PROMOTING SUSTAINABLE CONSTRUCTION in the EU

Green Labels, Certification Systems and Green Procurement

June 2015

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1. INTRODUCTION

There are a multitude of definitions for eco-labels nowadays mostly known as green labels. We could say that a green label is an environmental certification (represented by a symbol) awarded to specific products including buildings and services to show that is has minimal negative impact on the environment in comparison with other products or services having the same function.

Green labels can help developers and consumers to choose products and/or services that are less harmful to the environment or are made in a way that treats people more fairly. They are usually part of an organised labelling scheme that helps to make sure the label is accurate. Generally, the best schemes are those that set common rules and use somebody independent (third party) to test this.

Nowadays there are green labels for almost every kind of product, from paper to paints, to food and construction material, for example. They can be very useful in helping to choose products or services more environmental friendly such as using less energy or water, containing fewer harmful or polluting ingredients, made from recycled materials or taking into consideration wildlife and the natural world.

The building sector in developing countries is responsible for about 40% of the overall environmental burden (UNEP, 1999)[1] having extensive direct and indirect impacts on the environment due to the fact that during their construction, occupancy, renovation, repurposing, and demolition, buildings use energy, water, raw materials, generate wastes, and emit potentially harmful atmospheric emissions making this sector one of the three urban areas that generates most impacts on the environment. In order to reduce these impacts, private, social and governmental organizations have created several voluntary and sometimes compulsory green labels or green building standards, certification schemes, and rating systems to facilitate the mitigation of these impacts on the natural environment through the use of sustainable design and production and consumption of environmentally friendly products and services.

The promotion of sustainable consumption and production (SCP) was introduced into EU in July 2008 with the publication of the Sustainable Consumption & Production and Sustainable Industrial Policy Action Plan (SCP & SIP Action Plan)[2]. These two documents set a framework for environmental product policy aiming to improve the environmental performance of products and stimulate the demand for more sustainable goods with particular reference being made to the need of reinforcing and better integrate the existing Energy and Environmental labelling and Green Public Procurement (GPP).

[1] Cited by Ng S.T. et al in "A Life Cycle Based Green Building Product Labelling Scheme"
[2] Document available at the following the European Commission website:
http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52008DC0397&from=EN

GPP was officially introduced in EU in July 2008 with the publication of the communication called “Public Procurement for a Better Environment”, which provides guidance on how to reduce the environmental impact caused by the public sector consumption and how to use GPP to stimulate innovation in environmental technologies, products and services.

This report is part of the Switch Asia project financed by EU and implemented in Nepal by UN-Habitat jointly with IHS as the EU partner aiming to map using a desktop review, the current experiences and development of EU members with regard to creating and implementing green labels and green procurements to make the housing sector more environmentally friendly and sustainable.

The report is organized in three main sections:

1. In the first section the report presents a general overview of the main types, terms, benefits, actors and certification processes linked to green labels.
2. The second section focuses on the EU experiences with the creation and implementation of green labels including a Dutch case on the implementation of the EU Energy Efficiency label and finally it presents a short survey of other green labels being developed and used in key countries outside EU.
3. The third part covers the state of the art on green public procurement (GPP) with a focus on EU experiences and ends with on how GPP is being implemented in UK.

2. GREEN LABELS AND CERTIFICATION PROCESS

2.1 CREATING AN ECO-LABEL AND CERTIFYING A LABEL

Green label or Ecolabelling systems exist for products, services and even for buildings. The process for creating or certifying labels can be initiated by NGOs, or by the government; such as the case of the European Union which has developed a specific legislation for the creation and implementation of green labels for a variety of products, services and buildings.

In general; labels are created as voluntary schemes or programmes using their own standards such the case with one party label (first party certification)[3]. Others are compulsory such the ones created by local, national or international organizations.

The process of creating a voluntary or compulsory governmental label (green label) is in general done by developing and approving an ordinance or a Directive, such as the case of the EU. This directive or ordinance defines several aspects linked to the implementation of the label such as an indication of the organization that is going to be responsible for managing the label, the procedures companies will follow to label their products, clear liabilities and administrative procedures, technical aspects (criteria) and enforcement mechanisms.

Currently there is a tendency, especially in the area of the energy, to make the governmental labels compulsory; (mandatory) as in the case of energy efficiency for appliances and products and theenergy performance of buildings.

When a label is mandatory, as in the case of energy products, all vendors or producers of this labelled product must display the certification logo including how much energy this product is consuming. Technical documentation containing key specifications stated in the ordinance or directive that has created the label as well as product information must be provided to dealers free of charge in case it is requested.

2.2 GREEN PRODUCT CERTIFICATION LABELS[4]

Green product certification in the form of labels appeared in 1978 when the German Federal Ministry of Interior created the first label named “The Blue Angel” years has which in recent witnessed an increase of their popularity arising from a general concern about environmental deterioration and climate change.

Environmentally friendly products have grown in popularity so much that it has increased the number of consumerlogos, each with varying levels of reliability, thoroughness and independence, even to the extent that there is a danger of them being of misused and of the quality of their features being misinterpretted. Commercial enterprises have come to realize that environmental concerns can be translated into a market advantage for certain products, and indeed a number or environmental declarations and claims have become in association with certain products describing them as being “recyclable”, “eco-friendly”, “low energy”, etc.

[3] For the definition of this term and others, please look in Box 1 page 8 of this report.
[4] Information gathered from Global Ecolabelling Network (GEN) available in this link: http://www.globalecolabelling.net/what_is_ecolabelling/index.htm

When talking about green product certification labels or environmental labels we are referring to the practice of labelling products based on many environmental considerations such as hazard warnings, certified marketing claims and information disclosure labels. This information facilitates (or influences) the decision that the customer makes when selecting a product because it informs him/her about product characteristics that may not be readily apparent and theyallow consumers to make comparisons between products and choose the product with a minimum environmental impact. Therefore, green product certification labelling often affects manufacturers and marketers because they have to design products that must compete based on quality, price, availability and environmental attributes.

Before describe the label certification process it is useful to know the meaning of key terms used in this field (Box 1). These terms will be used throughout the whole report and knowing them will facilitate the understanding of the subjects discussed in this part of the report.

Box 1: Summary of the most useful terms used in the label certification process[5]

[5] Source: Whole Building Design Guide, which is a programme of the National Institute of Building Sciences USA. For more information please see: http://www.wbdg.org/resources/gbs.php

Eco-label (green label); a visual communication tool indicating environmentally preferable products, services or companies that are based on standards or criteria. Note: Eco-labels may be referred to as tiered, pass-fail, Type I, II, III, multi-attribute, single attribute, etc.

Eco-labelling programme or scheme; refers to the organization that creates an eco-label, and is responsible for its ongoing management and use.

Certification; is a confirmation that a product meets defined criteria of a standard. According to ISO certification is: "any activity concerned with determining directly or indirectly that relevant requirements are fulfilled".

Standard; is a set of guidelines and criteria against which a product can be judged. ISO defines a standard as: "a document, established by consensus, approved by a recognized body that provides for common and repeated use as rules, guidelines, or characteristics for activities or their results." Common standards related to building practices are created through consensus processes by organizations such as ANSI, ASTM, or ASHRAE.

Green product certifications; these are intended to outline and confirm that a product meets a particular standard and offers an environmental benefit. This is most respected when an independent third party is responsible for conducting the product testing and awarding the certification. Many product labels and certification programmes certify products based on life-cycle parameters (multi-attribute programmes) which could include energy use, recycled content and air and water emissions from manufacturing, disposal and use. Other product labels focus on a single attribute which could be water, energy or chemical emissions that directly impact the indoor environmental quality.

Third party assessment; means that the evaluator is independent of the product manufacturer, contractor, designer and specifier that has no financial interest or ties to the outcome of the assessment.

Second party assessment; refers when the evaluation is performed by an interested party such a trade association.

First party assessment; refers when the evaluation is coming directly from an organization that is associated with the entity making the claim or that benefits from the claim.

Green building rating or green certification system; this broadens the focus beyond products, to consider the project/building as a whole. Rating systems are a type of building certification system that rates or rewards relative levels of compliance or performance with specific environmental goals and requirements. Rating systems and certification systems are frequently used interchangeably. A few of these programmes are single-attribute, focusing solely on water or energy, while others are multi-attribute addressing emission, toxicity and overall environmental performance in addition to water and energy.

Attribute; The characteristics or elements of products or services that determine the type and extent of their short and longer term impacts on the environment or human health. Environmental attributes include, for example, biodegradability, recyclability, energy efficiency, water efficiency, indoor air emissions, hazardous waste, carcinogenicity, etc.

Single – attribute criteria labels; Type of environmental claim that captures one aspect or quality of a product's performance. It focuses on one environmental issue, e.g., energy efficiency, water or sustainable-wood harvesting. This kind of criteria keeps things simple but can inadvertently mislead consumers into thinking the product is green overall.

Multiple – attribute criteria labels; As the name suggests, these labels examine two or more environmental impacts; looking at several characteristics of a product or even a product's entire life cycle or impacts of a product.

2.2.1 Classification of Green Product Certification Labels

According to the International Standards Organization (ISO) the existing green product certification labels or environmental labels are classified into three typologies whose characteristics are explained below in table 1

ISO-defined Types of Environmental Labels			
Type	**ISO Number**	**What the label does**	**Parties**
Type I (ecolabel)	ISO 14024	This is a voluntary, multiple-attribute criteria based, third party programme that awards a license or seal or approval, authorising the use of environmental labels on products indicating overall environmental preference of a product within a product category based on life cycle assessment[6].	This kind of ecolabel needs a third party certification
Type II (self-declaration claims)	ISO 14021	These labels are also voluntary. Verifiable single-attribute environmental claims for issues such as energy consumption, emissions or recycled content. Can be first-party, self-declared manufacturer claims. However, many manufacturers are beginning to seek third-party verification of those claims in response to industry demand.	This ecolabel only needs a first party self certification issued by the manufacturer
Type III (environ-mental declarat-ions)	ISO 14025	This kind of labels are also voluntary, consists in qualified product information based on life cycle impacts. A qualified third party determines the environmental parameters and then companies gather the required information into the reporting format and these data is independently verified. (E.g. report cards/information labels.	This kind of ecolabel needs a third party certification

Table 1: ISO TYPES OF ENVIRONMENTAL LABELS

Besides these three typologies there is a fourth group called "**Type I-like"** which has a verification and certification process similar to Type I (ecolabels) but focusing only on a single sector (e.g. forestry industry or chemical industry, etc.) and/or addresses only one environmental issue (e.g. air quality, energy conservation or water, etc.), and/or considers only a single life cycle phase in their applications (e.g. product use, product disposal or recycling, etc.). This kind of ecolabels have been designed and implemented to address and recognize more than simply environmental performance aspects.

In figure 3.2 below, we can see the four types of environmental labels mentioned above.

[6] A life cycle assessment is the analysis of social and environmental impacts throughout the life cycle of a product or service, from selection of raw materials to delivery, use and disposal at the final location. It is useful because it highlights almost all relevant impacts.

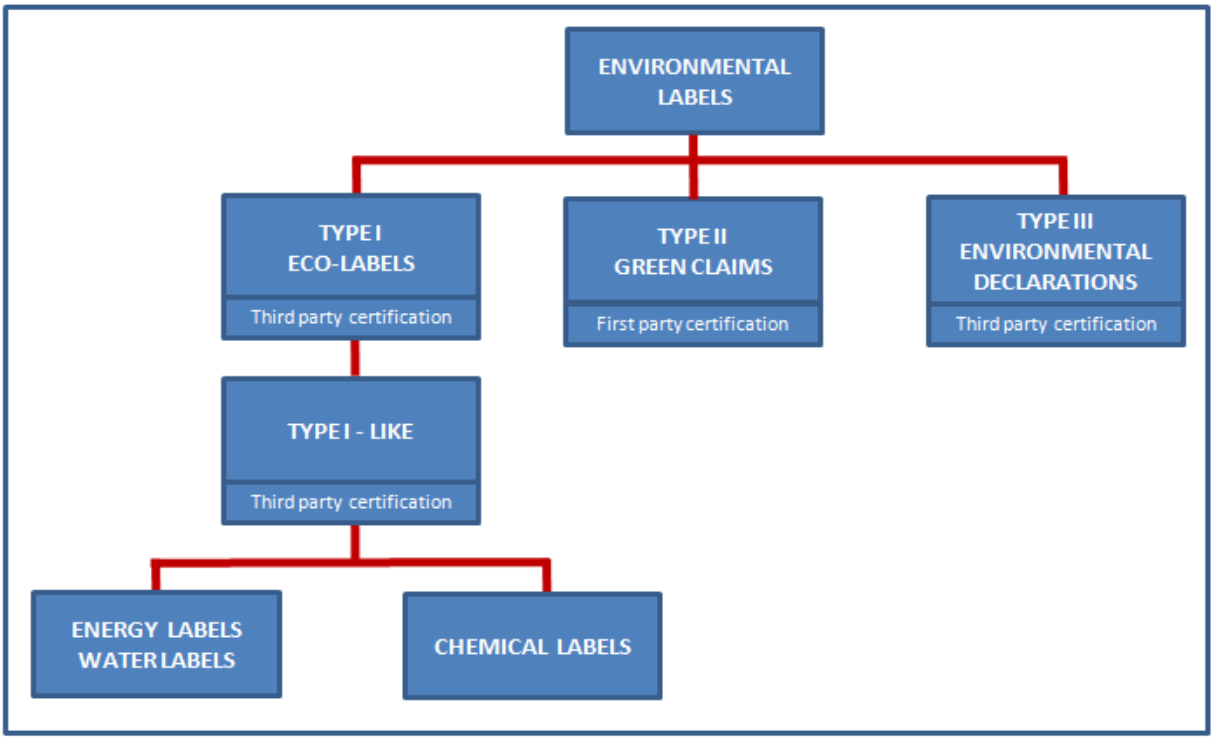


Figure 1: Environmental Labels Classification *(Source: International Standard Organization)*

From the above explanation we can conclude that high trust levels of labels are achieved when they have a governmental recognition with a formal Certification logo. Typically this means schemes approved as a Certification Mark, and have had the Government Department responsible to declare that the scheme has a standard and certifies that they are 'Competent to Certify'.

The highest trust levels would be a government recognized certification mark that was also compliant with key ISO standards especially ISO 14024 - Type 1 Ecolabels that undertake ISO 14040 compliant life cycle analysis as part of their assessment.

2.2.2 Objectives of Creating A Green Product Certification

Green product certification or environmental labelling is now a useful tool for governments to encourage sound environmental practices and is also useful for businesses to identify and to establish markets for their environmental products.

Many countries have now implemented some form of labelling and others are considering certification programmes development. Generally three core objectives are pursued:

1. **Protecting the environment**. The primary objective is generally the conservation and protection of the environment. Environmental label and certification programmes allow governments to influence consumers' decisions and encourage the production and consumption of environmentally preferable goods and services; acting in a way as a market-based instrument intended to bring about environmental improvement.

Specific environmental objectives include:

- Encouraging the efficient management of renewable resources to ensure their availability to future generations
- Promoting the efficient use of non-renewable resources
- Facilitating the reduction, reuse and recycling of industrial, commercial and consumer waste
- Encouraging the protection of ecosystems and species diversity
- Encouraging the proper management of chemicals in products

2. **Encouraging environmentally sound innovation and leadership**. Environmental labels programmes/schedules offer a market incentive to progressive businesses through the awarding and promotion of ecolabels; through this stress on the environment is reduced and the businesses can establish a niche market and a positive corporate image with consumers.

3. **Building consumer awareness on environmental issues**. In countries with a high degree of consumer awareness, an ecolabel with reliable information on the environmental impacts of products is all that is needed to promote the selection of ecolabelled products. In countries with lower priority concern on environmental impacts, ecolabelling can be used to promote environmentally beneficial actions.

2.2.3 Characteristics of a Green Product Certification

The essential characteristics that credible and effective environmental label schemes and green certification programmes must have to include:

- **Voluntary participation**. Participation of stakeholders should be *voluntary*. Environmental labels provide recognition and comparative advantage of products that achieve higher standards of environmental protection than the minimum imposed by law. They do not aim at replacing existing legislation.
- **Awarded distinction in environmental performance**. The product should have reached this distinction in comparison to average products in the same category and it should be clearly communicated in the label.
- **Open and accountable process**. A credible programme must be based on an open and accountable process that can be observed, monitored and verified at any time. The whole process should be *fair* and *consistent*. Since this should be an open process public criteria review must be included in the process via public hearings or contacting stakeholders directly. Comments received through such means should be taken into consideration when preparing the final criteria.
- **Based on sound scientific and engineering principles**. Environmental labels should simplify the communication of technical information about environmental performance to the public and should be based on measurable and state-of-the-art scientific data.
- **Based on life cycle consideration**. All aspects of the “life of a product” from design to disposal should be taken into consideration; meaning that the negative impacts on the environment at every moment of the life cycle of a product is considered.

- **Independent**. The credibility of the scheme depends on it being certified by an independent company. The *transparency* of the certification process marks the difference between an environmental label, an environmental logo and an internal company certification.
- **Objectivity**. The wide participation of stakeholders in the determination of the environmental criteria usually guarantees the objectivity and *fairness* of a labelling scheme. Among these stakeholders are representatives of industry, government, retailers, consumer and environmental associations.
- **Flexibility**. Programmes/schedules should be able to respond to technological market changes. Periodic reviews (every 3 years) ensures that standards and criteria levels keep in pace with new developments, therefore, programmes/schedules should allow for standards to be upgraded.

2.2.4 Process of Certifying a Label

The process to certify environmental labels is standard in every country but prior to any certification process; programme manager officials should have already acquired general knowledge and understanding of environmental priorities. This process involves three general and basic steps:

1. **Selection and determination of products categories**; this is a critical part of the labelling process because it has the major impact on the eligibility of the product. The extent of the category will also determine the strictness of the criteria for certification. Most proposals are received externally from industries, consumers and environmental organizations, and internally from the programme managers. Technical advisory groups review the request, applying their guiding principles and determine the product category.

2. **Development and adoption of appropriate criteria, standards or guidelines**; after selection of the product category, it is important to establish the requirements that an applicant must meet to be approved by the labelling programme. Technical and scientific professionals from the government and private sector prepare draft criteria that will be available to interested parties for their feedback; after being reviewed by programme staff and experts, these will be included in the final criteria.

3. After consideration of the life cycle[7] of a product, the next focus is in the recycled content, reduced toxicity, pollution reduction, energy efficiency and capacity for recycling; with respect to the industry its performance in these areas will also be assessed.

Certification and licensing; since the certification criteria was established, applicants[8] have been able to apply for certification under the programme which involves compliance verification and testing, applicant licensing and monitoring. Applicants are required to submit technical information (e.g. test reports, compliance evidence with law/regulations, etc.) and pay an initial fee. Following this the implementation body may direct and/or

[7] According to ISO it is referred to consecutive and interlinked stages of a product system, from raw material acquisition or generation of natural resources to the final disposal.

[8] Applicants could be manufacturers, suppliers, distributors importers or service providers who decide to participate in a programme through having their products to be in compliance with the criteria determined

perform an on-site audit or inspection. Once the license has been awarded an annual fee is charged for the use of the label. The certification has to be renewed periodically.

These basic steps are part of the specific procedure followed by each scheme in each country which is detailed in the next section when describing each of the environmental labels.

2.2.5 Major Participants and Their Roles

The participation of different stakeholders is important in the initiatives in order to achieve a transparent, fair and consistent process some of the characteristics of these programmes/schemes include the following roles for the major stakeholders.

- Government; is the funding organization in many countries and in others it is the catalyst initiating the process. It provides support (directly and indirectly) in developing programmes, and in their management and delivery, therefore it can have a significant influence through its procurement initiatives and activities.
- Programme managers; these are independent bodies that oversee and manage how programmes are going to be delivered (both technically and in terms of, marketing and administration). Their level of involvement varies from co-ordinating functions to performing all operational tasks.
- Industry, commercial associations, retailers and companies; the involvement of this sector is essential for the success of the process in order to ensure that the criteria for certification remain credible and practical.
- Consumers; their demand and preferences should be determined and reflected in the ecolabelling initiatives and processes.
- Others (Academia, media and international community); it is important to involve groups with no direct commercial interest in ecolabelling to enhance the credibility of the programme. Academia can provide research and expertise concerning criteria development. The media is important to help promoting ecolabelling in the market and the international community (foreign consumers, industry representatives, NGOs) that may contribute towards expanding consultative efforts in the globalized market.

3. EU EXPERIENCES WITH THE PROMOTION OF GREEN LABELS FOR PRODUCTS AND FOR THE BUILDING SECTOR

INTRODUCTION

There are many environmental (green) schemes or programmes in operation around the world, each of them covering different ranges of environmental criteria. All kinds of products nowadays carry either ecolabels (green labels) from cars to washing machines and toothpaste to potatoes. Different countries have different schemes and there are also different labels covering different aspects of environmental performance.

This part of the report will be focused on green labels related to the building sector. They will be divided in green labels for products and buildings. A case on the implementation of the EU Energy label in the Netherlands will be highlighted.

3.1 EU GREEN LABELS (ECO LABEL) CLASSIFICATION

The EU green labels are classified in three groups[9]

1) **Public, multi-criteria ecolabels (Type I, ISO 14024)**
   They are based on a number of pass/fail criteria that set the standard for the label in question. Different sets of criteria are established for each product or service group covered by the scheme. These criteria will normally define the environmental performance that the product must reach and may also set standards.
   Examples include:
   - The European Ecolabel: http://ec.europa.eu/environment/ecolabel/index_en.htm
   - The Nordic Swan, Scandinavia: www.svanen.nu
   - The Blue Angel (Blauer Engel), Germany: www.blauer-engel.de
   - Umweltzeichen, Austria: www.umweltzeichen.at

2) **Public, single-issue labels**
   Single-issue labels are labels that relate to one particular environmental issue like energy use or emission levels. There are two different types of single-issue labels.
   - The first type is based on one or more pass/fail criteria linked to a specific issue, e.g. energy efficiency. If a product meets those criteria, then it may display the label. Examples of this type of label are the EU organic label or the 'Energy star' label for office equipment.
   - The second type of label works by grading products or services according to their environmental performance on the issue in question. Examples of the second type include the EU energy label, which grades household goods according to their energy efficiency, with A++ as the most efficient and G as the least efficient.

   Single-issue labels can be very useful if you are following a step-by-step approach to greening procurement because they allow for gradual improvement. Using energy efficiency

[9] Information gathered from the EC "Green Public Procurement Training Toolkit" available at: http://ec.europa.eu/environment/gpp/pdf/toolkit/module1_factsheet_ecolabels.pdf

standards would be an excellent first step towards a wider green purchasing programme. The different grades allow you to decide easily how far you want to go

3) **Private labels**
In addition to the major public labels, there are a number of private labels, run by NGOs, industry groups, or combinations of stakeholders. These include labels on forestry certification schemes, such as the FSC (Forest Stewardship Council) or PEFC (Pan European Forest Certification Council) schemes, organic labels such as the IFOAM scheme, or multiple-criteria labels such as the Swedish label 'Bra Miljöval.'

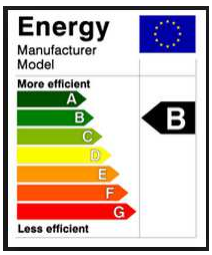
Depending on their accessibility and the way they are adopted, these labelling schemes may or may not conform to the guidelines on appropriate environmental labels for public procurement as set out above.

SINGLE ATTRIBUTE CRITERIA LABELS – ENERGY (FOR PRODUCTS AND BUILDINGS)

In this section we have divided the labels into two categories: single attribute criteria labels and multi attribute criteria in Europe. As explained above in section 1, single attribute criteria means that the assessment focuses on one environmental issue, e.g., energy efficiency, water or sustainable-wood harvesting; and multi attribute criteria means that the assessment focuses on two or more environmental impacts; looking at several characteristics of a product or even a product's entire life cycle or a product's impacts.

Below we present information on energy labels most commonly used and respected throughout Europe. Some of these labels are mandatory and others are voluntary and are certified in products, appliances and buildings. They help consumers to better choose energy efficient products and more sustainable and energy efficient buildings.

3.2.1 EU energy efficiency label for products (single attribute criteria, mandatory)



The labelling requirements for individual product groups were created under EU's Energy Labelling Directive, and are managed by the European Commission.

The mandatory energy efficiency of appliances/products in EU is rated in terms of a set of **energy efficiency grades** (classes) from A to G on the label, where A is the most energy efficient level and G the least efficient.

This label also gives additional information to the customers in order to facilitate their choices among different models. According to the regulation that created the label, all relevant information over the product should be available in catalogues and included on the retailers' websites.

The EU has recently added higher grades as appliances have become more efficient. This was done by introducing the rate A+++ to A. Currently an energy rating of A or even A+ is becoming average among appliances sold in Europe; the EU is aiming to increase this average to higher grades in the coming years.

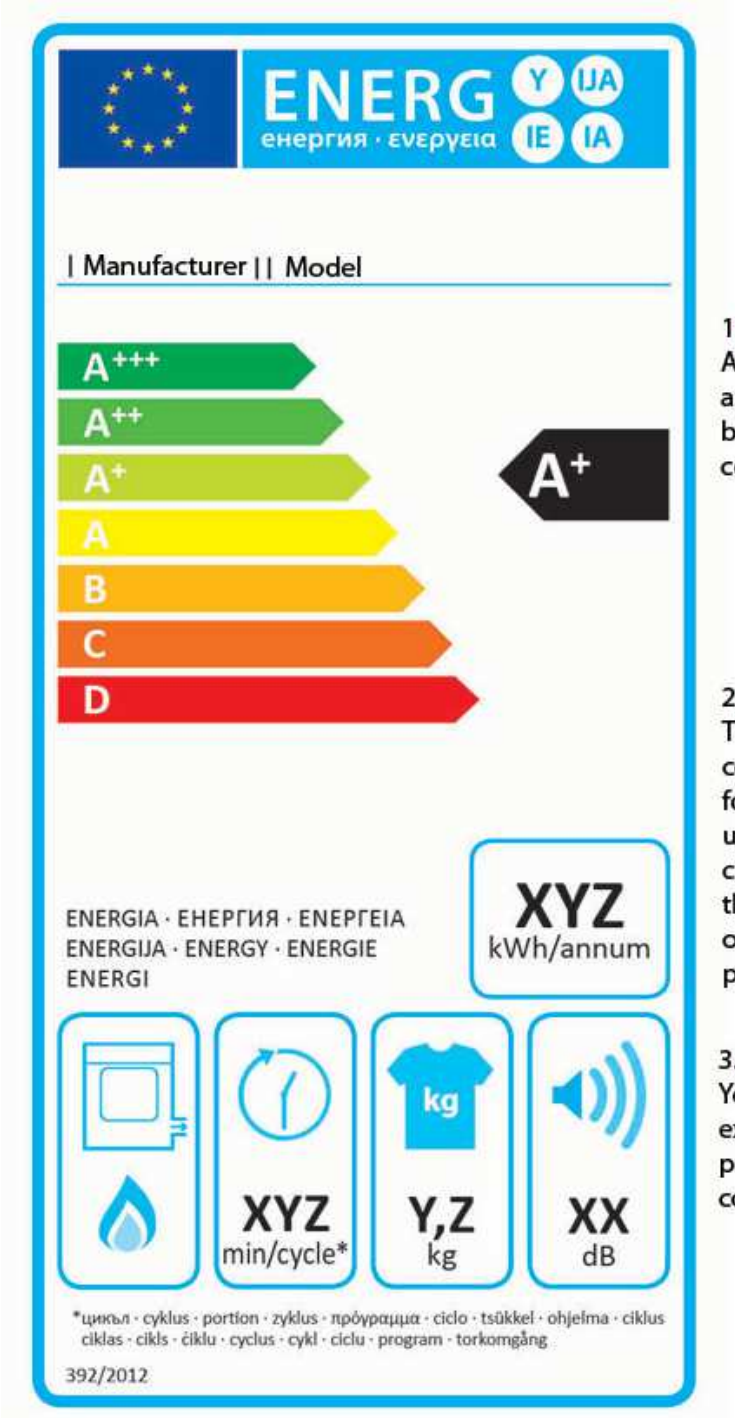
In order to facilitate the recognition of the EU energy label, a new logo which uses pictograms rather than words was created. This approach allows manufacturers to use a single label for products sold in different countries making it easily recognizable by consumers.

Other relevant information (depending upon the appliance), such as water consumption or noise levels measured in decibels (dB) can be included among the relevant information obliged to be disclosed to the consumers. Figure 2 depicts the actual logo currently being used throughout EU with explanation on some key elements and symbols present in the logo.

EU energy labels for products have become a common sight in home appliances. Theyare found on a selection of white goods and other products and are designed to help customers to see how energy efficient a model is before they buy it. The main products carrying an EU energy efficiency label are: washing machines, washer-dryers, tumble dryers, fridges, freezers, fridge-freezers, dishwashers, electric ovens, energy-saving light bulbs, air conditioners and televisions (from the end of 2012). All these products are legally obliged to display energy efficiency information at the point of sale.

With regard to the products and appliances linked to the building sector the main EU labels covers the following products: light bulbs, heat pump, paints and varnishes, floor products such as wood covering, hard floor covering and textile covering.

Figure 2: Logo of the EU Energy Efficient rating systems for products



1. Energy Efficiency Rating
A+++ is the most efficient, and D is the least efficient, based on the product's energy consumption.

2. Annual Energy Consumption
The annual energy consumption (in kWh per year) for each product is calculated using specific EU-defined criteria. Here, for tumble dryers, the figure is calculated based on the standard cotton program at full and half load.

3. Product-specific information
You'll also find images showing extra data related to the product, such as capacity, water consumption and noise levels.

3.2.1.1 Calculating energy efficiency ratings for products

Energy ratings are not comparable across different products, because each is calculated using a specific test defined by the EU and appropriate to that appliance.

An EU energy label can give you at-a-glance a good evaluation of how energy efficient a product is. But using it to decipher which product is the most energy efficient on the market is less straightforward - particularly when a large number of models receive the

same energy rating, or if the rating is calculated in a way thatis not representative of how people use a product in real-life.

An important tip to compare energy efficiency of two products with, for example, an A rated grade, is to look more closely at the energy consumption calculation data found on the label to find out which of the two uses the least electricity. Another handy tip is to look at the detail found within the label itself such as, for example, a washing machine's capacity or its noise levels.

3.2.1.2 Other useful labels currently being applied in EU related to energy efficiency for products

Energy Saving Trust Recommended: (single attribute, voluntary)
The Energy Saving Trust recommended logo endorses products that are amongst the most energy efficient. Manufacturers can join to get their products accredited. As well as washing machines, tumble dryers and other appliances, the logo can also be found on energy efficient boilers, insulation, glazing and hot water cylinders. This logo can only be used on the most energy efficient products; usually only the top 20 per cent of those available in the market.

It is awarded by the Energy Saving Trust, a non-profit organisation set up to reduce carbon emissions, funded by the UK government and the private sector. The criteria products must meet is set by an independent panel and reviewed annually, and a percentage of products are tested. Manufacturers and retailers pay a fee to the Energy Saving Trust to enter this scheme.

Energy Star: (single attribute, voluntary)
The Energy Star logo means that the energy consumption of an appliance is below an agreed method in stand-by mode. Office equipment such as computers, fax machines and printers often carry the logo.

It was created by EPS of USA as a government backed symbol of energy efficiency. The European Energy Star is a voluntary labelling scheme, controlled by an agreement between the USA and the European Community. This label is only used on office equipment and shows that a product has achieved energy efficiency standards set by the EU.

3.2.2 ENERGY EFFICIENCY LABELS FOR BUILDINGS: (single attribute, mandatory)

INTRODUCTION
Energy performance certification (EPC) is a key policy instrument that can assist governments in reducing energy consumption in buildings. It provides a way of rating individual buildings (both residential and non-residential ones) on how energy efficient (or inefficient) they are in relation to the amount of energy needed to provide users with expected degrees of comfort and functionality.

They also provide decision makers in the building industry and the property market place with objective information on a given building, either in relation to achieving a specified level of energy performance or in comparison to other similar buildings. As such, certification can help governments achieve national energy targets and enhance environmental, social and economic sustainability in the building sector. Often, certification is most successful when complemented with other initiatives that support energy efficiency.

Certification can be applied to both new and existing buildings. Certification schemes can be mandatory, such as the European Union Energy Performance of Buildings Directive (European EPBD), or voluntary, such as Energy Smart or ENERGY STAR. The certificates usually take one of two forms: a positive label demonstrates whether a building meets a specified standard (such as the Passive House Standard); a comparative label allows comparison with other buildings (such as the HERS Index and many European certification schemes). Comparative certification of existing buildings often includes advice on how to improve energy efficiency to obtain a better energy rating.

Delivery of a robust, accurate and cost-efficient certification scheme depends on many supporting mechanisms including: validated assessment procedures; training for assessors; quality assurance procedures; and technology and administration systems to co-ordinate and maintain these functions.[10]

According to this Directive, Member States in the EU are obliged to ensure that when buildings are constructed, sold or rented out, an Energy Performance Certificate is made available to the owner or by the owner to the tenant or potential buyer.

The certification also includes advice and information on how to improve energy performance. It concerns such elements as building envelope, windows, heating, electrical and ventilation installations, lighting, heat sources (incl. boilers, CHP units) cooling systems and others[11].

The EU energy label is awarded by the country member state on behalf of EU and it is managed by the European Commission and the country member state where the label is implemented.

3.2.3 Energy label certificate in the Netherlands: Implementation process

Introduction

To comply with the EU target on energy consumption, CO_2 generation and the use of sustainable energy sources; the Dutch government created the programme called: *"Schoon en Zuinig: nieuwe energy voor het klimaat" (*Clean and Economical: new energy for the climate) in which the following ambitious targets have been set:

[10] More information on "Energy Performance Certification of Buildings" can be found at: https://www.iea.org/publications/freepublications/publication/buildings_certification.pdf

[11] For more information on Energy Efficiency and how to save energy and money please see: http://ec.europa.eu/energy/en/topics/energy-efficiency

- A 30% reduction of greenhouse gas emissions, and CO_2, by 2020 (compared to the 1990 reference level)
- An increase in the rate of energy consumption reduction (from the current 1% per annum to 2% per annum).
- An increase in the generation and use of sustainable energy, from the current level of 2% to 20% by 2020.

The energy label is one the instruments that the government is using to improve domestic energy efficiency and decrease energy consumption. As it was already mentioned above it is part of a much broader legislation promoting the sustainable construction and use of buildings, such as the European norms for energy performance.

With this target in mind; in January 2008, the government started to implement the voluntary energy label for buildings requiring the owners of residential and non-residential buildings to supply new tenants and buyers with energy label of the building. The energy label shows how energy efficient the house/building is. There is also information about the insulation, windows and heating; the energy label shows the category in which a home or building is classified (A to G) and also presents a number of possible energy-saving options.

The Dutch system started the energy label as a voluntary scheme in 1998 and became mandatory to all new and existing commercial and domestic buildings since the first of January 2015

The Energy Label Certification Process for Buildings: The Dutch case

The energy label is mandatory in the (revised) European Energy Performance of Buildings Directive of 2013 (EPBD). This directive was transposed into Dutch legislation through the Decision energy buildings and the Energy Performance of Buildings Regulations.

The Dutch government sees energy as a means to help homeowners to save energy. So it aims with this energy certificate scheme to stimulate the energy homeowners to insulate their homes or take other energy-saving measures.

Since January 2015 all the new and old buildings including utility buildings, offices, schools and hospitals are obliged to have an energy label certificate. Some buildings are exempt from a certificate. (List of exemptions is provided at the end of this section). This certificate shows the energy of a home and the energy-saving measures that are possible. The label classes (grades) run from A (low savings) to G (much savings). The energy label is valid up to 10 years. This was agreed in the Energy Agreement promoted by the government.

The process of issuing the certificate is divided in two phases. During the first phase all homeowners received in January 2015 a preliminary energy certificate. This preliminary certificate has no formal status once it is awarded taking into account the publicly available information about the property such as for example, from the Land Registry system.

In order to obtain a definitive certificate homeowners need to access the government site: www.energielabelvoorwoningen.nl where he or she has to meet the required information and add proof of some special features of the building with regard to energy efficiency. The proof can be provided using official documents about the building or photos. Once cpmpleted the homeowners are expected to submit their information to one of an approved list of energy experts to validate their application.. The process of validating or ultimately inspect the apartment costs between 18 and 400 Euros. Once the information is approved the definitive certificate can be obtained from the site: www.ep-online.nl

Steps to apply for energy label

Once a provisory energy certificate is received by post the owner of a building needs to request a definitive energy certificate. The application can be made online following six steps:

- **Step 1:** Log in with DigiD (Dutch Digital identification code)
- **Step 2:** Check and adjust data from your home. The energy of the house is determined by the year or construction, type of dwelling, construction area and other important characteristics that are important to determine energy consumption: type of glass, wall insulation, floor insulation, type of heating, type of water, ventilation, solar panels and solar water heater.
- **Step 3:** Add evidence to the online home file. Provide documents that can serve as proof: photos of the house features, invoices of a renovation which clearly states the work undertaken, an engineering report,a valuation of the house etc.
- **Step 4:** Select an expert provided by the government for validation.
- **Step 5:** Send all the data
- **Step 6:** If all the data is ok, a definitive Energy label is received after the payment of the expert fee.

Visibility of the award certification

The energy certificate must be clearly visible to the public for Government organizations in public buildings of more than 500 m. In general they should be placed next to the reception or entrance. The prefix XXX depicts the information included in a definitive energy performance awarded by the Dutch government for a building.

Figure 3: Example of a typical energy performance label for a building in the Netherlands.

Benefits of the Dutch energy certificates

The overall aim of the system is to promote energy efficiency in order to help the government to comply with the EU and the national targets or energy efficiency and increase the use of renewables.

Buildings in category A have few possibilities to save more energy, while for those in category G there are a lot of possibilities. In addition, the label also shows the energy index. This is calculated on the basis of the characteristics of the building, installations in

the building and the - standardised - behaviour of residents or users of the building. It also shows the standardised energy consumption.

Apart from promoting energy efficiency the system it also tries to embed the energy efficiency benefits from the real estate market for buildings. A green energy label (A, B or C) for example can accelerate the sale or rental of a house. Buyers and new tenants can see at a glance whether or not a house is economical or efficient.
The rationale is that homes with a good energy rating will be more attractive to potential buyers or tenants than those which are less efficient. This will encourage owners to invest in energy-saving measures

3.2.4 Building Exempt of an Energy Certificate in the Netherlands

Below is a list of buildings exempt from energy certificates in the Netherlands:

- Buildings for which energy is used to regulate the indoor climate (such as sheds and garages)
- Protected monuments (according to the 1988 Monuments Act or under a provincial or municipal monumentenverordening). A building that is part of a protected village or town is not automatically a monument. It is up to the municipality or province or building a monument in the context of the Monuments. When in doubt, municipality or province can be referred to for clarification.
- Buildings used as places of worship and religious activities (such as churches and mosques)
- Buildings which are intended to be used commercially or for the storage of materials and goods, or for agricultural purposes (such as factory halls)
- Buildings to be used up to two years, (temporary structures (such as site offices, stores emergency, temporary classrooms in schools or executive and canteens at construction sites)
- Residential buildings used less than four months a year, and with an expected energy consumption of less than 25% of energy consumption in continuous use (such as recreation)
- Houseboats
- Buildings that purchased officially through compulsory purchase orders/sold and designated as being buildings that will be demolished
- Rental of one or more rooms in a house. For student accommodation with a private entrance and address an energy label is required.

3.2.5 Energy label and Social houses in the Netherlands[12]

According to the Dutch federation of social housing organizations, more and more social houses were given a green energy label (C or higher) and the number of social houses with bad labels (E or lower) has decreased. In 2012, social housing organisations installed 11.500 solar panels on their dwellings. This is almost twice the amount in 2011, when 5.900 houses were equipped with solar panels.

3.3 MULTLIPLE ATTRIBUTE CRITERIA LABELS – PRODUCTS AND BUILDINGS

[12] More information on Dutch Social Housing becoming more friendly can be found at:
http://www.housingeurope.eu/resource-180/dutch-social-housing-is-becoming-more-eco-friendly

Below are the green product building labels which are most commonly used and respected in the marketplace in Europe. We start by describing the EU Ecolabel programme/scheme implemented in the European Union since 1992, followed by the German Passivhaus label, BREEAM from the UK, the German DGNB and end with the Dutch label GPR.

3.3.1 European Union - EU Ecolabel[13] for Products (multi attribute, voluntary)

The European Union Ecolabel is a voluntary scheme established in 1992 by the European Commission to encourage businesses to market products and services that are kinder to the environment and meet high standards of environmental performance and quality. This label covers a wide range of products and services with further groups being continuously added.

The EU Ecolabel helps to identify products and services that have a reduced environmental impact throughout their life cycle, from the extraction of raw material through to production, use and disposal. EU ecolabel is a Type 1 label. It indicates that the product has been independently assessed and found to meet strict environmental criteria (considering more than just energy consumption), putting it among the best in its class.

The implementation of the EU Ecolabel has been set out the Regulation (EC) No 66/2010 of the European Parliament and of the Council. Its management is carried out by the European Commission together with Competent Bodies appointed in each European Economic Area Member State, to administer the award of the EU Ecolabel at national level. The EU Ecolabel is awarded according to ecological criteria set by experts, industry, consumer organizations and environmental NGOs at European level.

EU Ecolabel criteria have been formulated for more than 30 non-food and non-medical product groups that are reviewed every 3–5 years. The EU Ecolabel is part of a broader EU Action Plan on Sustainable Consumption and Production and Sustainable Industrial Policy adopted by the European Commission on 16 July 2008, which also links the EU Ecolabel to other EU policies such as Green Public Procurement (GPP) and Eco-design of Energy using Products.

EU Ecolabel and the Product Groups

The EU Ecolabel covers a wide range of product groups, from major areas of manufacturing to tourist accommodation services. Below is the list with products that can be certified:

- Cleaning products (Cleaners, detergents)
- Clothing and textiles (textiles and footwear)
- Do-it-yourself (paint and varnishes)
- Electronic equipment (imaging equipment, computers, televisions)
- Coverings (floor coverings)

[13] Information available on the European Commission website. See: eu- ecolabel

- Furniture
- Garden equipment
- Household appliances
- Paper products (printed paper, tissue paper)
- Holiday accommodation

Steps to apply for the EU Ecolabel

There are seven steps that must be followed by the applicant:

- **Step 1:** Check the eligibility of the product and who can apply for the EU Ecolabel
- **Step 2:** Get advice from the Competent Body (in the country of residence). This is the independent organization that will evaluate the application, provide technical support, award the EU Ecolabel and also may help marketing the product.
- **Step 3:** Start the application online inr the respective country.
- **Step 4:** Prepare a dossier including: declarations, documents, data sheets, test results and all additional requirements included in the User Manual for each product group.
- **Step 5:** Submit the application. After the submission online, the applicant should submit the required dossier (paper file) to the Competent Body which will assess the application within two months of the initial submission.
- **Step 6:** Approval of application. Once the criteria are met and the dossier is complete the Competent Body will award the EU Ecolabel to the product and will prepare a contract with the applicant. From that moment the applicant can use the EU Ecolabel logo an all the products that have met the criteria.
  From time to time the Competent Body may carry out factory inspections and product tests; and if evidence is found that the product no longer complies with the criteria, it will prohibit the use of the EU Ecolabel on that product.
- **Step 7:** Marketing of the new product/s. Information about the logo guidelines is available under "Useful material" in the EU Ecolabel website to understand exactly how to make best use of the logo. There is also a range of marketing, promotional and communication materials available for the license holder which can be used to help market the product.

Fees

The EU Ecolabel is designed to be as low cost as possible for businesses interested in the scheme. Since the cost varies from country to country, fees vary accordingly. For more detail on the fees click on this link EU Ecolabel Fees.

3.3.2 Germany - Passivhaus Label[14] for Buildings (multi attribute, voluntary)

The Passivhaus label is a German label that measures energy performance of buildings. This term Passive house (*Passivhaus* in German) refers to a rigorous, voluntary standard for energy efficiency in a building. The Passivhaus is a global concept of construction, with very low energy consumption, which aims to create housing that eliminates the need for conventional heating. Passivhaus is not a brand name; it is a construction concept that can be applied by anyone, anywhere.

[14] Information gathered from Passivhaus label website is available at: http://passiv.de/en/

In the subsequent paragraphs we describe the characteristics of the Passivhaus label, the requirements for certification and aspects that a building with a Passivhaus label should fulfil.

Characteristics

Passivhaus buildings are environmentally friendly and save money in the long run. Initially not everyone can afford it but financial support is increasingly made available in many cities. Below are some of the main characteristics of a Passivhaus:

- The labelled Passivhaus buildings achieve energy savings of up to 90% compared to a conventional building. Significant energy savings have been highlighted in warm climates also, where classical buildings require active cooling.
- Passive Houses make efficient use of the sun, internal heat sources and heat recovery, rendering conventional heating systems unnecessary throughout even the coldest of winters. During warmer months, Passive Houses make use of passive cooling techniques such as strategic shading to stay comfortably cool.
- Passive Houses have been praised for the high level of comfort they offer. Internal surface temperatures vary little from indoor air temperatures, even in the face of extreme outdoor temperatures. Special windows and a building envelope consisting of a highly insulated roof and floor slab as well as highly insulated exterior walls keep the desired warmth in the house – or undesirable heat out.
- A ventilation system imperceptibly supplies constant fresh air, making for superior air quality without unpleasant draughts. A highly efficient heat recovery unit allows for the heat contained in the exhaust air to be re-used.

Passivhaus Label requirements for certification

Obtaining the Passivhaus label is based on precise specifications including:

- It is granted to new homes with **heating needs** which are less than 15 kWh / m² / year.
- The **Primary Energy Demand,** the total energy to be used for all domestic applications (heating, hot water and domestic electricity) must not exceed 120 kWh per square meter of treated floor area per year.
- In terms of **Air tightness**, a maximum of 0.6 air changes per hour at 50 Pascals pressure (ACH50), as verified with an onsite pressure test (in both pressurized and depressurized states).
- Thermal **comfort** must be met for all living areas during winter as well as in summer, with not more than 10 % of the hours in a given year over 25 °C.

Principles of the Passivhaus

The design of the house Passivhaus, as specified by the Passivhaus Institut in Darmstadt, Germany, which manages the certification, is based on the following principles:

1. *Thermal insulation*
   All opaque building components of the exterior envelope of the house must be very well-insulated. For most cool-temperate climates, this means a heat transfer coefficient (U-value) of 0.15 W/ (m²K) at the most, i.e. a maximum of 0.15 watts per degree of temperature difference and per square meter of exterior surface are lost.
2. *Passive House windows*

The window frames must be well insulated and fitted with low-e glazing filled with argon or krypton to prevent heat transfer. For most cool-temperate climates, this means a U-value of 0.80 W/ (m^2K) or less, with g-values around 50% (g-value= total solar transmittance, as a proportion of the solar energy available for a room).

3. *Ventilation heat recovery*
   Efficient heat recovery ventilation is key, allowing for a good indoor air quality and saving energy. In Passive House, at least 75% of the heat from the exhaust air is transferred to the fresh air again by means of a heat exchanger.
4. *Air tightness of the building*
   Uncontrolled leakage through gaps must be smaller than 0.6 of the total house volume per hour during a pressure test at 50 Pascal (both pressurized and depressurized).
5. *Absence of thermal bridges*
   All edges, corners, connections and penetrations must be planned and executed with great care, so that thermal bridges can be avoided. Thermal bridges which cannot be avoided must be minimized as far as possible.

Steps to apply for a Passivhaus label

The certification of a Passivhaus building (its planning) is based on the PHPP[15]. This excel based tool is perhaps the most accurate energy balance design tool on the market.

- **Step 1;** when starting the certification process the building plans, regional climate data set for the building's location, and performance values of the components used (windows, ventilation, etc) must be entered into the PHPP.
- **Step 2;** the information entered in PHPP is checked by a certifier. If data is missing or cannot be supported with evidence, the certifier is obligated to request this information.
- **Step 3;** if this information is not enough to certify the building then the certifier may offer suggestions on how to improve the design while still at the planning stage,
- **Step 4;** the only aspect of certification that must be done on-site is the air tightness test, but this is carried out by an independent third party (not the certifier).
- **Step 5;** during the construction phase, the construction site manager must sign that the building was built exactly according to the PHPP before any certification is awarded.
- **Step 6;** in thecase that the building was not built as planned and if there were anomalies during construction, these must be disclosed and the certifier will then take them into account during the certification process.

3.3.3 BREEAM (Building Research Establishment Environmental Assessment Method)[16] – UK (Multi attribute, voluntary)

[15] PHPP The Passive House Planning Package is the tool used when designing a Passive House

[16] Information gathered from their official website: www.breeam.org

BREEAM is the world's foremost environmental assessment method and rating system for buildings. With 250,000 buildings with certified BREEAM assessment ratings and over a million registered for assessment since it was first launched in 1980. It has served as the basis for many of the green building certification systems and since its establishment it has been used throughout the UK. EU, EFTA member states, EU candidates, as well se the Persian Gulf.

BREEAM sets the standard for best practice in sustainable building design, construction and operation and has become one of the most comprehensive and widely recognised measures of a building's environmental performance. It can be used to assess the environmental performance of any type of building, new and existing, anywhere in the world. It encourages designers, clients and others to think about low carbon and low impact design, minimising the energy demands created by a building before considering energy efficiency and low carbon technologies.

A BREEAM assessment uses recognised measures of performance, which are set against established benchmarks, to evaluate a building's specification, design, construction and use. The measures used represent a broad range of categories and criteria from energy to ecology. They include aspects related to energy and water use, the internal environment (health and well-being), pollution, transport, materials, waste, ecology and management processes.

In the figure below one can find the scoring system used by BREEAM:

BREEAM rating	Assessment score	Star rating
Outstanding	≥ 85%	★★★★★★
Excellent	≥ 70%	★★★★★
Very good	≥ 55%	★★★★
Good	≥ 45%	★★★
Pass	≥ 30%	★★

Figure 4: BREEAM certification levels and scoring system

A certificated BREEAM assessment is delivered by a licensed organization, using independent assessors trained under a UKAS[17] accredited competent person scheme, at various stages in a buildings life cycle. This provides clients, developers, designers and others with:

- market recognition for low environmental impact buildings,
- confidence that tried and tested environmental practice is incorporated in the building,
- inspiration to find innovative solutions that minimise the environmental impact,
- a benchmark that is higher than regulation,
- a system to help reduce running costs, improve working and living environments,
- A standard that demonstrates progress towards corporate and organizational environmental objectives.

[17] UKAS is United Kingdom Accreditation Service

BREEAM addresses wide-ranging environmental and sustainability issues and enables developers, designers and building managers to demonstrate the environmental credentials of their buildings to clients, planners and other initial parties, BREEAM:

- uses a straightforward scoring system that is transparent, flexible, easy to understand and supported by evidence-based science and research,
- has a positive influence on the design, construction and management of buildings,
- Defines and maintains a robust technical standard with rigorous quality assurance and certification.

3.3.4 DGNB (German Sustainable Building Certificate)[18] – DEU (Multi attribute, voluntary)

The German Sustainable Building Certificate was developed by the German Sustainable Building Council together with the Federal Ministry of Transport, Building and Urban Affairs to be used as a tool for the planning and evaluation of buildings. It defines the quality of buildings in a comprehensive way and enables auditors to conduct an evaluation systematically. It covers relevant topics of sustainable construction, and awards outstanding buildings in the categories of bronze, silver and gold.

The certificate was initially developed for new office and administration buildings. In its current version 2008, the evaluation is focused on the following six topics; including the individual criteria used within each of the topics:

1. Ecological quality; which evaluates: (global warming potential, ozone depletion potential, photochemical ozone creation potential, acidification potential, eutrophication[19] potential, risks to the regional environment, microclimate, non-renewable primary energy demands, potable water consumption and sewage generation and surface area usage)
2. Economical quality; evaluating: building-related life cycle costs and value stability.
3. Social-cultural and functional quality; thermal comfort in winter and summer, indoor hygiene, acoustical and visual comfort, influences by users, roof design, accessibility, area efficiency, feasibility of conversion, bicycle comfort, assurance of the quality of the design and for urban development for competition and art within architecture.
4. Technical quality; (fire and noise protection, energetic and moisture proofing quality of the building's shell, ease of cleaning and maintenance of structure and ease of deconstruction, recycling and dismantling)
6. Processes quality; (quality of project's preparation, integral planning, optimization and complexity of the approach to planning, evidence of sustainability considerations during bid invitation and awarding and establishment of preconditions for optimized use and operation)
7. Quality of the location; it is presented separately and is not included in the overall grade of the object (risks and circumstances at the micro location, image and

[18] Information gathered from document published by the German Sustainable Building Council

[19] Eutrophication is the process by which a body of water becomes enriched in dissolved nutrients (as phosphates) that stimulate the growth of aquatic plant life usually resulting in the depletion of dissolved oxygen

condition of the location and neighbourhood, connection to transportation, vicinity to usage-specific facilities and adjoining media, infrastructure development)

Evaluation Matrix

Each criterion can be assigned a maximum of 10 points, depending on the documented or calculated quality. All criteria are weighted with a factor from 0 to 3, because individual criteria are treated as either more or less relevant. The degree of compliance with the requirements of the certification is calculated in accordance with the evaluation matrix.

In the figure below one can find the scoring system used by DNGB:

DGNB certification rating	Assessment score
Gold	≥ 89%
Silver	≥ 65%
Bronze	≥ 50%

Figure 5: DGNB Certification levels and scoring system

3.3.5 GPR BUILDING " Gemeentelijke Praktijk Richtlijn" (Municipal Practice Guideline) – the Netherlands[20] (multi attribute, voluntary)

GPR Building is a software tool, which can be used to assess both the environmental impact and the design quality of new and existing buildings leading to a certification. GPR Building differs from other sustainability tools in its simplicity and speed of use. An assessment could be made in less than half a day.

In 1995, the first version of the tool was developed by the municipality of Tilburg and W/E consultants. Stakeholders, such as architects, developers, social housing corporations and consumer organizations were involved from the outset. It has gone through several stages of development and is now licensed to more than 300 municipalities and building professionals across the Netherlands. GPR Building has been recognized as a national standard for sustainable procurement by the Dutch public authorities.

GPR methodology considers not only the environmental impact but also the quality of the building. A building is only considered to be sustainable if it has a high performance on both energy and materials and it will fulfil its function for a long time, to the satisfaction of the user and with a minimum impact on the occupants' health. GPR Building can be used for both the design of new and the retrofitting of existing buildings. It is suitable for residential, office and school buildings.

Assessment Indicators

A building is rated on five indicators on a scale of 1 (worst) to 10 (best). The key performance indicators are: Energy, Environment, Health, User quality, and Long term

[20] Information gathered from GPR website available at: http://www.gprgebouw.nl/

value which assesses the building quality. Each indicator is divided into the following sub-indicators:

- Energy (energy performance, demand reduction)
- Environment (water, environmental care, materials)
- Health (noise, air quality, thermal comfort, lighting and visual comfort)
- User quality (accessibility, functionality technical quality, safety)
- Long term value (adaptability and future amenities, flexibility, perceived value)

The GPR-score for the modules and sub-modules is calculated on the basis of a multi-criteria analysis, except for the modules Energy and Materials (the energy performance is based on the Dutch National standards for new and existing buildings and the score of the sub-module Materials is based on the method of life cycle assessment).

GPR Building Certification

1. A GPR Building Certificate is issued by an assessor or expert.W/E admittedly perform checks to assess the quality of the work of assessors and experts, but it is the Assessor or Expert determining whether a building or design gets a certificate and what performance stand it.
2. W/E reserves the right to rescind any GPR Certificate issued should it be evident that there are any anomolies
3. For new buildings, the whole building or part of it certified.
4. When renovating the entire building, or a part of the building, only that part tested will be certified, such as ,for example, a renovated part of a building.
5. The cost of GPR Building Certificate is met by the assessor or expert that issues the certificate.

4. NON-EUROPEAN EXPERIENCES WITH THE PROMOTION OF GREEN LABELS FOR THE BUILDING SECTOR[21]

In addition to the European examples mentioned previously we briefly include in this report some well known and trusted non-European environmental labels and building certification systems recognized internationally in the marketplace.

At the end of this report we include two tables in the annexes with additional green labels used in different parts of the world offering a brief description of them, their characteristics and a link their websites if appropriate for more information if required. In this section we divide the labels also into two categories: single attribute criteria and multi attribute criteria labels for products and for buildings.

4.1 SINGLE ATTRIBUTE CRITERIA LABELS – FOR PRODUCTS

Below we present information on the labels established to help consumers make more efficient use of resources, such as those on energy, water, and wood; all these three labels are single product certified and voluntary.

As mentioned before the assessment of these productstheir focus is on one environmental issue: energy efficiency, water or sustainable-wood harvesting.

4.1.1 Energy Star – USA (single attribute criteria, voluntary)

Energy Stat was first established in 1992 as a voluntary labelling programme and is a widely recognized government–run product certification label for energy efficient products. It is a joint programme of the U.S. EPA and DOE.

Energy Star-certified products include appliances, heating and cooling equipment, lighting, home electronics, commercial roofing and office equipment. Energy Star standards are generally updated and tightened every two years.

The Energy Star label can be found today in Australia, Canada, Japan, New Zealand, Taiwan and the EU.

4.1.2 WaterSense - USA (single attribute criteria, voluntary)

WaterSense is a partnership programme also by the US EPA. WaterSense seeks to protect the future of the nation's water supply by offering people a simple way to use less water with water-efficient products, new homes, and services. It was established in 2006 and seeks to help consumers make smart water choices that save money and maintain high environmental standards without compromising performance. WaterSense products and services that have earned the label have to be are at least 20% more efficient.

[21] More information on these topics can be found at: http://www.wbdg.org/resources/gbs.php

4.1.3 Forest Stewardship Council (FSC) (single attribute criteria, voluntary)

This is a third-party certification programme established in 1993 with the goal of promoting responsible forestry and certifying the resulting wood products. The standard is managed by the FSC while certification is awarded by third parties such as the Rainforest Alliance and Scientific Certification Systems. There are different standards for different forest products (FSC pure, FSC mixed, and FSC recycled) and different regions. The FSC chain of custody is a requirement of certification that follows the path of the wood product from forest to consumer.

4.2 MULTLIPLE ATTRIBUTE CRITERIA LABELS – FOR PRODUCTS AND BUILDINGS

Below are the Non-European green product building labels and certification systems which are most commonly used and respected in the marketplace internationally.

These are all multi-criteria labels/systems for buildings. Since they are all multi-criteria their assessment focus on two or more environmental impacts; looking at several characteristics of a product or even a product's entire life cycle or a product's impacts.

4.2.1 Green Seal, label for products (multiple attribute criteria, voluntary)

Green Seal is a third-party certification and labelling programme that covers a wide range of products with sector-specific requirements, particularly consumable items for building operations. Green Seal has been certifying products since 1992 and is an ISO 14024 Type I programme. Green Seal considers the impacts of a product over its entire life cycle when developing a standard. Building products covered include paints, adhesives, lamps, electric chillers, windows, and occupancy sensors.

4.2.2 Cradle-to-Cradle (C2C), label for products (multiple attribute criteria, voluntary)

This is a certification and label based on criteria that addresses the materials contained in a product, the material re-utilization cycle, the amount of energy and water used in manufacturing, and corporate social responsibility. There are levels of product certification that can be achieved including basic, silver, gold and platinum. Currently, the C2C is the only certification programme in the US that addresses chemical properties of product ingredients to intentionally help manufacturers replace chemicals that are harmful with healthier alternatives.

4.2.3 Leadership in Energy and Environmental Design (LEED), certification for buildings (multiple attribute criteria, voluntary)

LEED was created in 2000 by the US Green Building Council (USGBC), for rating design and construction practices that would define a green building in the United States. Leed is used throughout North America as well as in more than 30 countries with over 6,300 projects certified across the globe and over 21,000 projects registered.

LEED consists of credits which earn points in 7 categories: Site Selection, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Regional Priority, and Innovation in Design. One hundred points are available

across these categories with mandatory prerequisites such as minimum energy and water-use reduction, recycling collection, and tobacco smoke control. LEED includes distinct rating systems that address different building types: New Construction, Existing Buildings, Commercial Interiors, Core and Shell, Schools, Retail, Healthcare, Homes, and Neighbourhood Development.

4.2.4 CASBEE, certification for buildings (multiple attribute criteria, voluntary)

CASBEE in Japan is a method for the evaluation and rating the environmental performance of buildings and the built environment. It is a comprehensive assessment of the quality of a building, evaluating features such as interior comfort and scenic aesthetics, in consideration of environmental practices which include using materials and equipment that save energy or achieve smaller environmental loads.

CASBEE is composed of four assessment tools corresponding to the building life cycle. "CASBEE family" is the collective name for these four tools and the expanded tools for specific purposes. The CASBEE assessment tools are CASBEE for Pre-design, for New Construction, for Existing Building and CASBEE for Renovation, to serve at each stage of the design process.

CASBEE is comprised of assessment tools tailored to two different scales: construction (houses and buildings) and urban (town and city development). These tools are collectively known as the CASBEE Family.

4.2.5 Green Mark, certification for buildings (multiple attribute criteria, voluntary)

Based in Singapore, and it was launched by the Building and Construction Authority (BCA) in 2005 to promote environmental awareness in the construction and real estate sectors. The BCA Green Mark Scheme rates buildings according to five key criteria including: energy efficiency, water efficiency, environmental protection indoor environmental quality, and other green and innovative features that contribute to better building performance. The programme outlines a six step scheme that also offers cash incentives to developers, especially focused on addressing improvement to existing construction in areas such as energy use reduction and materials conservation.

4.2.6 Green Star SA, certification for buildings (multiple attribute criteria, voluntary)

Green Star was developed by the Green Building Council of South Africa, and is based on the Australian Green Building Council tools to provide the property industry with an objective measurement for green buildings. Each rating tool reflects a different market sector (office, retail, multi-unit residential, etc.)

The objectives of the Green Star SA rating tools are to: establish a common language and standard of measurement for green buildings, promote integrated, whole building design, raise awareness of green building benefits, recognize environmental leadership, and reduce the environmental impact of development.

4.2.7 Pearl Rating System for Estidama, certification for buildings (multiple attribute criteria, voluntary)

Estidama (sustainability in Arabic) is intended to be the initiative which will transform Abu Dhabi into a model of sustainable urbanization. Its aim is to create more sustainable communities, cities, and global enterprises and to balance the four pillars of Estidama: environmental, economic, cultural and social. The Pearl Rating System for Estidama aims to address the sustainability of a given development throughout its life cycle from design through construction to operation. Accordingly, three rating stages have been established: Design, construction and operational.

5. GREEN PUBLIC PROCUREMENT (GPP)

INTRODUCTION

Green procurement stems from pollution prevention principles and activities. Also known as green or environmental purchasing, green procurement compares price, technology, quality and the environmental impact of the product, service or contract.

In a broad sense it can be said that green procurement means purchasing environmental friendly products and services that cause minimal adverse environmental impacts. "Green" products or services utilize fewer resources, are designed to last longer and minimise their impact on the environment from cradle to grave. In addition, "green" products and services have less of an impact on human health and may have higher safety standards. Whilst some "green" products or services may have a greater upfront expense, they save money over the life of the product or service.

Green procurement programmes may be as simple as purchasing renewable energy or recycled office paper or more involved such as setting environmental requirements for suppliers and contractors.

Two kind of procurement schemes actually co-exist in the market : one focusing only on the environmental aspects called environmental procurement and the other having a more holistic approach, which takes into account the three pillars of sustainability (socio-economic and environment) called sustainable procurement (SP). Sustainable procurement embeds environmental, economic and social criteria into contractual documents with the aim of motivating suppliers to offer more sustainable products and services

As the term green became accepted more and more worldwide embedding environmental, economic and social criteria; a growing number of organizations and countries have started to use the term green procurement instead of sustainable procurement. In this report green procurement will be used in its actual holistic sense including the socio, economic and environmental aspects.

Given that governments are one of the most important actors for buying diverse materials to maintain the running and implementation of their institutions, the term Green Public

Procurement (GPP) is currently being widely used and promoted. This term not only includes the environmental aspects but also the health and socio-economic aspects.

Green procurement policies and programmes are applicable to all organizations, regardless of size. They can help to reduce expenditure and waste; increase resource efficiency; and influence production, markets, prices, available services and organisational behaviour and they can also assist countries in meeting multi-lateral requirements such as comply with the EU GPP targets, the Kyoto Protocol and Rotterdam Convention.

Before a green procurement program can be implemented, current purchasing practices and policies must be reviewed and assessed. A life cycle assessment of the environmental impacts of products or services is required and a set of environmental criteria against which purchase and contract decisions are made has to be developed.

The outcome of this process is a regularly reviewed green purchasing policy that is integrated into other organisational plans, programs, and policies. A green purchasing policy includes date-stamped priorities and targets, the assignment of responsibilities and accountability and a communication and promotion plan.

The main obstacles towards the implementation of a green procurement programme are:
- lack of readily available environmental friendly products;
- expensive or zero environmental alternatives;
- inaccurate studies;
- lack of organizational support;
- Inaccurate or unsubstanciated environmental claims by manufacturers and suppliers.

This part of the report is divided in three parts: firstly there is a short overview of the basic principles, concepts and benefits, followed by an extensive description of how GPPs are being implemented and promoted in EU and finally there is a short overview of the GPP implementation in UK and Germany, two of the most successful countries complying with the EU GPP targets.

5.1 BASIC PRINCIPLES OF GEEN PROCUREMENT [22]

Government procurement is about matching supply and demand, in order to deliver the goods, services and works which the public sector is responsible for providing. Two basic principles apply:
- Value for money
- Acting fairly

A. Value for money

Contracting authorities have an obligation to get the best value for taxpayers' money for everything they procure. Best value for money does not necessarily mean going only for the cheapest offer. It means finding a solution which meets the requirements you have identified – including environmental ones– in the most cost-effective way. Best value not only measures the cost of goods and services, but also takes account factors such as quality, efficiency,

[22] Information gathered from "Buying Green – A handbook on green public procurement", European Commission.

effectiveness and fitness for purpose. Protection of the environment can be one of these factors and can, therefore, act as an equal consideration amongst others for the award of the contract.

B. Acting fairly

Acting fairly means applying the principles of the internal market, which form the basis for the public procurement directives and the national legislation based on these directives. The most important are the following:

- **Non-discrimination** – contracting authorities must ensure equal access to the contract by operators.
- **Equal treatment** – comparable situations must not be treated differently and different situations must not be treated in the same way, unless such treatment is objectively justified.
- **Transparency** – tender opportunities must be advertised widely enough to ensure competition and contracting authorities have the obligation to inform unsuccessful tenderers of the reasons for rejecting their tenders
- **Proportionality** - implies that measures adopted in a procurement process should be appropriate to the objectives pursued and should not go beyond what is necessary to achieve them.

5.2 BENEFITS OF GREEN PROCUREMENT

The benefits associated with GPP are not limited to environmental impact, but can include everything from social and health to economic and political benefits. Some examples of the benefits generated by European authorities through GPP are summarized below, see also: http://ec.europa.eu/environment/gpp/benefits_en.htm

Environmental benefits

GPP allows public authorities to achieve environmental targets:

- Deforestation, (e.g. through the purchase of wood and wood products from legally harvested and sustainably managed forests)
- Greenhouse gas emissions (e.g. through the purchase of products and services with a lower CO_2 footprint throughout their life-cycle)
- Water use (e.g. through choosing more water-efficient fittings)
- Energy efficiency and resource use (by choosing products which are more efficient and implementing environmentally conscious design principles, e.g. cradle-to-cradle)
- Air, water and soil pollution (by controlling chemicals and limiting the use of hazardous substances)
- Waste (by specifying processes or packaging which generate less waste or encouraging reuse and recycling of materials)
- Sustainable agriculture (e.g. by purchasing organically produced food)

GPP sets an example to private consumers: Green purchasing means setting an example for the general public and the private sector, and influencing the marketplace. Establishing a GPP policy, and communicating initiatives and their results, demonstrates that action in this area is possible and that it leads to positive outcomes. It can also encourage private sector organizations to use green criteria for their own procurement.

GPP raises awareness of environmental issues: GPP can act as a useful channel for raising environmental awareness by identifying the environmental impacts of a particular product/service throughout its life-cycle and providing information on the benefits of greener alternatives. For example, serving organic and sustainable food in a public canteen is likely to increase awareness amongst users and providers of the service.

Social/health benefits

GPP improves quality of life: Policies on GPP can improve services to the public and thus enhance quality of life. Cleaner public transport, for example, improves air quality. Reduced use of toxic chemicals in cleaning products provides a healthier working environment.

GPP helps establish high environmental performance standards for products and services: GPP can help drive higher quality standards for products and services, delivering better performance for public authorities and ultimately citizens. New products and services which have been developed to meet the requirements of GPP may also become popular with private consumers, improving overall standards.

Economic benefits

GPP saves money and resources when life-cycle costs are considered: It often leads to savings over the whole life-cycle of a purchase- both for public authorities and for society in general. Purchasing more energy-efficient IT equipment can save money in many different ways: for example lower electricity use and easier recycling or reuse at the end of its life. Similarly a more energy and water-efficient building may cost more up-front, but will save money in the long run.

GPP provides incentives to industry to innovate: It promotes green procurement and gives important incentives for industry to develop 'green' technologies and products and promote them in the market place. In particular, small- and medium-sized companies may profit from environmental procurement, as it offers an opportunity to find markets for their innovative solutions and products.

GPP can reduce prices for environmental technologies: it introduces 'green' tendering criteria that can influence the marketplace and result in new entrants in the field of environmental technologies and products - potentially resulting in increased competition and reduced prices.

5.3 GREEN PROCUREMENT IMPLEMENTATION PROCESS

Before a green procurement programme can be implemented, current purchasing practices and policies must be reviewed and assessed. A life cycle assessment of the environmental impacts of products or services is required and a set of environmental criteria against which purchase and contract decisions are made has to be developed. The outcome is a regularly reviewed green purchasing policy that is integrated into other organizational plans, programmes, and policies.

The International Standards Organization (ISO) and other bodies have established guidelines for green procurement programs.

Green procurement is seen as more and more in legislation, organizational policies, directives, environmental management systems or multi-lateral agreements often require organizations to implement a green procurement programme.

5.4 GREEN PUBLIC PROCUREMENT IN EU

In EU Green Public Procurement (GPP) is defined as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life-cycle when compared to goods, services and works with the same primary function that would otherwise be procured."[23] "*Public procurement for a better environment*"

The concept of GPP has been widely recognised in recent years as a useful tool for driving the market for greener products and services and reducing the environmental impacts of public authorities' activities.

GPP sets minimum, 'core' criteria as well as best practice "comprehensive" specifications for a range of product groups. Core criteria address the most significant environmental impacts; comprehensive criteria are intended for procurers who wish to purchase the best environmental products available.

GPP can support sustainable public procurement by providing stakeholders with an opportunity to develop a more sustainable supply chain. It concerns both:

- Contracting authorities: National, regional or local authorities and so-called bodies 'governed by public law'. These are bodies established for the specific purpose of meeting needs in the general interest, but without an industrial or commercial character and for the most part financed, administered or supervised by public authorities.
- Contracting entities: All entities operating in so-called 'special sectors', namely: water, energy, transport and postal services. Even if the operating entities in those sectors are not necessarily any longer public authorities or bodies governed by public law, they provide public services and remain relatively dependant on public money.

Examples of green contracts are: energy efficient computers, office furniture from sustainable timber, low energy buildings, recycled paper, cleaning services using environmentally friendly cleaning products, electric, hybrid or low-emission vehicles and electricity from renewable energy sources.

5.5 EU TARGETS FOR GPP

In order to steer the improvement of the environmental performance of products, to increase the demand for more sustainable goods and production technologies and to allow purchasers across the public sector to take account of environmental factors when buying goods, services or works the EU decided to set targets to be achieved by country members. GPP voluntary targets were adopted under the renewed Sustainable Development Strategy in 2006, stating that, by 2010, the average level of GPP should be the same as the level of the best performing Member States at the time (2006). In its 2008 Communication, the Commission proposed that, by 2010, 50% of all public tendering procedures should be "green". "Green" means tendering procedures must comply with endorsed common "core" GPP criteria.

[23] For more information see: "*Public procurement for a better environment*"

The baseline for this target was a study "Green public procurement in Europe" (2005-2006) on GPP performance across EU Member States, which indicated the current levels of GPP in the seven best performing Member States (Austria, Denmark, Finland, Germany, the Netherlands, Sweden, and United Kingdom). This study also identified the most suitable product groups for immediate greening.

GPP legal framework in EU

The legal framework for public procurement is defined by the provisions of the Treaty on the functioning of the European Union (hereafter the Treaty) and by the EU Procurement Directives as interpreted by the European Court of Justice. From an international perspective the EU is bound by the conditions of the General Procurement Agreement (GPA) of the World Trade Organisation (WTO).

The above-mentioned framework establishes a number of rules and principles which must be observed in the award of public contracts.

The main sources of Community law regard to GPP are: The Procurement Directives (2004/17/EC and 2004/18/EC) and Remedies Directive (2007/66/EC), The Treaties (Treaty on the Functioning of the EU and its predecessors), Case law of the Court of Justice of the European Communities and Law applying to related areas such as State Aid and Competition

In addition there are a number of sources on the interpretation of the relevant laws and principles, such as the Buying Green handbook and Commission Interpretative Communications. Further information on each of these sources is available in the Legal Framework section of this website at:
http://ec.europa.eu/environment/gpp/pdf/handbook.pdf

Sectoral legislation

Sector-specific EU legislation also creates certain mandatory obligations for the procurement of specific goods and services, for example by setting minimum energy-efficiency standards which must be applied. Mandatory obligations currently apply in the following sectors: Office IT equipment, Road transport vehicles and Buildings.

GPP Policy in EU

GPP has been endorsed in a number of EU policies and strategies, reflecting its recognised potential to encourage a more sustainable use of natural resources, establish behavioural changes for sustainable consumption and production, and drive innovation. Europe 2020, the EU's strategy for smart, sustainable and inclusive growth, highlights GPP as one of the measures in achieving such growth.

The main document the European Commission has issued on the subject is the Communication *"Public procurement for a better environment"*, which is part of the package of sustainability measures found in the "*Sustainable Production and Consumption and in the Sustainable Industrial Policy (SCP/SIP) Action Plan*".

The general objective of the Public procurement for a better environment communication is to provide guidance on how to reduce the environmental impact caused by public sector

consumption and how to use Green Public Procurement (GPP) to stimulate innovation in environmental technologies, products and services. Other documents such as EU policies and strategies make reference to GPP or regulate areas which are linked to its implementation.

National and local actions[24]

At the national level, most EU Member States have now published GPP or SPP National Action Plans (NAPs) which outline a variety of actions and support measures for green (or sustainable) public procurement. Most have set targets for GPP or SPP, either in terms of overall procurement, or for individual product and service groups.

A number of countries and regions have also developed GPP or SPP criteria sets. In many cases these are similar to the EU GPP criteria, with adjustments to reflect the particular circumstances or priorities of the authorities developing them. Most of the criteria set
rely upon life-cycle assessment (LCA) data where it is available, together with eco-labels and the evidence which these are based upon. Links to many of these criteria sets and accompanying guidance are included on the EU GPP website.

Individual contracting authorities at the local, regional and national level have also adopted green and sustainable procurement practices.

GPP criteria and identification of priority sectors

As part of the legal framework EU has developed common GPP criteria that can be incorporated into a public procurement procedure for goods, services or works in order to reduce the environmental impact of the purchase.

These criteria were developed aiming to reach a good balance between environmental performance, cost considerations, market availability, and ease of verification and to facilitate the inclusion of green requirements in public tender documents among the EU country members.
Procuring authorities can choose, according to their needs and ambition level to include all or only certain requirements in their tender documents.

The EU GPP criteria are a voluntary approach that was endorsed in the communication *Public procurement for a better environment*. This communication indicates a number of measures to be taken by the European Commission to support the implementation of GPP by Member States and individual contracting authorities.

The purpose of the EU GPP criteria is to identify the main environmental impacts of each of the products and services covered, and propose clear, verifiable and ambitious criteria to address these in the procurement process. They are not legally binding and encompass two separate levels – core and comprehensive. Member States are invited to include the criteria into their national GPP policies and individual contracting authorities to use them when procuring.

In practice, a number of Member States have either referenced the EU GPP criteria in their national action plans, or adopted criteria which reflect these quite closely. For example, in the

[24] Information gathered from "Buying Green – A handbook on green public procurement".

UK the Government Buying Standards are largely aligned with the EU GPP criteria, with some variations in scope/ambition depending on the product group.

Variations in the criteria adopted may reflect national differences in the market availability of products/services, approach to procurement and environmental and other priorities. Similarly individual contracting authorities may choose to adapt the criteria to meet their particular requirements. Individual contracting authorities can choose which criteria to apply, in the absence of specific national laws regulating this.

These criteria use by EU are divided into 'core' and 'comprehensive:

- The core criteria are those suitable for use by any contracting authority across the Member States and address the key environmental impacts. They are designed to be used with minimum additional verification effort or cost increases.

The comprehensive criteria are for those who wish to purchase the best environmental products available on the market. These may require additional verification effort or a slight increase in cost compared to other products with the same functionality These criteria are divided into 'core' and 'comprehensive

In 2006 EU elaborated a list of priority sectors containing a set of criteria[25]:

- **List of priority sectors**
  Cleaning products and services, Construction, Electrical and Electronic Equipment used in the Health Care Sector, Combined Heat and Power (CHP), Indoor lighting, Toilets and Urinals, Water-based Heaters, Waste Water Infrastructure and other.
- **Criteria developed**
  Scope for environmental improvement; public expenditure; potential impact on suppliers; potential for setting an example to private or corporate consumers; political sensitivity; existence of relevant and easy-to-use criteria; market availability and economic efficiency.

Costs of including green products in the GPP Processes[26]

The most common misconception about GPP is that green products cost more. However, upon closer inspection, this does not necessarily hold true. Green products can have a lower purchasing price as they have reduced impacts on the environment with often less energy and raw materials consumed and/or less waste generated so lower associated production costs.

The European Commission in a study on the "Costs and Benefits of Green Public Procurement in Europe" found that the purchasing costs for public authorities of green (including 100% recycled and eco-certified copying paper) and non-green copying paper are very similar.

In Germany, "green" versions of copying paper appeared to be significantly cheaper (23%). In Sweden, the same study showed that environmentally friendly floor care, sanitary and window cleaning products were all less expensive than their conventional counterparts (74%, 82% and 9%, respectively). In addition, where a life-cycle costing approach is applied to competing

[25] More information on EU GPP criteria is available at:
http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm
[26] For more information on Cost Issues and Do Green Products Cost More? see:
http://ec.europa.eu/environment/gpp/faq_en.htm#general1

products or services, greener alternatives are often cheaper even where the initial purchase price is higher. This is even more likely to be true where an environmental LCC approach is applied (please see FAQ on life-cycle costing for further information).

Good examples concern energy-using products, for which a "high" purchasing price is often more than compensated for by long-term savings. Depending on the product, the payback period may be as short as six months, for example in the case of energy efficient light bulbs.
If contracting authorities wish to ascertain which products are most cost effective for them they need to apply Life-Cycle Costing (LCC) approaches in their procurement decisions.

5.6 USING ECO-LABELS IN GPP

Under the EU Procurement Directives (2004/18/EC and Directive 2004/17/EC) ecolabels may be used in public procurement – both as a source for environmental criteria for specifications or the award phase, and as a form of verification - providing a number of conditions are met:

- Procurers are not allowed to demand that a product carries an ecolabel; you may only indicate that the criteria underpinning a certain ecolabel are met, and that it may be used as one form of proof of compliance
- Procurers may only use the ecolabel criteria which can legally be used in public procurement i.e. only criteria which refer to characteristics of the product or service itself or production processes, not those relating to the general management of the company
- Procurers may only refer to ecolabels which themselves meet a number of requirements (the Type I or ISO 14024 ecolabels such as the EU Ecolabel meet these requirements):
  - The requirements for the label are based on scientific evidence
  - The ecolabels are adopted with the participation of all stakeholders, such as government bodies, consumers, manufacturers, distributors and environmental organizations
  - They are accessible to all interested parties

To find a list of existing labels which can be used for GPP and get practical examples of what can and cannot be done, please consult the Green Public Procurement and the European Ecolabel factsheet[27] and the GPP Training Toolkit[28]

Type of Eco Labels most used in EU GPP

Public, multi-criteria ecolabels (Type I, ISO 14024) are the most common types of labels and also the most commonly used in green procurement in EU.
They are based on a number of pass/fail criteria that set the standard for the label in question. Different sets of criteria are established for each product or service group covered by the scheme. These criteria will normally define the environmental performance that the product must reach and may also set standards.
Examples include:

- The European Ecolabel: http://ec.europa.eu/environment/ecolabel/index_en.htm (Annex I lists the product and service groups covered)
- The Nordic Swan, Scandinavia: www.svanen.nu
- The Blue Angel (Blauer Engel), Germany: www.blauer-engel.de

[27] Green Public Procurement and the European Ecolabel see: http://ec.europa.eu/environment/gpp/pdf/toolkit/module1_factsheet_ecolabels.pdf
[28] GPP Training Toolkit available at: http://ec.europa.eu/environment/gpp/toolkit_en.htm

- Umweltzeichen, Austria: www.umweltzeichen.at

5.7 EU APPROACHES TO PROMOTE GPP[29]

In order to streamline the GPP across the country members the EU has developed and is implementing the following measures:

- Set clear political voluntary targets for GPP: by 2010, 50 % of all tenders should be compliant with endorsed common "core" GPP criteria;
- Produced a handbook Buying Green! on environmental public procurement which explains how best to integrate environmental considerations into public procurement procedures based on the provisions of the Public Procurement Directives of 31 March 2004;
- Developed a first set of GPP criteria for ten priority sectors in 2008, followed by a second set of criteria covering a further 8 sectors in 2010. The criteria have been developed with cooperation with Member States and other stakeholders;
- Provided a web based Training Toolkit on GPP;
- Launched a programme to train GPP experts and raise awareness about GPP in EU Member States;

In addition the Commission launched a Helpdesk in early 2010, to promote and disseminate information about GPP, and to provide timely and accurate answers to stakeholders' enquiries.

5.8 IMPLEMENTATION OF GPP IN EU COUNTRIES[30]

At national level, most EU Member States have now published GPP or SPP National Action Plans (NAPs) which outline a variety of actions and support measures for green (or sustainable) public procurement. Most have set targets for GPP or SPP, either in terms of overall procurement, or for individual product and service groups.

A number of countries and regions have also developed GPP or SPP criteria sets. In many cases these are similar to the EU GPP criteria, with adjustments to reflect the particular circumstances or priorities of the authorities developing them. Most of the criteria sets rely upon life-cycle assessment (LCA) data where it is available, together with eco-labels and the evidence which these are based upon. Links to many of these criteria sets and accompanying guidance are included on the EU GPP website.

Individual contracting authorities at the local, regional and national level have also adopted green and sustainable procurement practices. In some cases their actions have inspired the NAPs, or been taken up as examples in other Member States.

5.9 GPP IN UK

GPP in UK is one of the building blocks of the SCP action plan and covers product groups which have a high impact on the environment such as construction, food and catering services, and transport. It is closely aligned to the Eco-label scheme which provides suppliers of products and services with an environmental benchmark for their production and performance. Indeed many of the GPP criteria are derived from Ecolabel standards.

[29] In this section Hyperlinks have been used. Click on them to open the WebPages

[30] For more information please see: "Green Public Procurement and Product Performance Requirements: Case Study on selected energy using and non-energy using products available at: http://scp.eionet.europa.eu/publications/GPP_Paper/wp/WP2009_4

The concept of GPP is in UK now contained within the more wide-reaching framework of sustainable procurement. A national Sustainable Procurement Action Plan (HM Government 2007 was published in March 2007, which together with HM Treasury's Transforming Government Procurement (HM Treasury, 2007) provide a new framework for sustainable procurement in the public sector. In addition to the overall sustainability objectives, these have been designed to help the UK to meet its obligations under the Energy End-Use and Energy Services Directive, with the public sector setting an exemplary role in energy efficiency

In order to comply with the EU GPP targets UK has stipulated that by 2010 50% of all government procurement tenders should be green. The percentage will be expressed in both number and value of green contracts as compared to the overall number and value of contracts concluded in the sectors for which common "core" GPP criteria have been identified.

- The following sectors are included in the UK GPP programme:
- Construction (covering raw materials, such as wood, aluminium, steel, concrete, glass as well as construction products and operational and end-of-life aspects of buildings, maintenance services, on-site performance of works contracts)
- Food and catering services
- Transport and transport services
- Energy (including electricity, heating and cooling coming from renewable energy sources)
- Office machinery and computers
- Clothing, uniforms and other textiles
- Paper and printing services
- Furniture
- Cleaning products and services
- Equipment used in the health sector

The GPP programme is being guided by the National Sustainable Public Procurement Programme (NSPPP) that seeks to make it clear to government employees that sustainable procurement is simply good procurement practice which can generate significant benefits such as increased efficiency, reduction in carbon and cost savings. The programme explains public procurement and demonstrates how to apply sustainable procurement good practice throughout the purchasing cycle.

The implementation of the programme was given to Defra, the UK government department responsible for the environment, for food, farming and for rural affairs through its Sustainable Products and Consumers (SPC) team which is responsible for projects to deliver UK sustainable public procurement policy and product specifications. One of the main responsibilities of this department is to support the achievement of the UK target for the EU's Green Public Procurement programme.

Among the initiatives created to promote and foster GPP development in UK we would like to highlight the followings:

- A new Centre of Expertise in Sustainable Procurement was established within the Office of Government Commerce, which is responsible for providing cross-departmental support on

all aspects of government procurement, to help deliver this by providing product-specific guidelines and information.

- Public sector guidance on both mandatory and Best Practice sustainability criteria for a small range of products is currently available on the government's sustainable development website, "Buy Sustainable – Quick Wins." While the scope of work includes water heaters and showers, at present it does not cover the use of recycled mineral CDW.
- Development of Government Buying Standards (GBS), owned by Defra, which are a set of easy to use product specifications for public procurers that can be used as technical specifications in tender documents. GBS are set at 'mandatory' and 'best practice' levels. Under the the Greening Government Commitments central government departments and their related organizations must ensure that they meet the mandatory levels of the GBS. 'Best practice' criteria are for organizations that want to take the lead in sustainability. These either set the bar higher for existing criteria, or add further criteria that need to be fulfilled.
- Stimulating different public sector organizations to use the existing guidelines for public procurement contained in the:
  - Code for Sustainable Homes (CLG, 2008a), a voluntary standard introduced in 2007 to improve the sustainability of new homes, for new residential buildings and;
  - Building Research Establishment Environmental Assessment Method (BREEAM, 2008a), for non-residential buildings, including multi-residential, offices, retail, industrial, schools and courts. It also has a special section covering building fit-out and renovation
- Adoption and promotion of the use of the EU developed toolkit on GPP which consists of 3 independent modules: http://ec.europa.eu/environment/gpp/index_en.htm
  Module 1: A strategic module which seeks to raise the political support for green public procurement within an organization targeting in particular decision makers.
  Module 2: A legal module which seeks to clarify legal issues and is designed for both strategic and operational levels.
  Module 3: An operational module that includes concrete examples of environmental criteria for 10 product and service groups, for use in public tendering procedures.
- Helping and funding the development of an independent organization to provide specifications and detail information on 'Green Building' resources including products, materials and construction techniques in the UK. http://www.greenspec.co.uk/

6. CONCLUSIONS

Energy labelling is already proving to be an effective means of stimulating the market for more sustainable products in EU. Mandatory energy efficiency labelling of domestic appliances has succeeded in increasing consumer awareness, which in turn has encouraged manufacturers to actively use the labelling system to gain a competitive edge.

The success is further demonstrated by the extension of voluntary labelling schemes into the nondomestic sector, and includes products that form part of the components (e.g. fixtures and fittings) of a building.

The combination of energy labelling and national building regulations, which incorporate the requirements of the Energy Performance of Buildings Directive, has been effective in raising the

energy efficiency standards of individual building components as well as in implementing energy efficiency of entire buildings.

Energy labels schemes in EU are effectively making energy use visible and raising awareness about energy savings potential. They are helping to inform owners, tenants and potential investors about the level of energy performance and or other green attributes that buildings, appliances, products or services may have. This information allows consumers to easily check and compare between the different energy, water or other green attributes that the market is offering.

In most of EU countries members, building regulations now specify the minimum energy efficiency and energy-related criteria for water heaters and windows and other building materials.

This change in policy is often acknowledged to have led to a strong trend towards the use of even more efficient energy products and building models.

EU Energy performance certificate labels are proving to be a powerful marketing tool to promote energy efficiency in buildings by targeting such improvements as a decision-making criterion in real-estate transactions, and by providing recommendations for the cost-effective or cost-optimal upgrading of energy performance.

Green Public Procurement is another important approach EU is using to promote sustainable consumption and production in the housing sector.

Legislation and/or national GPP action plans exist in most of the EU countries requiring the public sector to take environmental considerations into account in their procurement procedures.

In most of EU countries, current GPP guidance is already using the various national eco-labelling/rating systems in existence to specify the recommended products performance levels, which is encouraging the market to develop in response to demand.

The public sector, particularly at a regional and local level, is also using voluntary codes to raise the standard of environmental building design relating to both the energy performance of the finished building and other environmental aspects, such as water demand.

In UK different public sector organizations are using the existing guidelines for public procurement contained in the "*Code for Sustainable Homes",* which is a voluntary environmental assessment method introduced in 2007 to improve the sustainability of new homes, for new residential buildings and the "*Building Research Establishment Environmental Assessment Method"* for non-residential buildings, including multi-residential, offices, retail, industrial, schools and courts. It also has a special section covering building fit-out and renovation.

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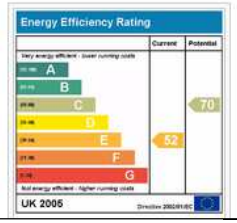
ANNEX 1: EXAMPLES OF SOME EXISTING ECOLABELS WORLWIDE[31]

The number or environmental labels available worldwide is high and is constantly growing. Below you can find some green product labels which are most commonly used and respected in the marketplace covering different product categories. This list doesn't suggest that the below labels are preferred or recommended.

No.	ECO-LABEL	DESCRIPTION AND SCOPE	PROMOTERS OF THE SCHEME		
			NAME	COUNTRY OF ORIGIN	WEBSITE
		ENERGY			
01		The EU Energy Label The EU Energy Label covers light bulbs, cars and most electrical appliances (e.g. refrigerators, stoves, washing machines). Energy efficiency of the product is rated in energy levels ranging from A to G. 'A' stands for the most energy efficient and 'G' for the least energy efficient.	Europe's Energy Portal	European Union	https://www.energy.eu/
02		ENERGY RATING (Australia) The Energy Rating label enables consumers to compare the energy efficiency of domestic appliances. It also provides incentive for manufacturers to improve the energy performance of appliances including refrigerators, freezers, air conditioners, dishwashers, clothes washers and clothes dryers. Rating ranges from 1 to 6 stars (6 best)	A joint initiative of Commonwealth, State, and Territory government agencies	Australia	http://www.energyrating.gov.au/
03		The Energy Star programme is a joint initiative by the U.S. Department of Energy and the U.S. Environmental Protection Agency (EPA) and is an international standard for energy efficient consumer products. Established in 1992 as a voluntary labelling programme with the aim to reduce GHG emissions and other pollutants. Their focus initially was on computers, printers, photocopiers, televisions, audio	Environmental Protection Agency (EPA)	USA	http://www.energystar.gov/

[31] For a complete list of ecolabels for all sorts of product categories worldwide please refer to the Global Ecolabelling Network (GEN) available in this link: global ecolabelling

		products and DVD players. Today Energy Star is also available on energy-efficient homes and buildings. Rating ranges from 1% to 100% performance (best)			
WATER					
03		WaterMark SAI GLOBAL (Australia) The WaterMark is certification trademark used in relation to water supply, sewerage, plumbing and drainage goods. Watermark certified goods comply with present regulatory position and meet required specifications and standards.	Standard Australia Limited	Australia	http://abcb.gov.au/product-certification
BUILDING					
04		TREES-NC (Thailand) (Rating of Energy and Environmental Sustainability for New Construction and Major Renovation) TREES-NC is a rating scheme that uses selected criteria for evaluating green buildings.	Thai Green Building Institute	Thailand	http://www.tgbi.or.th/intro.php
05		Green Star (Australia) Green Star is an environmental rating system that evaluates the environmental design and construction of buildings. 4 Star (score 45-59) signifies 'Best Practice' 5 Star (score 60-74) signifies 'Australian Excellence' 6 Star (score 75-100) signifies 'World Leadership'	Green Building Council Australia	Australia	http://www.gbca.org.au/
06		The Blue Angel is an ecolabel that protects human health and the environment. It is sophisticated, independent and has been the first ecolabel in the world covering more than 10,000 products in some 80 product categories. Some categories: Appliances, building products, waste management and recycling.	Federal Ministry for the Environment Nature Conservation and Nuclear Safety	Germany	http://www.ecolabelindex.com/ecolabel/blue-angel

07		The Singapore Green Labelling Scheme (SGLS) was launched in May 1992 to endorse industrial consumer products that have less undesirable effects on our environment. Administered by the Singapore Environment Council (SEC), the SGLS is the region's most established ecolabelling scheme. Their criterion includes building and construction materials	Singapore Environment Council	Singapore	http://sgls.sec.org.sg/
08		Built Green Canada is an industry-driven, voluntary programme that promotes "green" building practices to reduce the impact building has on the environment. It concentrates on seven areas: energy efficiency; materials and methods; indoor air quality; ventilation; waste management; water management; and business practices.	National Organization	Canada	http://www.builtgreencanada.ca/
09		EcoMark Japan	Japan Environment Association	Japan	http://www.ecomark.jp/english/syoukai.html

ANNEX 2: SOME SUSTAINABLE BUILDING RATING SYSTEMS SOURCE

RATING SYSTEM SOURCE			
Sustainable Building Rating System	**Development Basis**	**Type of Standard Certification**	**Areas of Focus**
BREEAM UK (EU,EFTA member states, EU candidates as well as the Persian Gulf)	Original	Multi-tiered process with pre-assessment, third party consultant guidance for: New construction, communities, in use buildings and eco-homes	Energy and water use, internal environment, pollution, transport, materials, waste, ecology and management processes
CASBEE (Comprehensive Assessment System for Building Environmental Efficiency) Japan	Original	Assessment for: Pre-design, new construction, existing buildings and renovations	Energy and resource efficiency, local environment and indoor environment
Green Globes Canada	BREEAM, Green Leaf	Green building guidance and assessment programme for: Existing building and new constructions	Energy, indoor environment, site, water, resources, emissions, project / environmental management
Green Globes US	Green Globes Canada		
HK BEAM (Hong Kong Building Environmental Assessment Method)	BREEAM	Comprehensive standard and supporting process covering all building types, including mixed use complexes, both new and existing to assess, improve, certify and label the environmental performance of buildings	Site aspects, material aspects, water and energy use, indoor environmental quality and innovations and additions
LEED US (Canada, India, Mexico)	Original	Certification through third party verification for: New construction, existing buildings operations & maintenance, commercial interiors, core & shell, schools, retail, healthcare, homes and neighbourhood development	Sustainable sites, water efficiency, energy and atmosphere, materials & resources, indoor environmental quality, locations & linkages, awareness & education, innovation in design and regional priority through a set of prerequisites and credits
Green Star Australia	BREEAM, LEED	In Australia, it was developed by Green Building Council Australia (GBCA) which validates the project's achievement through a formal assessment	Initially it was commercial office design and construction. The system has been recently developed to include: shopping centres, healthcare and education facilities, mixed use/multi-unit residential, industrial, and public buildings.