Green procurement activities: some environmental indicators and practical actions taken by industry and tourism

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Abstract: New concepts in environmental legislation are now going from the command-and-control rule to the prevention, promotion and extended producer responsibility. In addition to international certification standards such as ISO 14000, other aspects such as competitive strategic issues, new market opportunities, process innovation, products and services, are showing that for the industry sector, protection of the environment can be considered good for business. Several indicators show evidence of this. One such indicator is green procurement activities ongoing at several levels and in several locations. Elaboration of guidelines on how to include green procurement in public policy are under discussion or are definitive established by governments such as Canada, the USA and the EU. These are some very important examples of environmental indicators. To understand this field better, we have conducted an investigation into the green procurement activities of industry and the tourism sector. In some sectors, such as tourism, environmental protection gives additional features and added-value. An analysis of the tourism sector has been performed, taking into account laws, procurement activities, corporate strategies, consumer behaviour, innovations both implemented and planned. Positive signals from industry and sectors such as tourism show that environmental protection is a must for all of us and its adoption is strongly recommended in several fields, such as industry and tourism, investigated in this study.

Keywords: Environment; green procurement; tourism; hospitality industry; industry.

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1 Introduction

In recent decades global concern for the environment has grown very quickly. The UNEP Conference of 1992 in Rio de Janeiro, with the publication of Agenda 21, was an important milestone in the global call for practical action, which was followed by several important initiatives and intents. It is quite evident that global issues in the field of environmental protection are a top priority for most organisations, as we can see below:

- UNEP claims that health effects due to environmental factors are very marked
- Academia has enhanced its effort in the environmental sciences with an exponentially increasing number of papers published yearly
- Industry is now no longer considering environmental protection as a constraint to deal with, but, on the contrary, as a strategic issue for development
- ISO certification worldwide and EMAS registration in Europe are increasing very quickly as well
- International legislation and standards focusing on environmental protection are continuously published. New concepts in environmental legislation are now going from the command-and-control rule to the prevention promotion and extended producer responsibility. In addition to international certification standards such as ISO 14000, other aspects show that for the industry sector, protection of the environment can be considered good for business.

Taking in consideration what was stated above, we defined as the *main objective* of this paper to identify important environmental indicators and practical actions taken by industry and the tourism sector in relation to green procurement activities, in order to help the decision makers in those industries.

As *specific objectives* we have defined the following:

1 present a collection of important *environmental indicators* for industry and the tourism sector related to procurement activities

2 present a collection of important *practical actions* taken by industry and the tourism sector related to procurement activities

3 identify the main *benefits* and *challenges* of adopting green procurement strategies for the *industry sector* and the *tourism sector* taking into account some macro-environmental variables such as, for example: the economic, the political and legal, the sociocultural, the natural, the technological and the competitive environment.

The paper is structured as follows: Section 2 looks at methodology, Section 3 covers the meaning of green procurement and Section 4 concludes.

2 Methodology

For the development of this paper we have utilised the *survey* method, because of its ability to aggregate data from many cases, analysing them out of context. This method is

appropriated when the research emphasis is to verify opinions, actions or some specific features [1].

3 Green procurement – what does this mean?

Green procurement or buying green means "purchasing products or services that will reduce environmental impact" [2]. Procurement is the cornerstone of greening operations, because it helps to improve efficiency, by looking at product characteristics, or the pollution generated by making the product. Issues like packaging, waste disposal, resource use, transportation, durability, toxicity, pathogenicity, recyclability, among others, are very important in greening operations.

3.1 Green procurement activities in industry and tourism

Industry and tourism worldwide are seeing trends of increasing pressure related to environmental concerns. These pressures originate from many environments. As we can see, the following ones are relative to the macro-environment (uncontrollable variables), which are the major forces that affect organisations: the economic, the political and legal, the sociocultural, the natural, the technological and the competitive environment [3,4]. The micro-environment represents forces of the immediate environment of the organisation that affect all the organisational functions, its suppliers, customers, employees, and other important stakeholders of the organisation.

For the purpose of this paper, we will look at those pressures on procurement activities, in particular. The influences of those many environments can lead to a new approach to procurement activities for industry and tourism.

The *economic environment* is facing new business cycles and expenditures pattern as well as questions related to the income of consumers – especially because of the effects of the globalisation of the economy. These new issues are important to be observed by organisational purchasers. They need to be conscious about what is going on around the world, because their organisation can be seriously affected.

The *political and legal environment* by way of laws, regulations, and political pressures is directly affecting decision makers, because restrictions are more and more severe. Some regulations related to packages, products components, waste generated in the production process and consumer rights, among others, are directly influencing procurement activities.

The *sociocultural environment*, due to the rapidly growing adoption of information technologies, is changing abruptly. Despite trends in local cultures being strengthened, global culture is being unified, especially because of the internet's influence. So, the values, beliefs and behaviours of people are changing around the world. Environmental concern is one of the most important elements of unification of values, beliefs and behaviours, as we can see. Social responsibility and the definition of the ethical principles of corporations, are concepts that are being internalised quickly by companies, especially because of pressures from society. In order to apply these new attitudes, organisational purchasers are being required to change their patterns as well as attitudes and behaviours.

The *natural environment* involves every resource available or affected by the organisation. Air, water, minerals, vegetables, and animals can be part of the natural

environment of the organisations, whether used or not by them to produce their goods or services. Organisational activities may cause many negative as well as positive impacts on the natural environment, but these impacts will depend on the way the organisations deal with nature. In this sense, organisations can waste or restore resources as well as increase or reduce pollution. Organisational purchasers have many responsibilities in order to help their companies to produce more positive than negative impacts on the natural environment.

Scientific knowledge, research, inventions and innovations which result in new or improved goods and services constitute the *technological environment*. Technological developments provide important opportunities to improve the value offered to customers. When organisations do not follow changes, technology becomes a threat. Once again, organisational purchasers are asked to contribute in order to give support to the innovation processes of their organisations. Their knowledge and practical experience related to procurement activities can sensibly improve the innovation process.

All the organisations that potentially could create value for the customers of a particular organisation constitute the *competitive environment* of that organisation. In this sense, it is necessary to discover what the competitors are doing and to try to forecast what they will be able to do in the future. Analysing the competitive environment can help an organisation to develop its competitive advantages in order to face its competitors. Mapping the competitive environment can, in the final analysis, provide the organisation's survival in the long term. Organisational purchasers can contribute to the survival of their organisations by mapping what competitors are buying, from whom and for what purpose. Discovering this important information can guide the purchaser in his/her next activities and facilitate his/her job in order to discover what are the best available solutions to protect the natural environment.

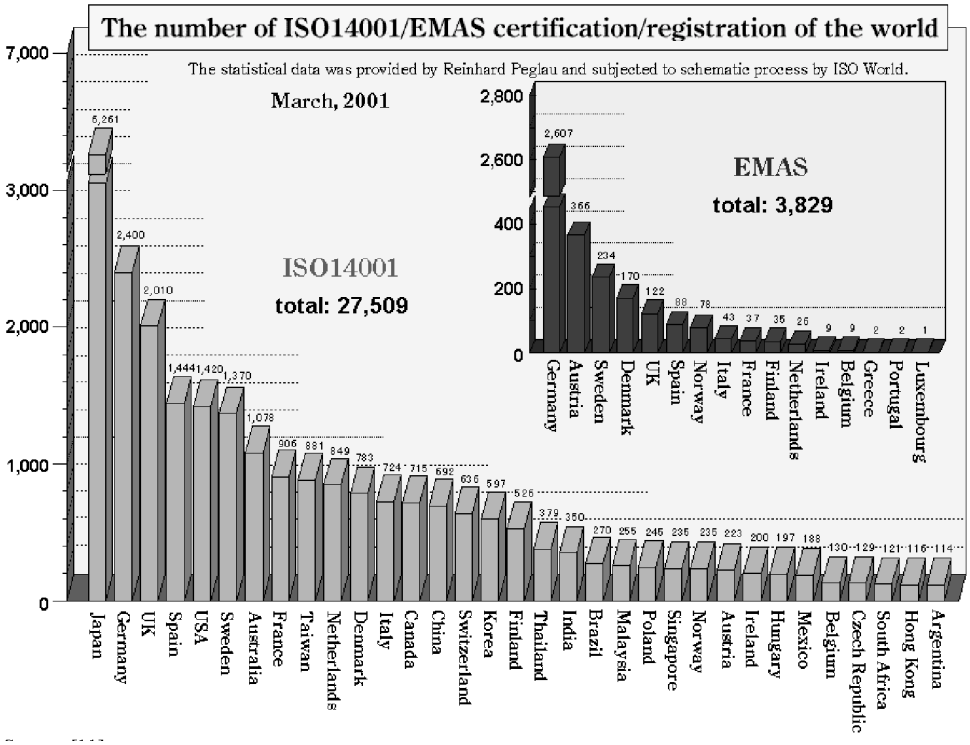
As we can see above, organisational purchasers have a very important role in the adoption and implementation of the sustainable development principles by organisations. In the production model 'Input-Transformation-Output', organisational purchasers are especially connected with the 'input' phase.

If a company wants to become a green company, it will be necessary to develop new standards for procurement activities. For this reason, organisational purchasers will need to change their point of view and start to develop the requirements for a 'green procurement activity'. But, to make this work it is necessary to know what are the most important environmental indicators that are growing around the world. In our paper we will pay special attention to industry and tourism, as can be seen below.

3.2 Some environmental indicators and practical actions for industry

A representative environmental indicator for industry is given by the continuously growing number of ISO 14001 certifications and EMAS registrations worldwide. The logic of the exponential evolution of the number of implemented Environmental Management Systems (EMS) within industries consists of the involvement of suppliers and sub-suppliers in the evaluation of indirect environmental aspects, as required by the standard ISO 14001 (Figure 1).

Figure 1 The number of ISO14001/EMAS certification/registration in the world



Source: [5]

It is quite strange indeed that environmental protection cannot be achieved by committing critical processes to suppliers. So, even if a factory has very few local environmentally critical aspects (it could be the case of a factory assembling parts only), its 'responsibility' may be extended to the processes performed by the other companies providing the components. In the electromechanical sector it has been estimated that about 95% of the environmental impact of products is outside the gates of the factory. Thus comes the necessity to establish a supply environmental management process, which can be considered a green procurement activity.

A scientific approach adopted by multinational companies to extend the producer's responsibility to the product's life is the so-called Life Cycle Assessment (LCA), described by the ISO 14040 standards. LCA takes into account in its evaluation, all the phases of the production chain, including raw material extraction, pre-processing, processing, assembling, transportation, use, reuse, maintenance, recycling, and disposal. This technique allows the designers to interact with supply managers and with sellers and its objective is to identify critical phases, which may be hidden to other analyses. To perform accurate LCA it is important to have a good relationship with the main suppliers because they can provide appropriate data for analysis. Such a partnership is not always possible and, in those cases, averaged public databases are to be used.

LCA results however are not yet used very often as a grid for the selection of suppliers; this is particularly true in so-called Business to Business (B2B). Several

ongoing actions to motivate SMEs and to integrate them into the EMS program are organised by multinational groups. This approach is considered to be the most fruitful 'soft green procurement', where involvement of the supplier is better than imposing severe limits or restrictions.

In the public sector, however, the situation is completely different and, as already stated, environmental aspects will be an important element in the evaluation of the company.

One step taken by the EC and ISO is in the direction of product environmental characterisation. The EC started a few years ago with the definition of the European Ecolabel scheme (similar to other existing labels focused on environmental aspects) and now the ISO with the publication of the ISO 14020 – Environmental Product Declarations.

Even if the logic is different, the goal is the same: to define a method of promoting better environmental product-systems, with an LCA based systematic and reproducible approach. The first certified EPDs are available but experience in this field is still limited. When several products are documented in terms of EPD, comparative analyses will be possible and probably recommended.

3.3 Some environmental indicators and practical actions for the tourism sector

For the tourism sector, especially for the hospitality industry, many important environmental indicators are flourishing. Given the importance of tourism, and the key role hotels have to play in the sustainable development of this sector, the International Hotel Association (IHA), the International Hotels Environment Initiative (IHEI), the United Nations Environment Programme (UNEP) and the UNEP Industry and Environment (UNEP/IE) have edited some manuals called 'Environmental Actions Pack for Hotels' [6] and 'Environmental Good Practice in Hotels' [7], which try to promote environmental management of hotels and build capacity on this important issue.

Why go green? This question is stated in [6, p.6], the answers are the following:

1 Reduced consumption and therefore reduced costs

2 Customer loyalty and enhanced public image

3 Attracting and retaining dedicated staff

4 Long-term business benefits and

5 Improved competitive position.

The hospitality industry is mainly considering the following environmental indicators, when proceeding with their environmental checklist:

1 energy

2 solid waste

3 water usage

4 effluents and emissions

5 contractors and suppliers

6 business issues

especially related to the strategic decisions of the business (association with a carrier or tour operator which is environmentally aware, the hotel's guests are becoming environmentally concerned, the hotel's staff is environmentally concerned, the environmental reputation of the hotel, the decision to extend the hotel or to build a new one, the competitors' environmental action, complaints about poor environmental practices, the hotel has been fined or cautioned about pollution, among other issues) [2,5-8,9]

Many environmental measures are aimed at reduced consumption (energy, water, office materials, food supply, etc.). With regard to energy, a survey of hotels suggests that energy savings can be upwards of 5% for good housekeeping measures and about 10% for low-cost measures.

As regards purchasing activities, some practical actions for the hospitality industry are given, in order to build new green procurement strategies. It is quite important that the organisation develop and establish some policies related to the following products or services:

1 purchasing environmentally friendly products when possible

2 buying recycled or recyclable products when possible

3 purchasing mainly fresh food – as opposed to frozen or heavily packaged food

4 taking environmental considerations into account when deciding to employ a contractor

5 evaluating the performance of eco-friendly products

6 avoiding buying products, when alternatives exist, especially related to the following items:

- products made from tropical hardwoods
- CFC-based products (fridges, air conditioning, aerosols)
- chlorine bleaches or bleached linen
- overly packaged products;
- leaded petrol
- halon fire extinguishers.

In order to identify better some important environmental indicators and some practical actions taken by the tourism sector, we summarise them in Table 1.

Table 1 Environmental indicators and practical actions taken by the tourism sector

Environmental Indicators	*Practical Actions*
Energy	• building efficiency and conservation measures • adoption of fluorescent compact light bulbs • adoption of new technologies such as sensors, electronic keys, timers, etc. • adoption of solar cells, weather vanes, geothermal energy, etc.
Water usage	• building efficiency and conservation measures • present separate water costings according to use
Materials	• building efficiency and conservation measures • preferably buying regional items • preferably buying recycled or recyclable products • purchasing mainly fresh food • avoid toxic and/or dangerous products • improve the stock conditions of the raw materials • avoid overly packaged products
Solid waste	• 3 Rs: reduction, reuse, recycling
Effluents and emissions	• minimisation • reuse, recycle or recirculate • use impure water for flushing toilets
Contractors and suppliers	• develop them in order to buy environmentally friendly products and services • collect information about raw materials used by the organisations and their suppliers • ask for alternative raw materials • specify new ecological patterns
Purchasing activity	• centralise information about alternative products, raw material substitutes and new technologies • make all information available to decision makers
Transport	• use fuel free from lead • consider the possibility of using propane, natural gas or electrical propulsion systems in equipment • take care with antifreeze products • recycle used oil • practise effective maintenance of vehicles • reduce unnecessary transport

Source: Summarised by authors from [2,5-23]

Besides this, some suggestions of environmental indicators for the hospitality industry proceed the building and monitoring of its environmental performance are stated in Table 2.

Table 2 Suggested environmental indicators for input and output for the hospitality industry

Input	*Suggested Environmental Indicators*
Water consumption	• m3 p/ nº of guests
	• m3 p/ kg of meals served
	• m3 p/ litre of served beverages
	• m3 p/ US$ 100 of total income
Energy consumption	• values of total thermal transfer: < 45 watts p/m2
	• lighting levels:
	- rooms and corridors: 15 watts p/m2
	- public areas: 17 watts p/m2
	- banquet areas: 20 watts p/m2
	• kWh p/nº of guests
	• kWh p/US$ 100 of total revenue
	• kWh p/m2 p/service area in operation
	• kWh p/m2 of total external area
	• kWh p/m2 of total internal area (behind scenes)
Gas consumption	• litres p/nº of meals served
	• litres p/US$ 100 of total revenue from food and beverages
Fuel consumption	• litres p/kilo of laundry
	• litres p/US$ 100 of total revenue
Output	*Suggested Environmental Indicators*
Solid waste generated	• Each residue category is calculated as a fraction of the total amount of residue
	• total tons p/guests
	• total tons p/staff
Effluent generated	• total litres p/guests
	• total litres p/staff

Source: Summarised by authors from [2,5-16, 18-23]

3.4 Benefits and challenges of adopting green procurement strategies

From a general point of view, Winter [9] has stated that the main benefits of an eco-management can be the following:

1 Human survival

2 Public consensus

3 Market opportunities

4 Reduction of risk

5 Cost reduction

6 Personal integrity.

In the Winter model [9] there are six principles considered essential for the success of organisations in the long term, which are:

1 Quality

2 Creativity

3 Humanity

4 Profitability

5 Continuity and

6 Loyalty.

This model includes the strategic use of traditional business management instruments for ecological purposes. Three key elements are characteristic of business management with ecological awareness:

- Innovation
- Cooperation
- Communication.

Organisations that are becoming eco-friendly see many opportunities and benefits from changing their way of thinking and in relation to the environmental issues. They know that are too many challenges to be overcome yet. But these challenges are the factors that continuously motivate the innovation process. One of these challenges is related to procurement activities.

Many benefits can be achieved when organisations perform an efficient and efficacious role in exercising their purchasing activities. However, there are a number of methods of doing green procurement, one of which is the application of environmental criteria to target product categories. This is not always a simple matter, especially when one must consider all requirements within the material life cycle in making a final decision, along with performance, health and safety and cost requirements.

Although the procurement process is only one aspect of selecting environmentally preferred materials, it can only be effective when collaboration exists between the material requester (user, owner, etc.), the material specifier (designer, engineer, etc.), the purchaser, and the supplier (manufacturer, distributor, etc.).

For this reason, it is possible to say that the procurement function provides an important link to bring the key players together to improve collectively the way we make, buy, use and dispose of (reuse/recycle) materials.

In order to summarise what was above stated, as well as the main ideas of the paper, we developed Table 3 (Industry Sector) and Table 4 (Tourism Sector).

Table 3 *The Industry Sector* – some benefits and challenges of adopting green procurement strategies

Macro-environmental variables	*Benefits*	*Challenges*
Economic	Aspects such as energy efficiency or resource conservation are parallel environmental and economic factors [23,9].	With increasing environmental concern a premium prize can be established for better environmental performing products (but not in all cases).
Political and legal	The extended producer responsibility concept, which is under discussion, will not be a problem.	Creating a partnership with suppliers may help in legal compliance and better global performance.
Sociocultural	This should be the main goal of a 'green' attitude of any company.	Performing as a socioculturally responsible company, visibility advantages will improve its business.
Natural	The first benefit from green procurement in the industry is in the spreading of an 'environmental' culture, which will obviously have positive effects on 'green' companies.	The key issue consists of creating rewards mechanisms for suppliers. According to Hawken, Lovins and Lovins [19], there is potential business value being created by companies that are starting to reinvest in natural capital.
Technological	Technological benefits can be achieved with application of LCA.	Definition of recyclable products and multifunctional systems is a great challenge for technology and for the environment.
Competitive	When all the previous benefits are achieved this is just a consequence.	Financing activities such as green procurement may be a good investment for any advanced company.

Table 4 *The Tourism Sector* – some benefits and challenges of adopting green procurement strategies

Macro-environmental variables	*Benefits*	*Challenges*
Economic	Environmentally friendly organisations generally identify many benefits of developing new suppliers, especially when they are local suppliers [18].	The challenge can be to maintain the strong motivation to buy green, despite the low prices of similar products or services that are not green.
Political and legal	Stringent environmental regulations are becoming a reality and organisations are under pressure to accomplish them. In this sense, the government procurement activities can be a special factor of competitiveness for organisations which are supporting ecological consciousness in the hospitality industry.	Accomplishing environmental regulations and requirements can be very challenging for organisations, since governments and society are becoming more and more exigent. Purchasers of the tourism sector need to be conscious of the main regulations of their country, state and municipality, in order to act properly.
Sociocultural	NGOs and society, in general, are growing fast in environmental consciousness. Tourists and consumers are changing their motivations and their profile, for example, there is an internet site that offers a list of green hotels in Canada, among other green businesses [14].	Changes in consumer behaviour are happening fast. Loyalty or fidelity is not an easy thing to get from a customer. However, green customers/tourists, are more loyal because they do not yet have a diversity of suppliers to choose from . So, the challenge for purchasers is to buy what the tourist wants, in order to keep tourist loyalty in the long run.
Natural	The main benefit to the natural environment of green procurement activities will be the gradual reduction of the environmental impact, among many others.	Organisations can waste or restore resources as well as increase or reduce pollution. Organisational purchasers have many responsibilities in order to help their companies to produce more positive than negative impacts on the natural environment. The challenge consists of a permanent search for new possibilities.
Technological	The technological innovation required of the suppliers of the hospitality industry, in order to adapt themselves to a green procurement standard, will be a benefit to both sides of the relation: customers and suppliers.	Purchasers must be part of the team that develops new products and services. They have important experience and knowledge to transmit to R&D personnel. The challenge for the organisational purchasers of the tourism sector will be to stay up to date with new opportunities.
Competitive	When innovation is required, we have many opportunities to become more competitive. The benefits will be collected by organisations that are already adopting new environmental strategies.	Organisational purchasers can contribute to the survival of their organisations by mapping what competitors are buying, from whom and for what purpose. Their challenge, in other words, is to be very well informed and develop a competitive intelligence related to the main concerns of their organisation.

4 Final considerations

An investigation into green procurement activities worldwide has been described in this paper. In some sectors, such as the tourism sector, environmental protection gives additional features and added value. There is a Canadian guide called 'How to Choose a Green Hotel' [8], which gives very important clues about the subject. We can find a feeling around the world that tourism and conservation can go hand-in-hand. Ecotourism is evidence of this new thinking. In this sense, purchasers have a crucial role to perform in their organisations, in order to contribute and help protect the earth.

As we can see in the document 'Environment – General Provisions – Sixth Environment Action Programme. Environment 2010: Our future, our choice' [13], from the European Community, one of the measures to be taken, in order to implement the European Union's sustainable development strategy, is to work in partnership with business. In this sense, one of the recommended actions is 'the promotion of green procurement'. One important factor of this action is 'The European Green Purchasing Network – EGPN' [11]. It adopts the concept of supply chain management for the environment and it promotes sustainable innovation and competitiveness through dialogue between vendors and buyers along the entire supply chain. The aim is to bring together a community of purchasing organisations into a voluntary initiative.

Another example of the importance of the 'green procurement activity' is given by the EPA – The United States Environmental Protection Agency, which has launched the EPP Program, called 'Environmentally Preferable Purchasing' [12]. The EPP is about incorporating key environmental factors with traditional price and performance considerations into purchasing decisions.

Canada has understood that greener government procurement is an important element in integrating sustainable development into day to day activities of government departments. In this sense, it has established the 'Environment Canada's Green Procurement Policy' [8,14].

As verified by our research, we can say that many other examples of policies and strategies about greener procurement activities are flourishing around the world. Hence, as the main conclusion on the subject of this paper we are able to say that we have identified many positive signals from industry and tourism which show that environmental protection is a must for all of us [25] and its adoption is strongly recommended.

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