering its implementation into the public procurement sector. The majority of drivers today remain to be external drivers but this can change as external drivers can have a significant influence on individuals in organisations [20] who themselves can become the key drivers. Unlike the private sector the public sector has always been under pressure to comply with government or EU regulations. It is this pressure that remains the key driver of GPP.

Within the public sector there is a commitment to environmental protection and sustainable development and this can lead to the environmental image of a local authority becoming a GPP driver as more and more public and private consumers are taking into consideration the environmental footprint of products and services. The increased availability of greener products and services has increased greener purchasing across all departments while the simplification of green criteria has somewhat increased to provide procurement purchasers

with more knowledge of the green products and services they intend to incorporate in their tenders.

In a report on the global review of sustainable procurement by UNEP [15] in 2013 it was estimated that by the end of 2012 at least 56 countries worldwide had adopted a national GPP policy in some form. These 56 countries can be broken down into their respective regions which include;

- Asia – 10 countries
- Africa – 8 countries
- Europe – 25 countries (4 pending National Action Plans at the time)
- Latin America – 9 countries
- North America – 2 countries
- Oceania – 2 countries

There have been numerous notable performers of GPP practices on an EU and a global basis. In 2009 Malta completed the construction of their first energy self-sufficient school where GPP was implemented during the tendering stage. Bidders were asked to follow criteria such as the bidder's technical capacity, energy efficient methods, biodiversity impacts and construction specifications. The project resulted in a surplus of 35,000kwh of energy which was sold back to their national electricity grid [15].

Since 2003 the Office of Public Works (OPW) in Ireland has worked to increase the sustainability of its furniture for state offices and departments. The tendering process has included the possibility of additional points for suppliers and service providers who can demonstrate that their goods and processes are environmentally friendly. The criteria used by the OPW in these tenders are included in the subject matter, the award criteria, specifications and the contract performance clauses. The result of this has been that costs in the furniture division has decreased and suppliers have saved money through enhancing their environmental profile of their products and activities while in turn savings have been passed onto buyers [9].

GPP has become mandatory in Slovenia for all public bodies including state, local and other public agencies while in Japan 95% of all purchased products in the designated categories by all central government ministries must be 'green products'. In Chile their target of 15% of procurement orders meeting sustainability criteria by the end of 2012 was reached a year early with a figure of 17.2% [8].

The previous examples are just some of the GPP performances that have taken place in the last 10 years. The co-operation between states regionally and globally on GPP practices is vital in order to increase its use among countries who are not exercising green procurement methods.

The Irish government sees GPP as a significant tool in achieving greater value for money in the public sector. The recent publication of a National Action Plan aims to make the public sector a role model for sustainable growth in Ireland's

economy and sets out guidelines and actions to be taken to achieve these aims.

II. AIMS AND OBJECTIVES

The aim of this research paper is to identify and analyse the key barriers to and drivers of implementing GPP in Ireland's public sector procurement departments with an emphasis on the construction sector.

In order to achieve this aim, the following were the specific objectives of the research:

- Investigate to what extent Green Public Procurement is being used in public procurement departments;
- Examine the key barriers facing Green Public Procurement;
- Examine the key drivers of implementing Green Public Procurement;
- Recommend solutions to overcome the key barriers

III. METHODOLOGY

Three questionnaires were compiled and distributed to three different key groups in order to get a different viewpoint of GPP from those deemed responsible for achieving a more sustainable construction sector. The three questionnaires all had a similar theme but were modified to suit each group's application of GPP. By modifying questions to suit each group the author hoped that this would either verify or contradict the resulting data figures.

The groups identified as key groups relating to GPP included in group one; all local authorities and a select number of state and semi-state bodies, in group two; all of Ireland's energy agencies plus experts in the field of GPP and group three included a select number of construction companies. The construction companies were chosen on the basis of having completed a public sector project in the last 10 years or were currently involved in a public sector project. The main focus was on the results from group one while the results from groups two and three were merely to cross examine group one's results.

The cross examination of the three questionnaires would produce more accurate and reliable results and in turn further achieve the objectives of this research project. The findings of the questionnaires would also be compared against the findings of the literature review. In order to expand and elaborate on the findings, which would mostly be in numerical format, two interviews were conducted. It was necessary to include interviews in order to add more depth to the data already collected in the questionnaires. The interviews also provided an opportunity to discuss the topic of GPP with industry professionals.

A total of two telephone conversations were carried out with an environmental officer from a local authority and a director of a company who was an expert in green tendering. A similar method to the questionnaire was applied to the two interviews where questions were altered to suit the interviewees' GPP activity.

A total of 51 questionnaires were returned from 115 recipients, representing a response rate of 44%.

IV. SURVEY RESULTS

The literature review provided an insight into the extent to which GPP is being implemented in Ireland's public procurement departments with the uptake of GPP in other EU countries presented as a benchmark. Several EU reports presented poor results on Ireland's uptake of GPP with Ireland reported to be in the lowest group of EU countries who were furthest from reaching their EU GPP targets.

The consensus among those who responded positively on the implementation of GPP was that while they had sufficient individual knowledge of GPP, their own organisations did not practice GPP procedures. The key result here was that 31% of local authorities and state bodies had a high level of knowledge of GPP. It seems there is at least an awareness of GPP in local authorities as only 8% claim to have very low knowledge.

An EC report [10] showed that 55% of respondents included at least 1 of the GPP criteria in their contracts. This compared well with the research questionnaire where it was discovered that 59% of respondents included 1-3 of the GPP criteria in their tenders while 21% stated that they included none of the criteria. However only 3% of local authorities included 11 or more which is extremely disappointing given the 50% target set by the EC.

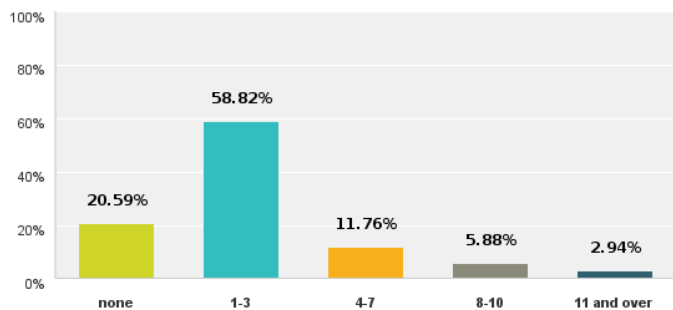


Figure 1. – Amount of GPP criteria being used in tenders

The key barriers to GPP that have existed since it was established as a green procurement tool were examined and identified in the literature review. The literature review highlighted key barriers such as the perception that greener products or services result in increased costs, lack of resources, lack of training and lack of support from higher authorities. All three groups that were surveyed stated that higher upfront capital costs of greener products and services were the most influential in hindering the use of GPP practices in procurement procedures. Local authorities and state bodies revealed other barriers such as the lack of choice of environmentally friendly products and services, the resistance to change procurement procedures and the lack of methods to compare environmental credentials of greener goods and services. The least influential barriers to GPP from group one were lack of government support, slow return on investment and lack of training and educational programmes on GPP.

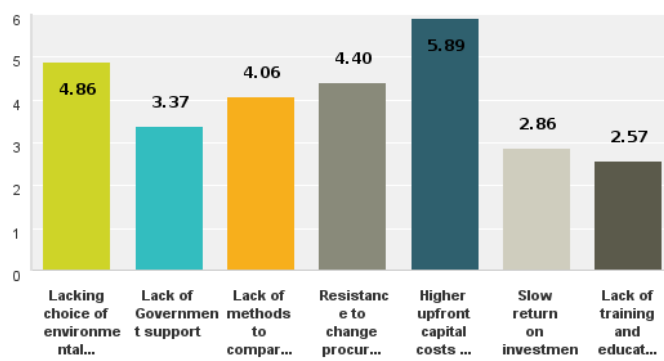


Figure 2. – Drivers of GPP

When comparing these findings with groups two and three there are a number of interesting comparisons. The construction companies surveyed from group three put the slow return on investment high on their list of barriers while local authorities do not. This is understandable as group three respondents are exclusively from the private sector where short term profits are crucial. Group three see the resistance to change procurement procedures as a low barrier while group one sees it has one of their main barriers. This demonstrates how flexible and more eager the private sector is than the public sector when it comes to introducing new methods.

Drivers such as EU regulations and market reputation were seen as the key drivers among European countries while co-operation between states and internal staff were identified as the least influential drivers.

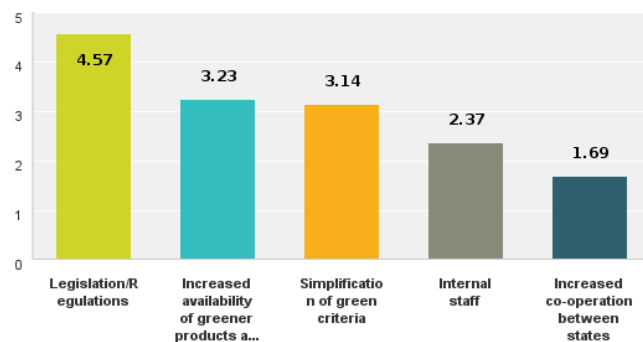


Figure 3. Barriers to GPP

The results of the questionnaires were similar to those identified in the literature review with regulations and legislation set by the EU coming out on top as the key driver of GPP. Regulations such as the EU public procurement directive 2004/18/EC and building regulations on energy conservation are two of many direct and indirectly related legal frameworks that can influence an organisation in their uptake of purchasing greener goods and services. Cost savings were also a significant driver mentioned by key individuals in the questionnaires and interviews while EU targets were also pointed out. The interest in environmental issues by internal staff and the increased co-operation between states are perceived as drivers with the least impact on an organisation's uptake of GPP when studying the questionnaires.

V. CONCLUSIONS

Higher upfront capital costs of greener products and services

The perception that greener products and services result in higher costs will be a difficult barrier to overcome as procurement officers do not think in the long term when making their purchasing decisions but think more of purchasing for their own term of office. One way to overcome this barrier is to increase the education of new and existing procurement officers in the field of life cycle costing which they should then be encouraged to use at some level in their purchasing decisions. In this way procurement officer's purchasing decisions will benefit the long term sustainability of their communities and subsequently force procurement officers to make their purchasing decisions a political issue rather than solely a budgetary issue.

Poor choice of environmentally friendly products and services and lack of methods to compare environmental credentials of greener goods and services

Ireland's public procurement sector should initially follow the guidelines set out in the GPP Product Sheet and the EC GPP Training Toolkit which both work in tandem to provide recommendations for the procurement of greener construction works and services.

There is currently no EU GPP database to provide guidance on the impact that products and services have on the environment. Until one has been devised the choice of greener products and services will remain limited. The government should raise more awareness regarding the market move towards GPP so service providers and suppliers can react in time to start sourcing additional greener products and services.

Resistance to change procurement procedures

The inertia to GPP is very apparent in the Irish public sector. The questionnaire survey carried out included some very surprising responses with one respondent from a local authority claiming that he never heard of GPP. This can only be due to a lack of awareness and a lack of training and education on GPP among public procurement officers. GPP workshops should be made compulsory for all public procurement officers and the National Action Plan on GPP should be made available to every local authority department.

The Government must become the initial driver of GPP. Therefore awareness and training concerning this practice must be seen as the initial action to combat the resistance to change procurement procedures. Action must also be taken at third level colleges to include GPP in their environmental and procurement courses so graduates have the knowledge to include environmental considerations in their decision making.

A move to make GPP a compulsory action by the EU must occur sooner rather than later if the targets set for 2020 are to be met by certain member states. The EU must also accelerate their proposal to introduce a European wide database of green products and services and a simplified method to compare greener products and services to their traditional counterparts.

A sustainable public construction sector is achievable if the purchasing power that the public sector holds is utilised correctly. If the public sector utilises their purchasing powers correctly then this can also have a subsequent positive effect on the private construction sector. Barriers to GPP will remain unless further government action is taken. The introduction of the recent National Action Plan on GPP should go some way towards increasing the uptake of GPP in Ireland but only if the key decision makers in the public sector act on its recommendations.

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