Chapter 12

Green Award Criteria in the Most Economically Advantageous Tender in Public Purchasing

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INTRODUCTION

The term public purchasing refers to the purchasing by governmental organizations and local authorities of goods, services and works, which are used in a variety of public sectors, such as housing, public transport, infrastructure, offices, and major construction works. In the European Union (EU), the public procurement procedure is relatively strictly regulated by the EU legislation. The new public procurement Directives, 2004/17/EC and 2004/18/EC, that repealed Directives 92/50/EEC and 93/36/EEC and 93/37/EEC, were adopted in 2004, but in many EU member states the national legislation has not yet been implemented according to new directives. The aim of the directives is to ensure a competitive bidding process by establishing common rules for advertising procurement needs, invitations to tender and contract award. These rules are based on the principles of non-discrimination on the basis of nationality for EU companies, free competition and transparency of award procedures.

The obligatory requirements, which the bid (and later the supplied product or service) must fulfill, are given by the selection criteria and the technical specifications. Contract clauses may also include requirements that must be met during the contract. Now, it is of course possible to determine the wished properties of the contract by these obligatory requirements, so that only price will be used in the award criteria. But often it can be wise to compare the bids on the basis of some aspects other than the price, i.e., to use other award criteria.

The directives explicitly describe two different bases for the award of tenders: “the lowest price” or “the most economically advantageous tender.” The latter implies that other award criteria will

also be taken into account, in addition to the price. Thus, the contract shall be awarded to the tender with the lowest price or to the one that is the most economically advantageous as a whole taking into account for example quality, price, technical merit, aesthetic and functional characteristics, environmental characteristics, running costs, cost effectiveness, after sales service and technical assistance, delivery date and delivery period or period of completion (2004/17/EC). The interpretation of the most economically advantageous tender in the purchase directives makes it possible to link environmental protection with economical advantage.

The concept of Green Public Purchasing (GPP) is used in the contexts where environmental issues are taken into account in the procurement process (International Institute for Sustainable Development 2005). The importance of GPP is increasing in the context of sustainable development. The United Nations launched in Johannesburg in 2002 a 10-year action program in which public procurement had an important role in increasing demand for ecologically better products (UN, 2002). The Organisation for Economic Cooperation and Development (OECD) gave a recommendation in 2002 to improve the environmental performance of public procurement (OECD, 2002). In Europe, GPP has been recognized as one of the most important tools of Integrated Product Policy, IPP (EU Commission, 2003). The primary aim of IPP is to reduce the environmental impacts of products throughout their life-cycle, harnessing, where possible, a market driven approach within which competitiveness concerns are integrated (EU Commission, 2003). Increased demand for greener products by GPP, in competition with the more traditional products, is well suited to the market driven approach of IPP. Public authorities are remarkable players at the European market, spending each year 14-16 % of the EU gross domestic product (Erdmenger, 2003; EU Commission, 2003). Greening the public procurement processes would have both short-term and long-term effects, decreasing rapidly e.g., energy use in the public sector, and at the same time affecting product design and the environmental characteristics of goods and services in the long run (Swanson, et al., 2005).

Many state governments and local municipalities have provided green procurement programs that encourage and assist public agencies in the purchasing of environmentally preferable products.

The EU has also encouraged member states to draw up publicly available action plans for greening their public procurement (EU Commission, 2003). These should contain an assessment of the present situation and ambitious targets for the situation in three years time. The action plans should also state clearly what measures will be taken to achieve this. They should be drawn up for the first time by the end of 2006 and then revised every three years.

In addition to green public procurement, the terms environment-oriented procurement, sustainable procurement, eco-procurement (ICLEI, 2005) and environmentally preferable purchasing (Micklus, 2002) have been used for the same purpose. In the USA, in addition to the term "environmentally preferable purchasing," Li and Geiser (2005) introduce another term: "environmentally responsible public procurement.". Despite the variety of forms, these terms refer to the selection of products and services whose environmental impacts have been found to be less damaging to the environment and human health when compared to competing products and services in the market.

The state of GPP has been analyzed by measuring the use of environmental criteria in tender calls and documents (Bouwer et al., 2005; Kippo-Edlund, Hauta-Heikkilä, Miettinen & Nissinen, 2005). However, they did not measure other criteria of total economical advantageousness. The purpose of this chapter is to show which kind of criteria public purchasers include in the total economical advantageousness, and focus especially on the state of environmental criteria within the whole picture of total economical advantageousness.

MATERIAL AND METHODS

The study is based on an assessment of tender documents. The method was first developed and applied to study the state of GPP in Nordic countries (Kippo-Edlund, Hauta-Heikkilä, Miettinen & Nissinen, 2005), and later modified and applied to study the state of GPP in EU countries (Bouwer et al., 2005). In this chapter, it has been modified further to cover all the elements of economical advantageousness that public purchasers use. In the method, tender calls and tender documents are examined, identifying and assessing each award criterion that is used. A pre-prepared list was used as a help to identify and classify the criteria (see Table 1 and Appendix for the

TABLE 1
Number of Tender Calls that Included Certain Award Criteria[1]

Basis of The Award	Number of Tender Calls				
	FIN $n_{C,FI}$ = 60	SWE $n_{C,SE}$ = 60	DE $n_{C,DK}$ = 60	TOTAL N_C = 180	
Only Price	7	6	5	18	10 %
Overall Economical advantageousness	53	54	55	162	90 %
Elements of the most economically advantageous tender	$n_{E,FI}$ = 53	$n_{E,SE}$ = 54	$n_{E,DK}$ = 55	Total N_E = 162	
Total price	53	54	55	162	100%
Initial price	53	54	55	162	100 %
Economic efficiency, profitability	2	7	9	18	11 %
Some life cycle costs (e.g., implementation, use, maintenance)	11	7	14	32	20 %
Quality	**52**	**51**	**55**	**158**	**98 %**
Technical capabilities, e.g.,:	25	17	35	77	48 %
- Service and spare parts	10	5	15	30	30 %
- Technical support and after-sale services	11	12	12	35	22 %
- Guarantee	2	7	5	14	9 %
Functional characteristics, e.g.,:	18	15	16	49	30 %
- Product or service concept	12	4	15	31	19 %
- Compatibility to previous systems and products	10	4	8	22	14 %
- Suitability for use	9	3	6	18	11 %
- User friendliness	7	4	14	25	15 %
- Quality management / quality system	8	9	10	27	17 %
- Supplier's competence and references	21	20	10	51	31 %
- Functionality of the final product or service	12	6	7	25	15 %
- Capacity	-	5	13	18	11 %
Contractual and delivery terms	**34**	**19**	**32**	**85**	**52 %**
Time of delivery	22	19	13	54	33 %
Reliability of the delivery	11	5	17	33	20 %
Terms of payment	3	-	4	7	4 %
Terms of delivery	2	4	6	12	7 %
Environmental aspects	**13**	**17**	**15**	**45**	**28 %**
Environmental policy	3	9	4	16	10 %

TABLE 1 (Continued)

Basis of The Award	Number of Tender Calls				
	FIN $n_{C,FI}$ = 60	SWE $n_{C,SE}$ = 60	DE $n_{C,DK}$ = 60	TOTAL N_C = 180	
Environmental management system	1	6	6	13	8 %
Environmental issues / impacts	7	1	5	13	8 %
EU eco-label or other eco-label	-	3	3	6	4 %
Chemical content	-	3	3	6	4 %
Recycling or reuse service	2	2	1	5	3 %
Packaging material	-	2	3	5	3 %
Noise	-	-	5	5	3 %
Social and ethical issues	**10**	**5**	**10**	**25**	**15 %**
Safety	4	3	-	7	4 %
Working environment	-	3	5	8	5 %
Personnel matters (e.g., number of employees, days of illness)	3	2	4	9	6 %

environmental criteria), meanwhile searching also for possible new kind of criteria.

The experimental material of the study covers 180 tender calls over EU-threshold values in Denmark, Finland and Sweden (i.e. 60 from each country), the tender calls being published at the time interval 21.7. 2005 – 29.9. 2005. The tender calls were identified from the common public purchasing database of EU ("Tenders Electronic Daily", i.e. TED-database) in the order they were published, and the organizations were asked by email to send the documents of the tender calls. This procedure results in a randomized sample regarding the organizations and the different product groups. All kinds of public organizations were included, e.g., organizations of central government, local authorities, bodies governed by public law and organizations from special sectors, such as public water and energy supply. In addition, all kinds of products were involved, and tender calls were classified into 24 product groups (Table 2), by using the given numbers of Common Procurement Vocabulary (i.e. CPV-numbers) as a help.

In the analyses, we use three subsets of the data with different abbreviations (Table 3). First, to get a broad view of the elements of overall economical advantageous and environmental issues as a part

TABLE 2
Award Criteria in Different Product Groups

Product Groups	Number Of Tender Calls					
	Number of cases N_E=162	Total price as award criteria	Quality as award criteria	Delivery terms as award criteria	Environ-ment as award criteria	Social issues as award criteria
Transport services	**13**	13	11	3	8	2
Vehicles	**10**	10	10	4	4	2
Paper products	**6**	6	6	5	4	1
Cleaning services	**7**	7	7	4	3	2
Manufactured goods, e.g., furniture toys	**7**	7	7	4	3	1
Office machinery	**7**	7	7	2	3	2
Construction work	**6**	6	6	4	3	2
Chemical products	**5**	5	5	4	3	-
Cleaning products	**3**	3	3	2	2	-
Food	**6**	6	6	5	2	1
Medical, laboratory and optical devices	**28**	28	28	17	2	8
Repair and maintenance work	**5**	5	5	1	2	-
Construction materials	**6**	6	6	3	1	-
Textiles	**3**	3	3	2	1	-
Office supplies	**1**	1	1	-	1	1
Electricity, gas, other energy source	**3**	3	2	2	1	-
Industrial machinery	**5**	5	5	4	1	-
Plastic products	**2**	2	2	1	1	-
Total of potentially green product groups	**N_G = 123**	**123 100%**	**120 97.6%**	**67 54.5%**	**45 36.6%**	**22 17.9%**
IT-services	**11**	11	11	5	-	2
Professional services (e.g., consultancy)	**14**	14	13	3	-	-
Printed material (news-paper, copying, etc.)	**5**	5	5	4	-	1
Special purpose goods	**2**	2	2	2	-	-
Electrical machinery	**2**	2	2	2	-	-
Health & social services	**5**	5	5	2	-	-
Total	**N_E = 162**	**162 100%**	**158 97.5%**	**85 52.5%**	**45 27.8%**	**25 15.4%**

TABLE 3
Abbreviations

Abbreviations	
N_C	total number of tender calls
$n_{C,FI} = n_{C,SE} = n_{C,DK}$	number of tender calls from each country
N_E	total number of tender calls using total economical advantageousness
$n_{E,FI}$, $n_{E,SE}$, $n_{E,DK}$	country-specific numbers of tender calls using total economical advantageousness
N_G	total number of tender calls in the product groups that were 'potentially green'
$n_{G,FI}$, $n_{G,SE}$, $n_{G,DK}$	country-specific numbers of tender calls in the product groups that were 'potentially green'
N_W	total number of tender calls in which the weights were given
$N_{W,G}$	number of tender calls with given weights in the 'potentially green' product groups

of it, we use the whole material of total economical advantageous (N_E = 162). Second, in order to compensate a bit the randomness of the product groups, we select tender calls of the product groups for which at least some environmental aspects were used, i.e., the "potentially green" product groups (N_G = 123). Third, when analyzing the weighting of environmental issues in the tenders, we take into consideration only the tender calls where the weights and scores of different elements were given (N_W = 112). Within this third subset, we also look at the "potentially green" product groups ($N_{W,G}$ = 86).

RESULTS

Award Criteria

Contracts covered by the EU directives must be awarded on the basis either of the "lowest price" or of the "most economically advantageousness." The analysis of the 180 tender calls illustrated that in 90% (in 162 tender calls) the decision was based on the overall economical advantageousness, and only in 10% was the

decision based solely on the price. The percentages were equal in the three examined countries. When public purchasers award the tenders according to the most economically advantageous basis, they should determine which criteria provide them with the best utility, e.g., the best value for the money and these criteria must be announced beforehand in order to enable candidates to comply with these criteria. The 'most economically advantageous' tender may include economical, ecological and social criteria (OECD, 2003). Despite that, only a few examples are mentioned in the directives, i.e., delivery or completion date, running costs, cost-effectiveness, quality, aesthetic and functional characteristics, environmental characteristics, technical merit, after-sales service and technical assistance, commitments with regard to parts, security of supply, and price. Otherwise, the contracting authorities are not confined to the examples listed in the directives.

The recorded components of the “most economically advantageous” tender were after a preliminary analysis fit into five main categories including 1) total price, 2) qualitative features, 3) issues related to the delivery, 4) environmental aspects and 5) social and ethical features. The appearance of award criteria and the elements of the most economically advantageous tender in the studied tender call documents are shown in Table 2. The table also shows how many of the tender calls included certain elements of overall economical advantageousness.

The initial price was, of course, a major component of the “most economically advantageous” tender so that all tender calls considered the purchase price as part of the overall advantageousness. In addition, almost one third of the tender calls included in the total costs also life cycle costs other than the initial purchase price. The total life cycle costing was not followed in the tender calls but some elements of it. In all countries, the most commonly used cost component after the initial purchase price was running, implementation and maintenance costs followed by educational and service costs. In addition, many of the tender calls mentioned the term “economic efficiency” or “profitability” as a component of total price but did not clarify exactly what the term included. These other elements were most commonly used in Denmark, where 23 of the 60 tender calls included life cycle cost components as part of the total price. In Finland, 18 of the 60 tender

calls defined the total price based on life cycle costs whereas in Sweden 14 tender calls included some life cycle cost components in addition to the initial price.

The qualitative factors were the second common element in the definition of the “most economically advantageous tender.” Almost all (97.5 %) of the tender calls that were defined as basis of the most economically advantageousness included the element of “qualitative factors.” The quality element was explained in detail, and in most of the cases “quality” was understood as: a) technical capability, e.g., ergonomics, durability, technical support, service, spare parts, and b) functional capability, e.g., suppliers’ competence, references, guarantee, quality management, product or service concept and suitability to use and to purchaser's current systems. Some of these qualitative elements could also refer to the ecological characteristics of the product and thus environmental soundness of the product can be taken into account to some extent also in the form of qualitative factors.

Delivery terms and other contract related issues represented an important part of the “most economically advantageous” tender. In over half (52.5%) of the tenders where the overall economical advantageousness was defined, delivery terms were mentioned as award criteria. The most common element was delivery time, reliability of the delivery and the terms of payment.

Environmental issues were considered as a part of the overall economical advantageousness in 27.8% of the tender calls where the decision was based on the overall economical advantageousness. The highest figure was in Sweden, where 31.5% (17/54) of the tender calls included environmental aspects as award criteria. In Denmark the number was 27.3% (15/55) and in Finland 24.5% (13/53).

The most commonly presented environmental aspects in the tender calls were environmental policy and/or environmental management system. In addition, the award criterion named 'environment' or 'environmental impacts' was often presented. The meaning of this aspect was not, however, defined and thus it is problematic to fulfill or verify, and to use it in the award decision. Other environmental aspects that were used as award criteria included requirements concerning the fulfillment of eco-label criteria,

chemical content, recycling or reuse system, packaging material and noise.

Social issues were defined as part of the 'most economically advantageousness' in 15.4 % of the tender calls where the decision was based on the overall economical advantageousness. In Finland and Denmark, 10 tender calls included social issues, such as working environment, user safety and creation of new jobs. In Sweden, the social issues were considered as award criteria in five tender calls.

Product Groups Differences

The criteria for the most economically advantageous tender and the weighting of elements naturally depend on the product or service (Table 3). It is evident that for product groups like educational or consultancy services, health and social services and many IT-related services such as software, there exist no obvious environmental criteria, which are reflected in the low number of environmental criteria found as award criteria in these product groups. Environmental award criteria are more often presented to product groups such as transportation services, vehicles, paper products, cleaning services, office machines and furniture, construction work and chemical products.

Since the nature of environmental characteristics of different products and services is diverse, we compare the results of the total sample (N_E = 162) to the tender calls covering products groups that included at least some environmental aspects, i.e., the “potential green” product groups (N_G = 123). Now we find that the environmental criterion is one element of the most economically advantageous tender (MEAT) in 36.6% of the tender calls whereas it was 27.8% in the total sample (Figure 1).

For each country, the effect was rather similar, i.e., in Finland, environmental aspects were considered as one award criteria in 33.3% of the tender calls whereas the number was 24.5% if the effect of the difference between product groups was not considered. In Sweden, the existence of environmental criteria increased from 31.5% to 39.5% in the “potentially green” product groups. In Denmark the increase was from 27.3% to 36.6%. The figure also illustrates that social and ethical issues get more weight in the same product groups. In addition, the figure seems to propose that the

selection of product groups increases the weighting of delivery terms but a closer look to the country specific examination indicates that this increase is mainly due to the Swedish material (Table 4).

FIGURE 1
Appearance of the Main Elements of the MEAT in All Tender Calls (N_E=162, left pillar) and in the "Potential Green" Product Groups (N_G = 123, right pillar).

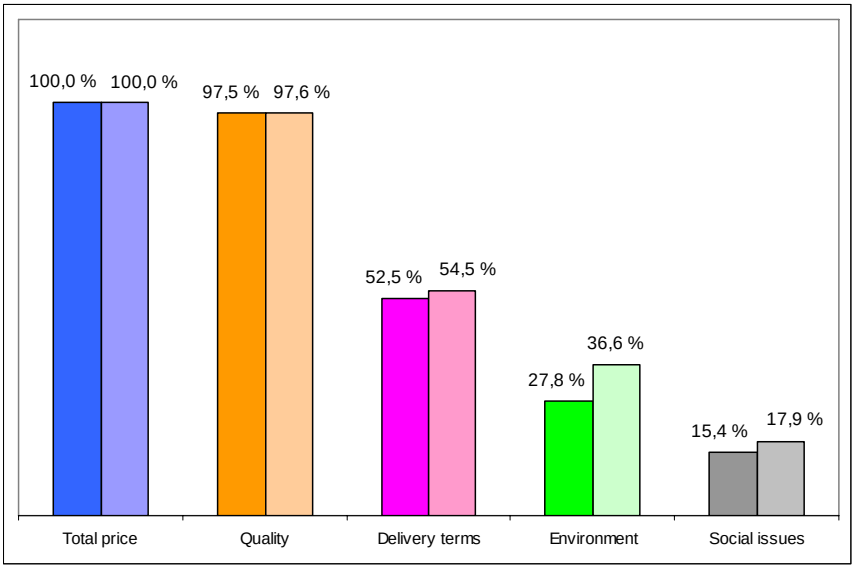


TABLE 4
The Appearance of Different Elements of the MEAT in All Material (N_E=162) and in the "Potential Green" Product Groups (N_G = 123).

	FINLAND		SWEDEN		DENMARK	
	$n_{E,FI}$ 53	$n_{G,FI}$ 39	$n_{E,SE}$ 54	$n_{G,SE}$ 43	$n_{E,DK}$ 55	$n_{G,DK}$ 41
Total price	100 %	100 %	100 %	100 %	100 %	100 %
Quality	98.1 %	100 %	94.4 %	93.0 %	100 %	100 %
Delivery terms	64.2 %	64.1 %	35.2 %	39.5 %	58.2 %	61.0 %
Environment	**24.5 %**	**33.3 %**	**31.5%**	**39.5 %**	**27.3%**	**36.6 %**
Social issues	18.9 %	23.1 %	9.3 %	11.6 %	18.2 %	19.5 %

Highest Weights for Price, Quality and Delivery Terms

Although the previous analysis provided the information about the appearance of environmental aspects as a part of the award criteria in more than 36 % of the tender calls this does not, however, show how much influence the environmental issues really have in the purchase decision. In the tender call material, the expressed weights can give information on this.

According to the purchasing directive, the weighting (or order of importance) shall be given in the tender call. However, only in 69 % of the tender calls where the decision was made based on the most economical advantageousness, were the weights of different elements given.

In more detailed analysis of the weights of environmental criteria, only product groups on which environmental criteria existed are considered. Thus the sample size in the following analysis is reduced so that product groups such as health and social services, IT-related services and other professional services are not analyzed.

Three subsets of data are listed in Table 5. The sample includes tender calls that are subject to the following criteria: 1) the decision was based on the overall economical advantageousness, 2) the tender calls of products and services included at least some environmental aspects and 3) weighting or scoring was given.

TABLE 5
Number of Tender Calls on Which the Weights Were Given

Product groups	Finland	Sweden	Denmark
"Potentially green" product groups			
Cleaning services	3	1	-
Computers, printers, copying machines and other office machinery	2	1	2
Plastic products	-	1	1
Motor vehicles	-	3	3
Paper products	-	-	4
Food products and services	-	-	4
Manufactured goods, e.g., furniture, toys, lightning, other consumables	3	1	4
Transport services	3	6	2
Optical / medical devices	1	5	10

TABLE 5 (Continued)

Product groups	Finland	Sweden	Denmark
Chemicals and chemical products, medicine	1	2	3
Construction materials and work	5	3	2
Industrial machinery	3	1	2
Repair and maintenance services	1	1	1
Textile products	-	1	-
Number of tender calls in the 'potentially green' product groups with weights presented $N_{W,G}$ = 86	**22**	**26**	**38**
Product groups which did not include environmental aspects			
Printed matter (books and printed materials)	-	2	
Plastic products	-	1	1
Health and social services	1	1	3
IT related services	5	4	5
Other professional services	1	1	1
Number of tender calls in other product groups	**7**	**9**	**10**
Total number of tender calls where the weights were given N_W = 112	**29**	**35**	**48**

The final sample size for the analysis of the weighting of environmental issues was $N_{W,G}$ = 86 (22 in Finland, 26 in Sweden, and 38 in Denmark) tender calls.

The average weighting of a tender call from the sample of 86 tender calls is shown in Figure 2. The total price of the purchase accounts for 50% of the scores whereas quality accounts for 37% of the scores. In addition, delivery and contractual terms are worth 7% of scores and environment is weighted on average 3.3% of the scores. The variety of weighting was high and usually, when the weighting was given to the environmental aspects, it accounted for 5 – 20% of the scores. The result 3.3% gives the average of weighting of environmental issues in the tender calls of product groups that have potential environmental impacts.

If we did not recognize the difference between the product groups, the weighting for environmental issues would be 2.7% of the average tender call. In all countries the average weight of environmental aspects is of course larger in the “potentially green” product groups. The country specific numbers are shown in Figures 3-5.

FIGURE 2
Average Weighting of Different Elements of the MEAT in the "Potentially Green" Product Groups ($N_{W,G}$ = 86)[2]

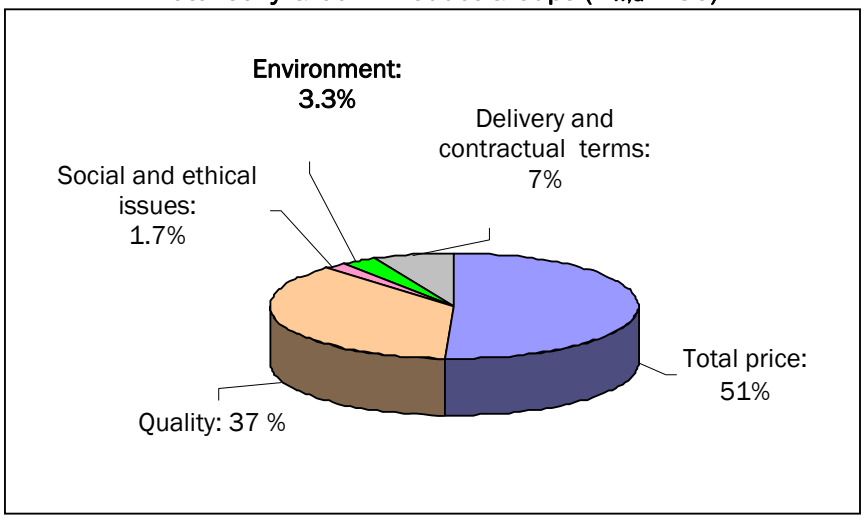


FIGURE 3
The Average Weighting of Different Elements of the MEAT in Finland in the "Potentially Green" Product Groups ($n_{W,G,FI}$ = 22)[2]

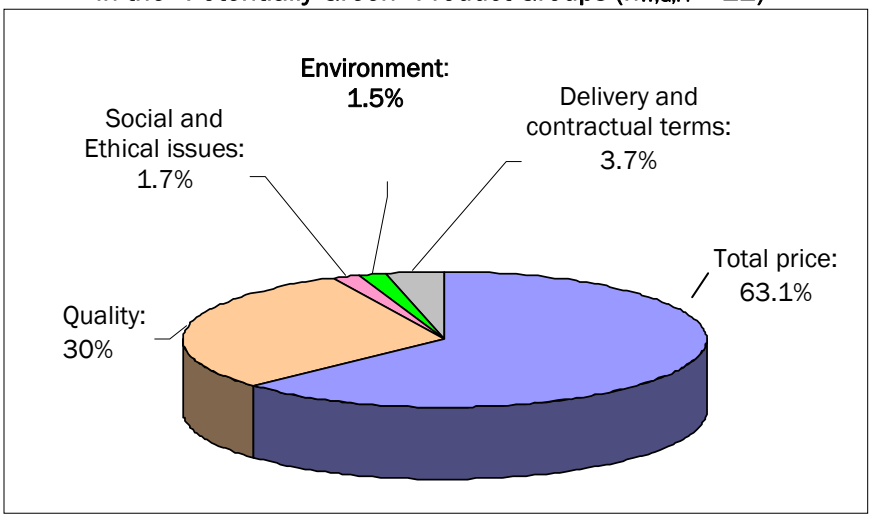


FIGURE 4
The Average Weighting of Different Elements of the MEAT in Sweden in the "Potentially Green" Product Groups ($n_{W,G,SE}$ = 26)[2]

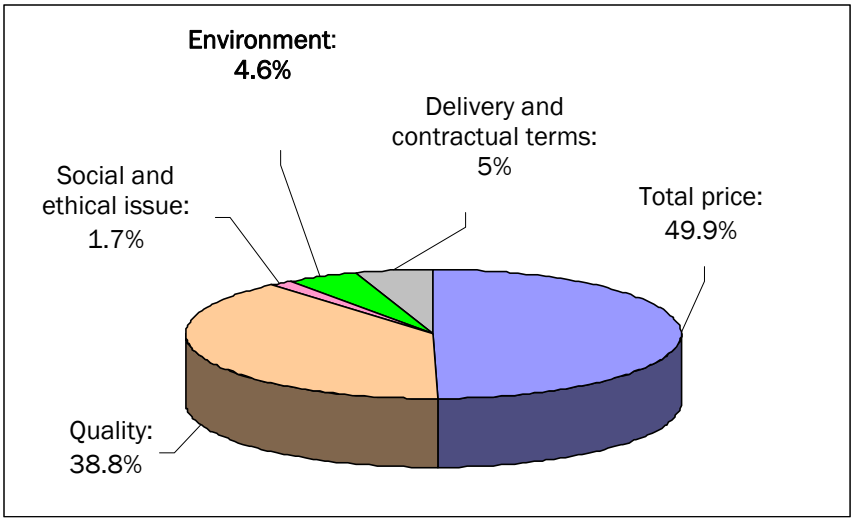
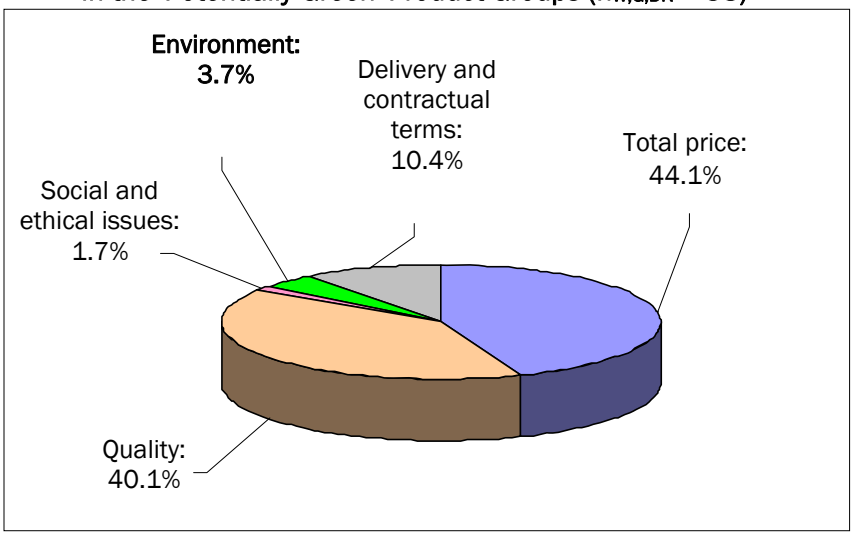


FIGURE 5
The Average Weighting of Different Elements of the MEAT in Denmark in the 'Potentially Green' Product Groups ($n_{W,G,DK}$ = 38)[2]



DISCUSSION AND CONCLUSIONS

The analysis of the 180 tender calls from Finland, Sweden and Denmark showed that 90% of the purchase decisions are made based on the most economical advantageousness, thus allowing also other aspects to have influence on the final award than just the price. The most economically advantageousness as an award basis provides a flexible framework for the purchaser to include different aspects in the award process, however, taking into account the conditions for suitable criteria laid down in the EU directives No. 2004/17/EC and No., 2004/18/EC. The elements of overall advantageousness go beyond the five main characteristics of price, quality, delivery terms, environmental aspects and social factors. Clearly, the price component was presented in all tender calls, followed by the quality factors and delivery terms. Over half of the tender calls named delivery terms as a part of the award decision. Almost one third of the tender calls included environmental aspects as a parameter of the decision process, and social aspects were considered in 15% of the tender calls.

The most commonly presented environmental aspects in the tender calls were environmental policy and/or environmental management system. In addition, the award criterion named “environment” or “environmental impacts” was often presented. The meaning of this aspect was not, however, defined and thus it is problematic to fulfill or verify, and to use it in the award decision. Other environmental aspects that were used as award criteria included requirements concerning the fulfillment of eco-label criteria, chemical content, recycling or reuse system, packaging material and noise.

The use of environmental policy or environmental management system as award criteria can be in conflict with the purchase directives, according to which these aspects belong to the selection criteria and not to the award criteria. Presented in the selection criteria, they are obligatory requirements. Directives, however, explicitly recognize that certificates of EMAS (Eco-management and audit scheme, Regulation EC 761/2001 in EU) can serve as a possible means of proof for companies to demonstrate their technical capacity (EU, 2004).

The requirements of the most economical advantageousness and environmental criteria differ greatly between product groups i.e., some product groups are more likely to have suitable criteria than others. Environmental award criteria existed in over 50% of the tender calls of product groups like "transport services," "paper products," "chemicals and chemical products" and "cleaning products." In the Nordic study by Kippo-Edlund et al. (2005) the use of environmental criteria was common in such product groups as food products and beverages, various type of pulp and paper products, office and computing machinery and equipment, repair, maintenance and installation services, and refuse services. Kippo-Edlund et al. conclude that it is important to disseminate good practices and criteria of these products. At the same time there may be a lack of suitable criteria for some services, so that in the Nordic study no criteria were presented e.g., for insurance and pension funding services. Their conclusion was that criteria should be established for these product groups.

The fact that over one third of the tender calls of products and services in the potentially green product groups include environmental criteria, does not, however, tell the whole story. This only shows that environmental issues will be considered in the award phase but it does not describe how much weight they will be given in the decision. Thus, the examination of the weighting and scoring of different elements of economical advantageousness was needed. Although the EU procurement directives suggest that weighting should be given, this was not the case in all tender calls. In Denmark, in 48 of the 55 tender calls weighting was given, whereas in Finland and Sweden the rate was far below. Unclear weighting and scoring will allow the purchasing authority much freedom in the decision phase. They may, for example, decide that the weighting of environmental issues is something between 5-20% or that the initial price covers the majority of the importance and the other elements of economical advantageousness are worth a low weight. Thus, if the weighting and scoring are not given in the tender call, it may be impossible to assess beforehand whether "green aspects'"will really matter in the award decision.

As the average weight of environmental criteria was 3.3%, one could say that the weights were generally low. On the other hand, this means that product/service that is ecologically sound and gets "green" points in the award phase, can be 3.4%[3] more expensive

compared to a product/service that does not get any "green" points, without loosing the competition. This gives a preference for the green product, albeit rather small. Some tender calls gave weights between 5% and 20%, which can mean a substantial benefit for the green products.

Looking at the potentially green product groups, price component represented half of the overall economical advantageousness followed by quality factors (37%) and delivery terms (7%). Environmental aspects represented an average of 3.3% of the overall economical advantageousness, whereas social aspects were weighted 1.7%. However, there were differences between the countries, so that total price was clearly the major component in the Finnish award whereas in Swedish and Danish tender calls the quality issues and price were considered almost equal in weighting. In addition, in Sweden, the average weight of environmental aspects in the award was 4.6% and in Denmark 3.7% whereas in Finland the weight was 1.5%.

It is good to note, that the directives present also several other alternative ways to include environmental aspects in the purchasing process. Environmental aspects can be integrated into the purchasing process also in the definition of the object of the contracts, the description of technical specifications, selection criteria and contract clauses. Thus the existence of award criteria and the weighting given for them do not alone determine the greenness of the contract, although they give valuable information of it. In the study by Kippo-Edlund et al. (2005), 58% of the Swedish tender calls included some kind of environmental criteria, but only 36% included environmental award criteria. Environmental aspects were considered also in selection criteria (36% of tender calls), technical specifications (39%), and contract clauses (12%).

Comparing the existence of environmental award criteria in the study by Kippo-Edlund et al. (2005) and in the present study, respectively, the figures are for Finland 24% and 25%, for Sweden 36% and 31%, and for Denmark 58% and 27%. The difference between the two studies is large for the Danish tender calls, but the figures for Finland and Sweden are quite consistent.

Recent studies conducted on GPP in Nordic countries and in Europe (Kippo-Edlund et al., 2005; Bouwer et al.; 2005) showed that

environmental criteria exist in the tender calls also in other form than in the award criteria. According to the study (Bouwer et al., 2005), environmental criteria were mentioned fairly well in over 40% of the Finnish tender calls. In Sweden and Denmark the percentages were 60% and 30%, respectively. In the Nordic study about the situation in spring 2003, about 60% of tender calls in Sweden and Denmark included some kind of environmental criteria, whereas the figure for Finland was only 30%. In the EU study focusing year 2005, the figures for Sweden, Denmark and Finland were 80%, 60% and 55%, respectively.

This current study supports the view of the previous studies (Kippo-Edlund et al., 2005; Bouwer et al., 2005) that public purchasers in Finland, Sweden and Denmark seek to consider environmental aspects quite often.

The studies show that environmental aspects really have a position among the most used criteria of total economical advantageousness. Although the weighting of environmental aspects is rather low, especially in Finland, it still gives a price preference for the ecologically more sound products. Together the high occurrence of the environmental criteria in the tender calls can give a remarkable signal to the manufacturers in favor of the design and manufacture of ecologically more sound products.

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NOTES

1. In Table 2, tender calls that included certain award criteria, i.e., elements of the most economically advantageous tender are presented. In addition to the “main elements,” also the most common subelements are shown. See Appendix for all the environmental criteria that were recorded or looked for.
2. In Figures 2-5 parenthesis, the weight of environmental aspects in the total sample of the tender calls based on overall economical advantageousness is given. (Figure 2, N_W = 112 all

three countries, Figure 3, $n_{W,FI}$ = 29 Finland, Figure 4, $n_{W,SE}$ = 35 Sweden and Figure 5, $n_{W,DK}$ =48 Denmark)

3. 3.3 / (100-3.3) = 3.4%.

REFERENCES

Bouwer, M., de Jong, K., Jonk, M., Berman, T., Bersani. R., Lusser, H., Nissinen, A, Parikka, K., & Szuppinger, P. (2005). "Green Public Procurement in Europe 2005 - Status Overview." [On-line]. Available at www.ec.europa.eu/environment/gpp/pdf/report_facts. (Retrieved January 10, 2006).

Erdmenger, C. (2003). *Buying into the Environment, Experiences, Opportunities and Potential for Eco-Procurement.* Sheffield, UK: Greenleaf Publishing.

European Union (2004). *Buying Green! A Handbook on Environmental Public Procurement* [On-line]. Available at www.ucd.ie/procure/resources/buyinggreen.pdf. [Retrieved February 7, 2005]

EU Commission (2003). *Integrated Product Policy* (Communication from the Commission to the Council and the European Parliament. [On-line]. Available at www.europa.eu.int/comm/environment/ipp/ippcommunication.htm. (Retrieved February 7, 2005).

ICLEI (2005). *Sustainable Procurement.* [On-line]. Available at www.iclei-europe.org/index.php?id=194. (Retrieved February 10, 2005).

International Institute for Sustainable Development (2005). *Green Procurement.* [On-line]. Available at www.bsdglobal.com/tools/bt_green_pro.asp. (Retrieved February 11, 2005).

Kippo-Edlund, P., Hauta-Heikkilä, H., Miettinen, H., & Nissinen, A. (2005). "Measuring the Environmental Soundness of Public Procurement in Nordic Countries." *TemaNord 2005:505*, Nordic Council of Ministers, Copenhagen. [On-line]. Available at www.norden.org/pub/miljo/miljo/sk/TN2005505.asp.

Li, L., & Geiser, K. (2005). "Environmentally Responsible Public Procurement (ERPP) and Its Implications for Integrated Product Policy (IPP)." *Journal of Cleaner Production, 13* (7): 705-715.

Micklus, D. (2002, July 18). "Connecticut a Leader in "Green" Purchasing." *DAS News Release*.

Organization for Economic Co-operation and Development (2003). *The Environmental Performance of Public Procurement: Issues of Policy Coherence*. Paris, France: Author.

Organization for Economic Co-operation and Development (2002). "Recommendation of the Council on Improving the Environmental Performance of Public Procurement Act C(2003)3." Paris, France: Author.

Swanson, M., Weissman, A., Davis, G., Socolof, M. L., & Davis, K. (2005). "Developing Priorities for Greener State Government Purchasing: A California Case Study." *Journal of Cleaner Production*, *13* (7): 669 – 677.

TED-database (Undated). *Tenders Electronic Daily*. [On-line]. Available at: www.ted.publications.eu.int.

United Nations (2002). *WSSD, World Summit on Sustainable Development, Plan of Implementation.* [On-line]. Available at www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm. (Retrieved April 29, 2004).

APPENDIX
Environmental Award Criteria in the Tender Calls

Environmental award criteria	Finland $n_{E,FI}$=53	Sweden $n_{E,SE}$=54	Denmark $n_{E,DK}$=55	N=162
Environmental policy	3	9	4	16
Environmental management system	1	6	6	13
Other: Environmental issues (not well defined criteria)	7	1	5	13
EU eco label or other eco-label	-	3	3	6
Chemical content	-	3	3	6
Recycling / reuse system	2	2	1	5
Packaging material	-	2	3	5
Noise	-		5	5
Environmental program	-	1	3	4
Material choice	1	-	2	3
Machine norm or standard	1	1	1	3

APPENDIX (Continued)

Environmental award criteria	Finland nE,FI=53	Sweden nE,SE=54	Denmark nE,DK=55	N=162
Energy use	-	1	2	3
Environmental certificates	2	-	-	2
Environmental training (Eco-driving)	-	1	1	2
Recyclable	1	1		2
Fuel, hydraulic oil, spare parts	-	-	2	2
Environmental management of subcontractors	-	-	2	2
Environmental training and knowledge	1	-	-	1
Regular information about environmental issues	1	-	-	1
Recycled material	1	-	-	1
"Environmental class" of the product	-	1	-	1
Environmental laws	-	1	-	1
Environmental reporting	-	1	-	1
Actions towards environmental protection	-	1	-	1
Specified environment management measures	-	1	-	1
Biogas, ethanol, electricity or hybrid	-	1	-	1
Information on the material used for certain purposes	-	1	-	1
LCA-based EPD	-	-	1	1
Production energy	-	-	1	1
Production recycling	-	-	1	1
Production chemicals	-	-	1	1
Criteria that were also checked but not found in the *award criteria* of the tenders:	-	-	-	-
Emissions to air or water	-	-	-	-
Material amount	-	-	-	-
Package recycling / reuse system	-	-	-	-
Recyclable package	-	-	-	-

APPENDIX (Continued)

Environmental award criteria	Finland nE,FI=53	Sweden nE,SE=54	Denmark nE,DK=55	N=162
Criteria based EPD	-	-	-	-
Environmental impact assessment	-	-	-	-
Production emissions	-	-	-	-
Production material efficiency	-	-	-	-
Environmental effects of transport per km	-	-	-	-
Vehicle drive distance in service / work contracts	-	-	-	-
Environmental effects of transport	-	-	-	-
Transport distance of products	-	-	-	-