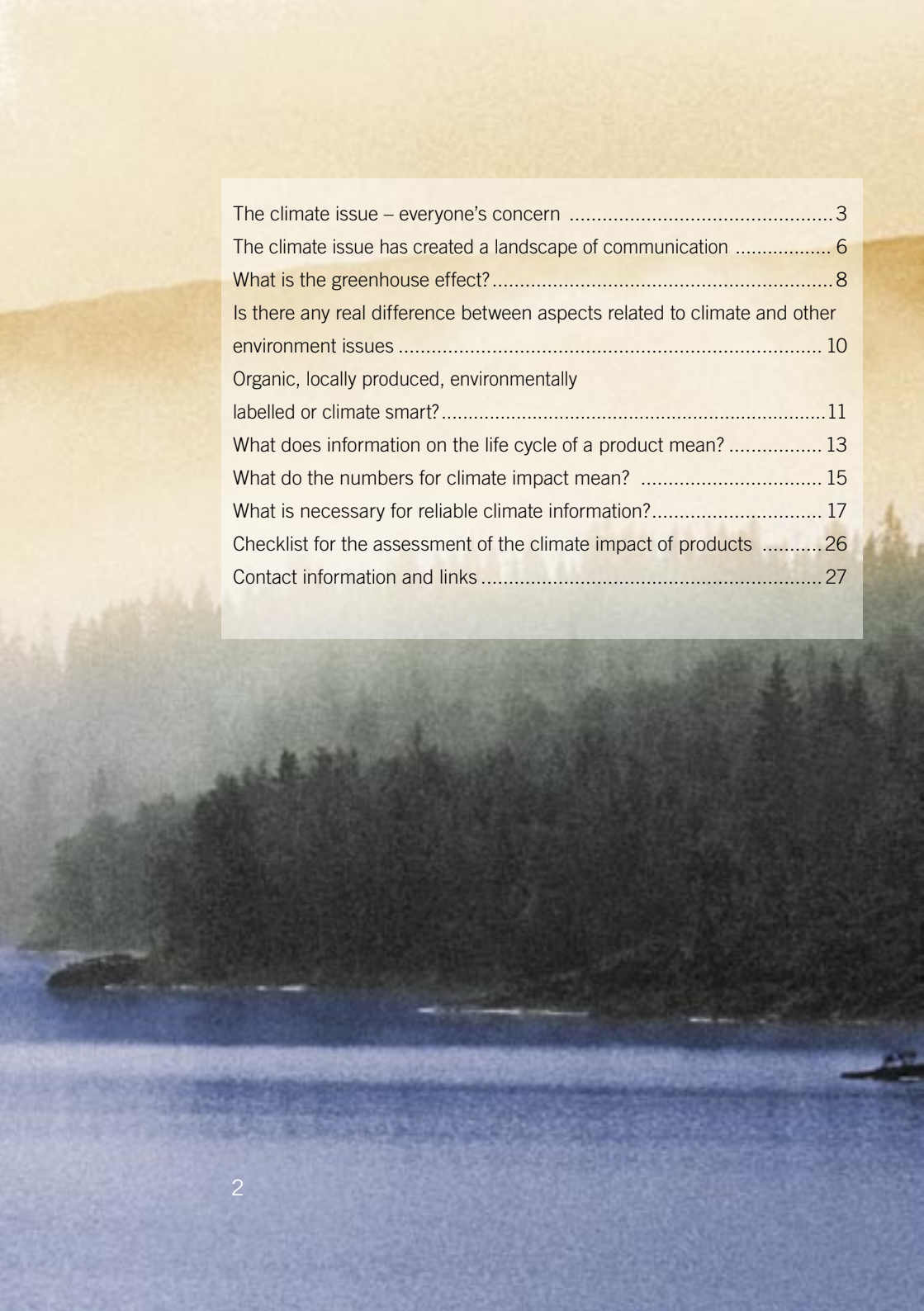


CLIMATE INFORMATION FOR GREEN PROCUREMENT

THE SWEDISH
ENVIRONMENTAL
MANAGEMENT
COUNCIL





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THE CLIMATE ISSUE

– EVERYONE'S CONCERN

Climate change and environmental threats have made us all aware of mankind's ability to change its surroundings in ways which may have serious consequences for future generations. There is scientific and political agreement that changes to our climate, the so-called greenhouse effect, which are now occurring at an ever greater speed can be linked to human activity and increased greenhouse gas (GHG) emissions.

The climate issue is the environmental issue which has highlighted the linkage to our private patterns of living and consumption and where we ourselves can contribute to relatively large reductions in our impact on the climate by changing the way we behave. Today





simple models are available on the Internet where everybody can calculate their so-called carbon footprint and how this is affected by where one lives, how one's home is heated, how one travels to work and on vacation, what one eats, how one recycles one's waste etc. Unfortunately there is no reliable information available regarding the carbon footprint of products, which is an important part of a person's ability to reduce its carbon footprint.

Lately, several initiatives have been taken to provide information on the carbon footprint of products. Unfortunately, many of these are done without any coordination or without the use of international practice and standards in the field. The consequence is a difficulty in comparing the carbon footprint of different products. Purchasing goods, whether by private consumers, companies or through the process of public procurement, has a great potential for changing the future development of products in order to reduce their impact on the climate. So far, private consumption has been at the centre of attention through various initiatives taken to develop different forms of climate labelling. Public procurement is now being given successively more attention as a tool for enabling public authorities, municipalities and regions to contribute effectively to a reduced effect on the climate by products and services.



The Swedish Environmental Management Council (SEMCo) has been assigned by the Swedish government to develop tools for green public procurement. For instance, this includes raising awareness of the importance of including efficient environmental criteria in the procurement process and increased information on how best to make such criteria. Furthermore, special focus on the climate forms part of the work of the SEMCo. The main purpose of this guide to climate information is to highlight current issues on climate information in general and some important points that are worth considering for procurers who need to consider information on the carbon footprint of different products in various ways.

This guide to climate information is to be considered as a first step as part of a process in which the Council wishes to contribute to inform about the climate issue. Even if the main purpose is to give guidance to procurers, the information is of general character and is hopefully also useful for other purposes.



THE CLIMATE ISSUE HAS CREATED A NEW LANDSCAPE OF COMMUNICATION

Public awareness of our environmental problems in general and climate issues in particular have rapidly grown over the last few years. This is largely due to the increased political interest and involvement, and the media coverage resulting from this. The climate issue has quickly changed the landscape of communication which is summarised in the diagram below.

THE NEW LANDSCAPE OF COMMUNICATION

- The climate issue has created a new demand for information of the climate impact of products which has largely been initiated by a group of influential "green consumers", this also affects public organisations since tax payers increasingly wants public founded organisations to use their money in a sustainable way.
- Many users and target groups for climate information seem to have a gradually increased knowledge of information on the climate impact of products and are relatively skilled in dealing with this information.
- Both private consumers and professional purchasers request more quantitative information that makes it possible for them to compare the climate impact of different products.
- Public and private organisations need access to data that enables them to measure and make accounts of the climate impact rising from their activities.
- Private consumers seem more and more willing to accept the challenge of making their own decisions on climate impact from products.



A very common opinion is that one needs to be careful with informing consumers about environmental problems as they may have difficulties in understanding their significance. It is however quite common that consumers initially have limited knowledge, for example of the climate issue, but that they learn from experience as they go along. This shows the importance of continuous and free access of available information on the climate impact of products. For procurers, it is especially important to keep track on the latest development of the climate issue as it links to products and goods and services that are normally involved in the procurement process.





WHAT IS THE GREENHOUSE EFFECT?

The Earth's atmosphere can be compared to a greenhouse. Without our atmosphere, the temperature on Earth would be considerably lower than our currently average temperature of about +15 degrees Celsius. This so-called "greenhouse effect" occurs when water vapour, carbon dioxide, methane, nitrous oxide and other greenhouse gases absorb some of the heat radiation that normally is lost from the surface of the Earth.

A distinction is made between the natural greenhouse effect and the one induced by human activity. Most greenhouse gases are already present naturally in the atmosphere and are of significant importance for life on Earth. However, the increasing emissions of greenhouse gases generated by man have altered the composition in the atmosphere mainly through rapidly rising levels of carbon





dioxide. This has resulted in a disruption in the weather system which cannot only be explained solely by natural variations.

When the levels of greenhouse gases in the atmosphere increase, the losses of heat radiation from the Earth's surface will decrease, resulting in a rise of the temperature on Earth. This amplified greenhouse effect will affect the whole weather system which in turn affects our environment in a number of ways sometimes with drastic consequences such as the risk of draught and desertification, increased levels and intensity of precipitation, increased flooding, melting ice and glaciers, rising sea levels and other disruptions to our weather system which also can lead to an increase in the number of extreme weather situations such as storms and hurricanes. These changes will probably carry on for a long time to come even if the overall emissions of greenhouse gases are reduced or cease completely over time.

There exists a relatively general understanding in the scientific community that the greenhouse effect is reinforced by human activity and that finding mutual and effective measures to mitigate the effects of climate change leading to a future reduction in greenhouse gas emissions are very urgent. However, there is still a difference of opinion regarding the scope and speed by which the climate will change and the consequences that this will have in different parts of the world.



IS THERE ANY REAL DIFFERENCE BETWEEN ASPECTS RELATED TO CLIMATE AND OTHER ENVIRONMENT ISSUES

The human impact on the environment leads to different consequences. Well-known types of environmental impacts are acidification of soil and water, eutrophication of freshwater lakes and coastal areas, and air pollution in densely populated areas. Acidification and eutrophication are usually regional problems, whereas air pollution in populated areas is a local problem. The greenhouse effect is another type of environmental problem but of a completely different dimension as it affects all life on Earth. Therefore no real difference exists between aspects related to climate and the environment issues as such, apart from the geographical coverage. However, climate change is probably one of the most serious of all environmental problems and the one with the most serious consequences for our natural ecosystems and humanity.

Climate change also differs from other environmental issues as it most directly affects the way we live, how we use natural resources and consume energy. Our current life style is not sustainable in the longer term. As a consequence, we must shift the use of non-renewable natural resources to renewable resources. We need to find new renewable energy sources and to start recycling energy from used materials and waste.

As climate change is strongly linked to energy consumption we must put more efforts into energy efficiency measures and energy savings. We can all contribute to this, for example, by buying energy-saving products. There exist great potentials for a procurer to prefer goods and services that use less energy during production and which have a low energy consumption when being used. It is a further advantage if the products also are recyclable to a large extent as is the ability to recycle energy when the products are worn out.

ORGANIC, LOCALLY PRODUCED, ENVIRONMENTALLY LABELLED OR CLIMATE SMART?

It may be easy to argue that the best way to reduce the climate impact of a single person or that of a whole organisation or society is to prefer to buy organic and locally produced products. There is also a common understanding that products with environmental labels are better from a climate point of view. Even though this might hold true for many products it is by no means always the case.

Existing environmental labelling systems often have different purposes than providing specific information on the climate. These systems also differ from each other. The principles of "locally produced products" focus on transports, whereas "organic products" normally relates to specific conditions during the production of food. Environmental labelling systems (e.g. EU-flower, The Nordic Swan, Good Environmental Choice) are designed to cope with well-known environmental problems and make a general overall assessment of these altogether. These systems are highly appre-





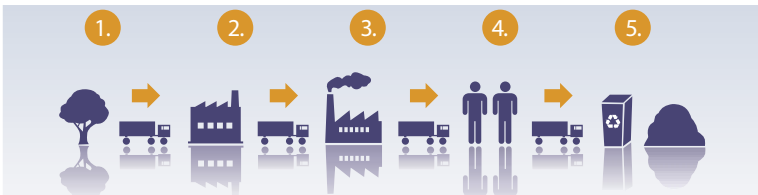
ciated by those consumers who wish to choose the best products from a general environmental point of view.

“Climate smart” or “climate neutral” products normally consider the climate impact of a product throughout its entire life cycle. It is important that a product that is referred to as “climate smart” or “climate neutral” has been examined based on reliable calculations of the greenhouse gas emissions based on international standards. If some aspects of the life cycle of a product are to be omitted from the calculation, these aspects should have a negligible of the total climate impact and this should be clearly stated and motivated.

Various prerequisites for existing environment information systems result in different types of data on the climate impact of products which may be of valuable for a procurer to gain more insight to. It is therefore important for procurers to obtain knowledge of the basic concept of different environment information systems available on the market and the extent to which they can be used as a basis for making environmental preferences for specific products having the lowest climate impact.

WHAT DOES INFORMATION ON THE LIFE CYCLE OF A PRODUCT MEAN?

In order to describe the climate impact of a product, it is important to take its entire life cycle into account. A method often used to make such calculations is through life cycle assessments (LCA). LCA studies are used to calculate the total environmental impact of a product - from the extraction of raw materials to manufacture, use and disposal (Fig. 1). For each individual such stage of the life cycle, an inventory is made to gather information on volumes and amounts of the consumption of material, energy and chemicals as well as emissions of pollutants and waste generation.



Figur 1. The different stages in a product's life cycle. 1. Extraction of raw materials, 2. Processing materials, 3. Manufacturing, 4. Use, operation and maintenance 5. Recycling or waste disposal

A subsequent important part of an LCA study is to convert the information from the inventory phase into various potential environmental impact of products. In this way, emissions of different greenhouse gases are added up into a common way of expressing the climate impact of the product. Other environmental impacts that are dealt with in a similar manner are depletion of the stratospheric ozone layer, acidification, creation of ground level air oxidants and eutrophication. The method for the carrying-out an LCA study life cycle analyses follows international standards (ISO 14040 and 14044). Usually all data are externally verified by an independent verifier, to ensure quality-assurance and guarantee reliable and trustworthy data.



LCA studies show that many products on the market have their significant climate impact during different stages in their life cycles. Products with a long life span and products that use substantial amounts of energy often have their significant climate impact during the use stage (see example from a vacuum cleaner in Fig. 2), Other types of products could have their most significant impact during raw material acquisition and manufacture, for example illustrated with the production of food (see example of milk production in Fig. 3). Hence, an LCA study is often a necessary tool to identify where in a products life cycle the most efficient efforts can be made to reduce and mitigate the climate impact of a product.



Figure 2. Result from an LCA study for a vacuum cleaner and the relative importance of the different life cycle stages in the total environmental impact (Source: EPD Vacuum cleaner, ETA, www.environdec.com)



Figure 3. Result of an LCA study of 1 litre of packaged milk and the relative importance of the different life cycle phases in the total environmental impact (Source: Climate declaration Bottled Milk, Granalo, www.environdec.com)

WHAT DO THE NUMBERS FOR CLIMATE IMPACT MEAN?

There are different greenhouse gases. The most common and widely spread gas from human activities is carbon dioxide (CO₂). Other common greenhouse gases are methane (CH₄) and nitrous oxide (N₂O). Less common greenhouse gases are various forms of freons (CFC) and sulphur hexafluoride (SF₆).

The greenhouse gases differ in how effective they are to absorb heat radiation from the Earth. A calculation of the total climate impact of a product, is based on the effectiveness of carbon dioxide to absorb heat radiation and the effectiveness of all other greenhouse gases are compared to this unit measure referred to as carbon dioxide equivalents and expressed as the product's global warming potential (GWP). As is clear from Table 1, the greenhouse potential differs greatly between various greenhouse gases, and for example methane is 25 times as efficient in absorbing heat radiation compared to carbon dioxide and nitrous oxide almost 300 times as efficient. Whereas emissions of carbon dioxide often relate to energy production and the burning of

GREENHOUSE GAS	GLOBAL WARMING POTENTIAL (GWP)
Carbon dioxide	1
Methane	25
Nitrous oxide	298
Freons	124 – 14 800
Sulphur hexafluoride	22 800

*Table 1. Greenhouse potential for frequently occurring greenhouse gasses
(source: IPCC, 2007)*



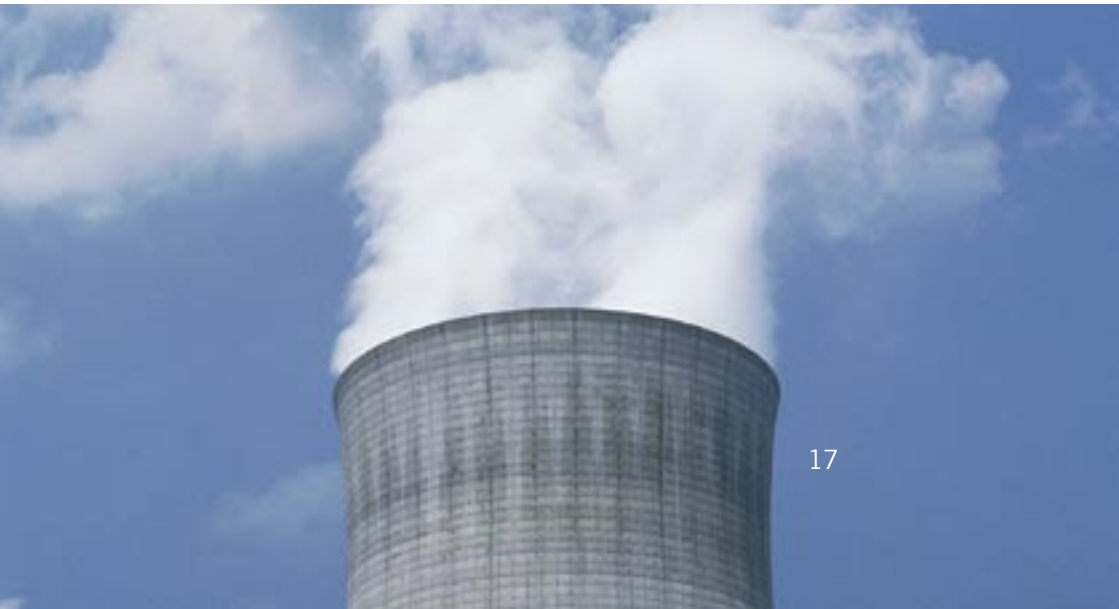
fossil gas, oil and coal, methane and nitrous oxide emissions normally originate from land use and food production.

Making use of the principles of LCA enables comparisons to be made between the climate impact of different products expressed in the overall global warming potential (GWP) provided that they belong to the same product category. It is important to keep in mind that there exist uncertainties inherent in all LCA calculations due to for example system boundary settings, cut-off criteria or uncertainties in collected data and data-bases etc. Variations may be in the order of $\pm 10\text{--}15\%$. It is therefore important that procurers do not overvalue differences in climate impact between products in case of small differences in GWP-values. Comparisons should be avoided completely if the information comes from different environmental information systems, such as different systems for environmental declarations. It is only possible to make comparisons if the data originates from the same type of system.

In many cases, separate data on the climate impact of a product expressed in GWP-values is difficult to interpret and to put into its true context. As already mentioned comparisons between different product's climate impact can only be made if they belong to the same product category. To facilitate interpretations of data on climate impact comparisons can be made between GWP-values in relation to average values for the product category. Another way is to normalise the information on GWP per capita for a region or a country.

WHAT IS NECESSARY FOR RELIABLE CLIMATE INFORMATION?

Considering the increasing focus on the climate issue, consumers of different kinds have begun to ask for climate information to a greater extent, for example in relation to buying goods and services. As a result of this many suppliers and producers have started to consider the possibility in a positive manner to sharpen its competitive edge in responding to this information need. Information systems that are currently available on the market are referred to as climate labelling, climate neutral products, carbon offsetting, climate declarations, carbon footprint etc. A number of different models to meet the increased information needs have been launched lately by which various types of descriptions of the climate impact can be made. However, these models usually produce very different results even despite calculations are made using the same original background data. It is therefore problematic for a procurer to manage a proper assessment of its reliability, what the information actually means and what it could be used for.





With regard to any information on the climate change of products it is a clear advantage if the LCA study is based on scientific valid methods and international standards. There exist a specific international standard with the objective of assisting procurers and users in making informed choices when comparing the environmental impact of products. It is referred to as ISO 14025 on environmental product declarations, EPD, and is described briefly below for the international EPD® system in how to make practical use of the standard specifically for climate information in the form of climate declarations. The International Organization for Standardization, ISO, has recently started very important work on the development of a standard for climate calculation and climate labelling of products – ISO 14067, Carbon Footprint of Products – Quantification/ Communication. The part dealing with climate communication will to a large extent be based on the ISO 14025 standard on environmental product declarations.

THE INTERNATIONAL EPD®SYSTEM AND CLIMATE DECLARATIONS

The international EPD®system is a programme that offers companies and organisations around the world a tool to develop environmental declarations in accordance with ISO 14025 for their products and services. For many of these users the advantage of an EPD is that the data originates from LCA-based calculations and reported in a uniform manner. In order for EPD's to be comparable, so-called Product Category Rules (PCR) are developed in an open and transparent participatory manner. The PCR contains specific rules on how to collect information and create EPD's. The international



EPD[®] system also enables organisations to provide credible information as all information in an EPD is externally verified by competent and independent verifiers and may therefore suit well in the procurement process. Eventually, EPD's may also be a useful tool for private consumers.

The international EPD[®] system also offers an opportunity to separately report on a selected environmental impact. An example of this is so-called climate declarations that contain a digest from



an EPD focusing entirely on issues related greenhouse gases and climate change. Climate declarations are based on the concept of EPD, therefore all information is considered relevant, factual-based and trustworthy. As climate impact usually is not the only environmental impact of a product to consider to make well-balanced decisions about environmental protection measures, the international EPD®system requires that the information about all other environmental impact should be easily available through the official registration and publication on the Internet.

What does a climate declaration contain?

A climate declaration provides information about how much greenhouse gases are generated by a product during its life cycle. The emissions of greenhouse gases are declared as CO₂-equivalents for a specific reference unit of the product, the so-called functional unit, for example 1 kg or 1 litre of the product. Climate declarations also provide brief information about the product and the manufacturing company and where to find further information about other environmental impacts related to the product through the EPD or other documentation.

EPD®
CLIMATE DECLARATION
FOR MILK
Functional unit: 1 litre of milk

Product

Company

Climate declaration

Other environmental info.

Contact



Climate communication on the product

In order to communicate the climate impact of the product, it is possible to compile the information on greenhouse emissions in a more simple way that it may be displayed on the product, on the packaging or in other contexts where it is not possible to display the entire climate declaration. In such case there must be a reference to where the climate declaration or EPD is available.

The use of climate declarations in the procurement process

Some key prerequisites must prevail for making use of different types of use of climate declarations in the procurement process.





One important condition is that sufficient numbers of suppliers on the market have climate declarations available for their products.

Examples of areas of use

Pilot study and market analysis

- Climate declarations may give information on the climate impact of a specific good or service in the different life cycle stages and provide input for judging whether such requirements can be made in the procurement process.



Procurement

- Climate declarations show which life cycle stage of the goods or service that is important related to the climate aspect. In that way a procurer is helped to focus the procurement criteria on the correct stage, for example, in case the use stage a product is the most important one in the product's life cycle a possible requirements could be formulated in such a way that the climate impact during the use of the product is reduced, e.g. by requirements on its energy consumption.
- Climate declarations may be used as a basis for the evaluation of the climate impact if multiple declarations are available on the market.
- Climate declarations can be used as a verification confirming that the product or service fulfils the procurement requirements linked to the climate impact.

Follow-up

- Climate declarations may form the basis for showing that the product or service has fulfilled the requirements in the tender document/contract.
- Climate declarations may be used as the basis for the procedure of following-up the climate impact of a service during the period of the contract.



CHECKLIST FOR THE ASSESSMENT OF THE CLIMATE IMPACT OF PRODUCTS

It is important for a procurer to pay special attention to the information on the climate impact of goods and services and on the reliability and usability of such data in order to ensure that the information may form the basis for different phases in the procurement process. The checklist below may hopefully provide some assistance in this context.

Checklist for the assessment of the climate impact of products for the process of green procurement

- Ensure that international standards, widely recognised and tested calculation methods are used
- Ensure that the data covers all stages in the product's life cycle (if not this must be justified)
- Information on common calculation unit must be available on which the data is based (i.e. the functional unit)
- Clear information must be given regarding the relevant product for which the product belong to so that comparisons may be made with other products in the same product category
- The time period for which the calculation data is valid must be stated
- Check that a quality-assurance of the data has been carried out by an independent and competent verifier

CONTACT INFORMATION AND LINKS

The Environmental Management Council welcomes any questions on how to make use of EPD's and climate declarations in the procurement process and will make our best to answer them. Visit the Environmental Management Council's website at **www.msr.se/en** or contact our Helpdesk: +46 8 50 10 55 50.

For more information about environmental product declarations, **EPD**, visit **www.environdec.com**

For more information about climate declarations, visit **www.climatedec.com**



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