GPP 2020 | procurement for a low-carbon economy

Low Carbon Service Contracts

How to address energy efficiency and CO_2 reduction in Service Contracts

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Content

Introduction

About GPP 2020

GPP 2020 aims to mainstream low-carbon procurement across Europe in support of the EU's goals to achieve a 20% reduction in greenhouse gas emissions, a 20% increase in the share of renewable energy and a 20% increase in energy efficiency by 2020. To this end, GPP 2020 implements more than 100 low-carbon tenders, which directly result in substantial CO_2 savings. Moreover, GPP 2020 is running a capacity building programme that includes trainings and exchange.

GPP 2020 webinar series

Within the capacity building programme of GPP 2020 a webinar series on how to best do low carbon procurement is offered, acting as one of the entry points for European exchange in order to contribute to the aim of GPP 2020 to support mainstreaming of GPP across Europe. The webinar series addressed different topics, from low carbon tenders to use of functional criteria or how to develop circular procurement strategies.

CO_2 reduction in services procurement

CO_2 reduction in services procurement has received significantly less attention than that in the procurement of goods and works. However, with the increasing trend to contracting out services to private companies, this procurement sector is becoming ever more significant.

This brochure on how to promote CO_2 reduction in service procurement collects ideas emerged during the project and the results of the project webinars on services and shows some of the good practice examples and new ideas from across Europe (e.g. incentivisation, energy performance contracting, setting minimum standards, monitoring performance, etc.).

Service contracts

What are "Service Contracts"?

According to Directive 2014/24/EC on Public Procurement **public service contracts** are defined as public contracts having as their object the provision of services other than 'public works contracts' (Article 2).

Where do emissions occur ?

Some service contracts focus more on the supply of products – e.g. the renting of vehicles –, and include maintenance or other service tasks.

This type of contracts is gaining more and more importance, as the shift from selling products to the provision of services that fulfill costumers' needs increases, and a new business model, called **Product-Service-Systems**, appears.

In classical service contracts there are 3 main areas where CO_2 emissions can be produced besides the ones of the products themselves: 1) in the buildings and facilities of the public administration; 2) in transportation activities; and 3) in the service provider's facilities.

Services contracts related to **public buildings** might include maintenance and management services, energy efficiency and supply services.

Services that produce **transport emissions** are not only postal services or messenger services, but also other services that include regular transport of goods, like for example catering services. Not included here in his brochure is the design or provision of public transport systems and services.

Some service contracts require the establishment of specific facilities or work centers used exclusively or partially for a specific contract, as for example in the case of data centers. Other services are executed in **service providers' facilities**, as for example printing services.

Although the definition of service contracts excludes work contracts, the elaboration of **design, architectural and engineering projects** prior to the execution of works, is also a very important group of service contracts to consider, as the future emissions during construction and use phase are predefined in this phase.

Product-centred services	Energy Services related to public buildings	Services generating transport emissions	Services generating emissions in the service provider's facilities	Design, architectural and engineering services
EXAMPLES				
Renting of vehicles Leasing of printing devices	Maintenance Services Energy Service Contracts	Postal and Messenger Services Goods Distribution Services	Datacenter Services Printing Services	Consultancy services prior to public works contracts

Types of service contracts considered

Product-centered services

Image: Tomloel, Dreamstime

Product-centered service contracts are those contracts where the main aspect of the contract is the provision of products, combined with service elements like financial services (leasing, renting), maintenance services for the products or consultancy services for the optimisation of the use or the substitution of existing products.

There are various reasons to change from supply to service contracts. However, low carbon aspects should be introduced in all cases:

Finance of more Efficient Energy Using Products

The most common financial services for energy using products are renting and leasing contracts for vehicles and IT equipment. Both are commonly used by public authorities all over Europe in substitution of the purchase of products. Renting and leasing contracts are used traditionally to finance investments and pay leases. The strategy here is to:

- **Set up energy efficiency standards for the products to be provided**

For the **Renting of energy efficient imaging equipment, Oeste CIM (Portugal)**, environmental criteria based on the EU GPP criteria of imaging equipment were developed, including maximum power consumption in run mode, standby and sleep, doble-side printing and Energy Star certification, achieving a 40% reduction of energy consumption and associated emissions.

The **Municipality of Ptuj, Slovenia**, was in 2013 declared the most energy efficient municipality in Slovenia. Through an **Energy Service Contract for public lighing,** 3142 lamps from 3500 were replaced with LED lamps, which has enabled 63 % reduction in the consumption of electricity and 1300 megawatt-hours per year. CO_2 savings due to energy renovation is 662 t CO_2 / year.

For the **Leasing of the fleet** of HEP ltd. (**Croatian Energy Company**), environmental and energy efficiency criteria for 589 vehicles have been included in the tender, like for example the Euro V standard. Energy savings of more than 580 TOE and more than 1800 t CO_2 emissions savings have been calculated for the 5 year duration of the service contract.

Innovation and Fast Tecnology Development

Financial service contracts such as renting or leasing might also be used in those areas where a fast tecnology development is expected, like in the case of electric vehicles, where the service contract offers the opportunity to substitute products after a relatively short period of time for better performing products or parts of products like batteries for electric vehicles.

- **Use financial service contracts for the uptake of fast-evolving energy-using technologies**

The **Renting of electric scooters for Barcelona City Police (Spain)** includes the supply of 30 electric motor scooters, equipped and adapted for the police, maintenance and repair, inspections, replacements and insurance. Before carrying out the service contract, different pilot tests performing the police force's regular tasks have been conducted. The gradual substitution of all scooters is foreseen for the future. Benefits obtained are a 87% reduction in total CO_2 emissions, 100% reducion in direct emissions from fuel combustion and 85% of energy savings.

Redesign of Existing Approaches and Development of New Service Models

The redesign of the actual use of products and the development of new approaches go one step further and promote the introduction of new products, for example when we contract the redefinition of the workplace (which might include new solutions such as cloud computing, shared workspaces or similar innovative aspects).

- **Use functional criteria**

The **Framework agreement for resource-efficient print and copy management service, Consip (Italy)**, includes the „Click & Save" service plus an optional service called „Office Fleet Management", is based on centralised management and renewal of the office equipment, introducing time new organisational aspects like support and maintenance, supply of consumption materials, monitoring and optimisation of the service and rationalisation of costs; including at the same time environmental criteria like reduced energy consumption, implementation of „Green Prining Policies" and other aspects related also to emissions in the printing phase.

- **Redefine functions to achieve resource efficiency**

Paperless invoice service, Oeste CIM (Portugal), is an example of dematerialisation: through the redefinition of the function - invoicing - an electronic invoice solution was acquired leading to substantial savings in paper and in time linked to the processing of invoices.

2,9 t CO_2e saving per year, comparing production of paper, printing and transport with the low carbon solution based on operation of servers and desktop PCs where invoices are processed.

Product Service Systems

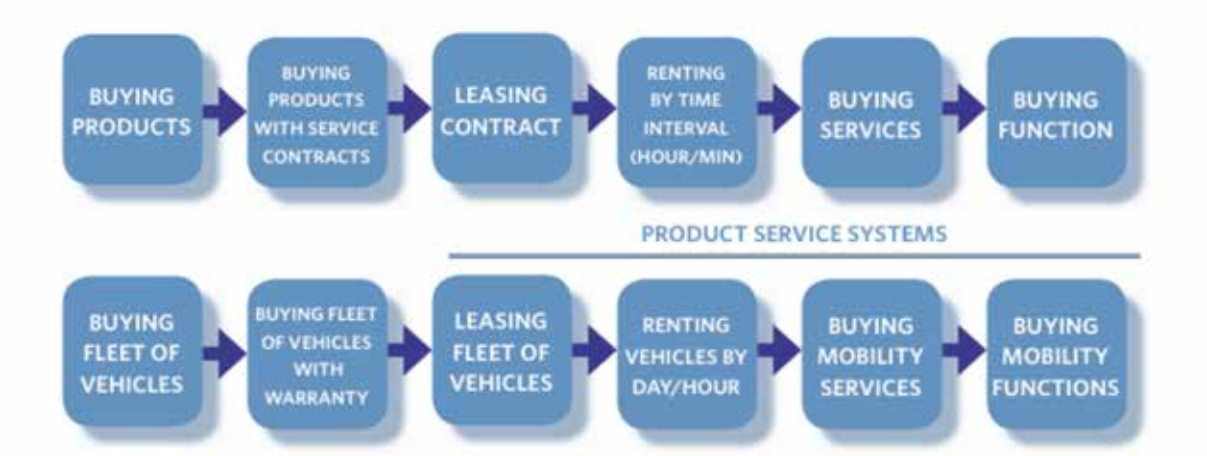
During the last years the concept "Product Service System" has gained prominence as an innovative business model, shifting from selling products to the provision of services that fulfill costumers needs.

> ***Product-service systems*** *(PSS) are service-oriented business models that replace selling products with selling services – or with selling a mix of products and services. These systems focus on fulfilling customers' needs (e.g. 'I need a clean home') rather than on product purchases (e.g. 'I need cleaning products to clean my home'). They essentially shift the perspective from product ownership towards product utility and, consequently, towards a product's impacts throughout its life-cycle. This shift enables cost reductions and efficiency gains, and can be used to further environmental objectives (e.g. energy and resource efficiency).*

Source: UNEP 2015

All above mentioned examples and aspects are different forms of Product Service Systems, that can be more product oriented, use oriented or result oriented services (see UNEP 2015).

The shift to Product Service Systems or servitising trend has a good potential to provider products with less environmental impact, but PSS are not inherently more sustainable or more energy efficient.



Range of possible product-service mixes. Source IISD 2013.

Energy Services related to public buildings

Image courtesy of Departament d'Ensenyament Catalunya

Energy Service contracts for public buildings focuse on optimizing its energy use and their management. It normally include preventive maintenance services, but also specific energy management services for buildings without or with investments in order to renovate facilities through retrofiting and refurbishment of energy systems of the building and its facilities. All these energy service contracts offer opportunities to include criteria that allow more energy efficiency which is resulting in CO_2 reduction.

Energy performance contracting or integrated energy services

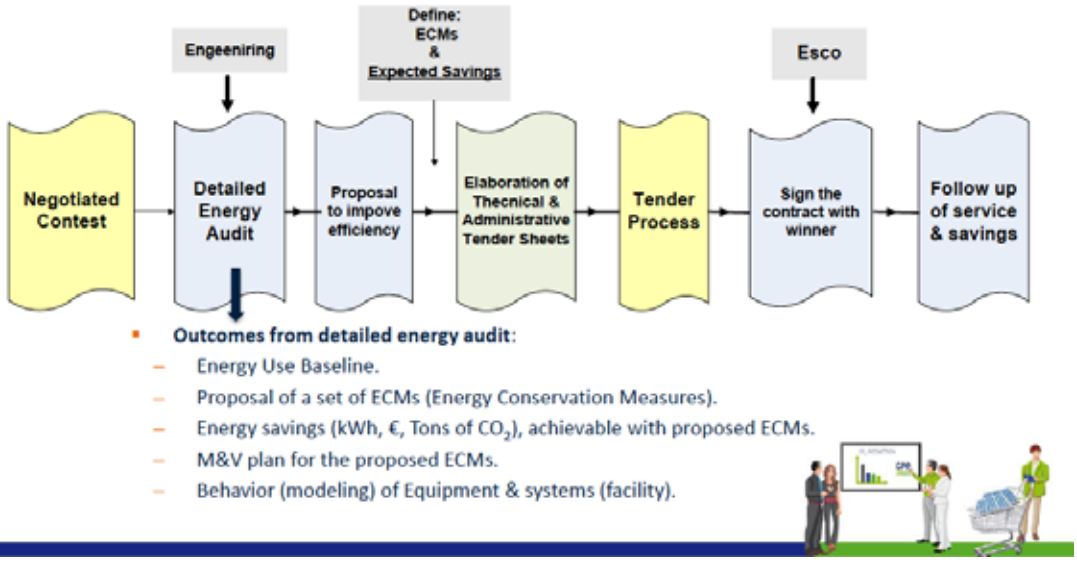
For those public buildings with high energy use and potential savings, the ESCO model based on Energy Performance Contracting (EPC) can be applied. EPC includes an energy analysis (audit) of the existing building, upgrade the energy systems, financing of requiered investments, implementation of measures and operation of the building. What basically characterizes the EPC is that the ESCo revenues are related to its fulfillment of energy savings. That's why this is considered as the best tool to achieve energy savings and so reduce.

Some common criteria for EPC to be considered are:

- **Define technical and administrative tender specifications based on the preliminary evaluation (audit) of the building and its installations**
- **Ask bidders to propose energy conservation measures and a a measurement and verification plan as part of their technical offer**
- **Include penalties for lower savings than guarateed savings offered by bidder**
- **Use international established standards for measurement and verification**

The framework contract on **Integrated Energy Management Services, Consip (Italy)**, is a performance-based contract for the management of heating, cooling and electrical systems through which the supplier has to guarantee the following: a pre-determined "comfort situation"; energy savings and carbon dioxide reduction. Specifications inlcude a settled temperature to be preserved inside the buildings, installation of electronic meters and constant monitoring of the indoor temperature, an assessment of the optimal consumption level for heating and energy services and energy audits for every building. Suppliers were required to ensure a minimum level of reduction for primary energy consumption of the whole building/heating plant system, and to provide evidence of the results by a certificate by the Italian Regulatory Authority for Electricity and Gas. The contract includes a performance clause requiring a minimum amount of energy saved (375 TOE). Actual energy saved under the framework (6,000 TOE) is higher than the minimum required.

EPC approach. Process used by ICAEN:



Energy efficiency services: monitoring and managing energy

Energy efficiency services are those services performed under a guaranteed energy results by an ESCo company. It is applied in buildings from medium level of energy use and medium potential of energy savings. Energy management services included in this type of contracts can consist of: diagnosis and recommendations for establishing optimum operating parameters in facilities, optimisation of energy supplies, energy monitoring, training and awareness-raising for users and building managers, implementation, supervision and monitoring of saving measures, and verification of the savings achieved.

The **Energy efficiency services for school buildings, Ministry of Education and ICAEN, Catalan Government (Spain)**, runs under an ESCO scheme on the EPC model, where the awarded company is responsible for the energy management of 12 secondary schools in the Province of Barcelona during 4 years. The service includes diagnosis and technical advice, energy savings measurement and verification, implementation and monitoring of saving measures and training and awareness. The estimated reduced annual energy consumption achieved is between 13 and 18%.

The **Framework agreement on energy audit** implemented by the **Austrian Federal Procurement Agency** is a service agreement. As the ESCO model indicates, the implementation of an energy audit constitutes the basis for the planning and implementation of measures which lead to the reduction of energy consumption (electricity and heating). The estimated reduced annual energy consumption amounts to 8,8 toe/year, whereas the estimated reduction in CO_2e emissions will amount to 23,0 t CO2e/year.

Maintenance services

Preventive maintenance services include the substitution of small building elements in repair processes. For those buildings with low energy use and low potential for depreciation of investments, maintenance services should be focusing on achieving better environmental standards based on the inclusion of elements with higher environmental performance, like light bulbs, water taps, radiators and others, making them more energy efficient with a low cost that can be included in standard maintenance procedures and contracts.

- **Include EU GPP or Ecolabel criteria for substitution of products in maintenance operations of buildings**

The service contract for **Maintenance of buildings incorporating good environmental practices of the Gipuzkoa Provincial Council (Spain)**, includes preventive, regulatory and corrective maintenance of the building structures and installations, including also furniture, equipments and other assets. The contract includes the elaboration of a preventive maintenance plan and a status report on the buildings and facilities, incorporating its improvement proposals. The report must indicate the environmental standard of the facilities (e.g, plumbing, water flow from taps, heating and air conditioning, performance of boilers, hours of operation, energy consumptio, regulation and control systems, lighting levels and uniformity). On an annual basis and based on the initial report, the contractor has to present a statement of environmental improvement and the condition of facilities reached.

Services generating transport emissions

Image: Bettina Schaefer

Transport services and services generating transport emissions include different types of delivery services, like parcel, postal, courrier or goods distribution services, but also business travel services or other services including the regular use of vehicles, like catering or waste collection services.

Approaches to low-carbon procurement of "transport" services can cover a broad variety of aspects:

Parcel, postal and courrrier services

- **Calculate and compensate CO2 emissions**

The Framework agreement for low carbon parcel services, German government, is based on CO_2 neutral parcel delivery for approximately 750 federal agencies and institutions.

CO_2 neutral shiping is a mandatory requirement, fulfilled through compensation of CO2 emissions by the contractor by purchasing CO2 allowances and providing respective CO_2 certifications of climate protection projects.

The result is 0 savings in energy consuption and 550 t CO2e savings per year.

- **Establish minimum emissions standards and higher performance as award criteria**
- **Reduce travel distances for service users**
- **Include alternative means of transport (e.g. by bike) for some deliveries**

In the **Postal Services Contract, Catalan Government (Spain)**, 15% of the award criteria are for the office network of the service provider (distance to service points): citizens will have to cover less distance when they have to visit a postal office to pick up certain letters and parcels.

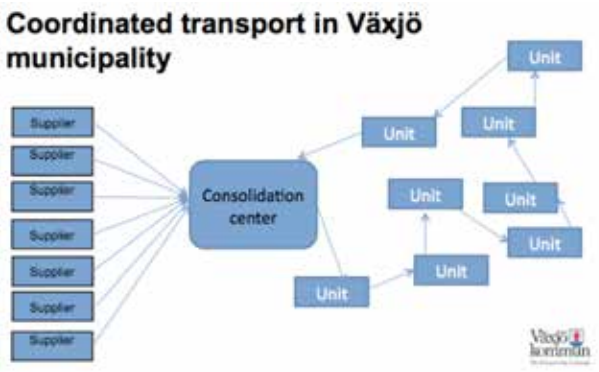
Additional 6% is for the CO2 emissions of the fleet and the Euro standard (4 to 6) assigned to the contract, and 2% for electric, hybrid and gas powered vehicles of the fleet.

For some deliveries in urban areas additional points are given for services by bike.

Goods distribution services

- **Rethink the goods distribution system and optimise routes**

The **Centralised good distribution system in Växjö (Sweden)**, investigated the possibility of combining different routes or deliveries. Based on a survey on goods transport for all units of the City of Växjö, a centralised goods distribution depot was created. Deliveries were optimised by setting up fixed routes and dates. A web-based ordering systems helps to reduce traffic and emissions to less than 4 kg CO_2 per delivered ton (before coordinated distribution, 61 kg CO_2 per delivered ton) which means a cut of local transport emissions by 95%.



Business travel services

- **Offer user-oriented mobility services**
- **Promote sustainable mobility and modal integration**
- **Offer videoconferencing instead of physical meetings**

The **Framework Agreement on Low carbon business travel services, Consip (Italy)**, includes the establishment of a Green Business Travel Policy, and introduces Mobility Service (savings of CO_2, costs and travel downtimes), incl. CO_2 reporting, environmentally friendly hotel solutions and video conference services.

It is estimated that with these measures 20% of travelers will switch form car and airplane to train.

4809 t CO_2 savings per year are estimated.

Other service contracts including vehicles or transport

- **Set up minimum requirements for the vehicles used**
- **Reserve the right to carry out inspections on vehicles used to execute delivery**

The **Catering service contract of the City of Copenhaguen (Denmark)**, establishes that all vehicles used for food distribution must be Euro norm 6 or higher and demonstrate the vehicles have the low-emission-zone label in Danish low emission zones. The Municipality reserves the right to carry out inspections on the vehicles used.

- **Set up CO_2 reduction targets as functional requirements**

The Competitive Dialogue for **low carbon waste collection services in Bristol (UK)**, is based on a CO_2e reduction target of 25% set up by the City Council. For the reduction requirements monitoring data were needed.

The winning bidder offered a 32% reduction which was achieved through a carbon management plan including reduction of number of journeys through optimised vehicles, telematic equipment for monitoring, driver behaviour, and others.

Services generating emissions in the service provider's facilities

Image copyright: Circuit Disk (photo on Flickr) by „nghiem vo", licensed under CC BY 2.0

The evaluation of the CO_2 emissions in service provider's facilities can be included in service contracts under certain circumstances: this is the case when a service contract requires specific facilities for the execution of the contract, or when the service provider purchases new equipment or energy using products for the service in question.

Equipment and products used for the service contract

A service provider might purchase new energy using equipments and products for the purpose of providing the service and use it exclusively for the service, as for expample IT equipment, vehicles, or more specific products, like in the health sector.

- **Energy efficiency requirements for products**

*As stated in the **Energy Efficiency Directive (2012/27)**, Central governments shall require in their tenders for service contracts that service providers use, for the purposes of providing the services in question, only products that comply with high energy efficiency requirements as defined for example in the Energy Labelling or the Energy Star, insofar as this is consistent with cost-effectiveness, economical feasibility, wider sustainability, technical suitability, as well as sufficient competition.*

Facilities and installations used for the contract

Some service contracts include specific facilities or installations which are used exclusively for the contract. Most examples are related to service contracts carried out in the urban space at local level, like public lighting services, street cleaning or waste collection services. These facilities are prepared for the execution of the contract, and specific energy efficiency or low carbon requirements might be included in the contract clauses.

Service contracts for managing data in external datacenter infrastructures, including design, operation and hosting of data services in IT service providers facilities, start becoming more and more relevant for public authorities,

- **Reserve the right to carry out inspections on vehicles used to execute delivery**

PrimeEnergyIT

The most important impact of data centers is energy consumption, related to IT equipment, cooling requirements and other energy consuming elements. The PrimeEnergyIT project developed **guidance for the procurement of data centre** equipment, including servers, storage devices, network equipment, cooling and monitoring equipment. The guidance document can be very useful for defining criteria for low carbon IT service contracts hosted in private data centers.

Design, architectural and engineering services

Image cpoyright: Juststone JKaminska, Fotolia.com

Architectural and engineering services for the design of new public buildings and infrastructures have a high relevance regarding CO_2 emissions both during the construction and during the use phase of such buildings, infrastructures or other design elements.

Here are presented some basic approaches to integrate CO_2 related aspects in the design phase carried out through architectural and engineering service contracts.

Energy performance of buildings, installations and public furniture

The Energy Performance of Buildings Directive (2010) requires that all new public buildings must be nearly zero energy buildings by 31 December 2018. Minimum energy performance requirements for new buildings and mayor renovations of buildings must be set up by Member States. Independent from national building legislation, contracting authorities can set up their own more restrictive energy standards for buildings, as minimum requirements to be included in the design phase of buildings.

- **Set up energy standards for the design phase of buildings, installations or urban furniture**

The policy vision of the **municipality of Sentrupert, Slovenia**, implemented in 2010 aims to ensure the municipal energy self-sufficiency by using local sources, andachieve a larger purchasing power, investment and new workplaces essentially focused on the maintenance of a vital local resource – wood. Policy's requirement for the building sector include energy-efficient building renovations and energy monitoring in municipal buildings and a set of municipal pilot projects that intends to demonstrate the biomass potential in terms of energy use and the wood material in terms of constructive features in contemporary and vernacular revival architecture. **The architectural services for the design of a new kindergarden** let to the first energy efficient wooden building in Slovenia in 2010, based on low energy standards (30 kW/m2).

A similar approach can also be applied to other urban elements not included in the Directive.

In the design phase of the **Innovative and green bus shelters, Cornwall (United Kingdom)**, one of the technical specifications was hat shelters should seek to be zero carbon in sourcing, manufacture and operation. The successful bidder offered wooden shelters with a very low carbon footprint compared to conventional metal shelters.One of the lessons learnt is the complexity of verification of "low carbon" or "zero carbon" requirements in the tendering process.

CO_2 emissions of construction materials and energy use

Calculation tools are used to evaluate the energy use of construction materials and energy consumption from a life cycle perspective, and can be included in service contracts for the design of buildings or infrastructures.

- **Evaluate the CO_2 impacts of construction materials in the design phase**

DuboCalc, Dutch Government

DuboCalc is used to calculate the environmental impact of the materials and energy use in a infrastructure design. DuboCalc is a software tool, based on the life cycle analysis (LCA) of all the materials and energy used over the entire lifetime of the work, from the sourcing of raw materials to demolition. DuboCalc calculates nine environmental impacts (including CO_2 emissions) and translates this into one number: the Environmental Cost Indicator Value (ECI Value). The lower this ECI Value, the better the environmental quality and the higher the hypothetical discount to the bidding price.

CO_2 performance of the bidder

Additionally the CO_2 performance of the bidder might be used in certain cases to evaluate bidder's commitments and capacity to reduce carbon emissions within specific projects.

CO_2 Performanceladder, Dutch Government

The CO_2 Performanceladder is a procurement tool to encourage companies to be aware of (management of) their CO_2 emissions (and those of their suppliers), and to be permanently on the lookout for new ways to save energy, use materials efficiently, and to use renewable energy. The CO_2 Performanceladder is a self-certification system that allows bidders to present the efforts they will make to reduce CO_2 emissions resulting from work undertaken efforts as part of the contracted projects. The ladder has five levels. The more effort the bidder puts into the reduction of CO_2 emissions, the higher up the ladder they are positioned. This is secured in a CO_2 -Performanceladder certificate. Once on the ladder, the bidder's offer is given a hypothetical discount, which has the effect of making the price more competitive. The higher up the ladder, the larger the hypothetical discount and, therefore, the greater the chance of winning the tender.

Summary of findings

For **product-centered contracts** clear product-related criteria for low-carbon purchasing can be introduced alongside additional functional criteria. The main aspects to be considered for low carbon Product Service Systems are:

- the use of high energy efficiency standards for products,
- the consideration of life-cycle aspects
- the use of functional criteria leading to less use of resources
- the redefinition of needs

For **services contracts related to public buildings** one of the most successful examples is the Energy Service Contract model, focusing on setting both minimum standards and incentives for CO_2 reduction during the service provision. The main aspects to consider are:

- the use of a detailed energy audit as baseline
- the definition of technical and administrative tender specifications based on the preliminary evaluation of the building and installations
- the implementation of energy conservation measures
- the establishment of penalties for lower savings than guarateed savings offered by bidder
- the definition of a measurement and verification plan, according to international established standards

For **services that produce transport emissions** the reorganisation of goods distribution is the most comprehensive approach focusing on the provision of the service in an energy and resource efficient manner. The most important aspects that can be applied to similar low carbon transport service contracts are:

- the use of common minimum criteria for vehicles
- the use of international standards for calculating and reporting emissions
- the optimisation of routes and redesign of existing service conditions
- the definition of regular monitoring requirements for service providers
- the promotion of less polluting means of transport (like public transport, bycicle, etc.).

For **services that produce emissions on the service providers facilities** the following aspects can be considered:

- set up energy efficiency requirements for products
- set up CO_2 emission requirements for service provider's facilities

Design, architectural and engineering services for the design of new public buildings and infrastructures have a high relevance regarding CO_2 emissions both during the construction and the use phase. Basic approaches to integrate CO_2 related aspects in the design phase carried out through architectural and engineering service contracts include:

- the definition of energy standards for the design phase of buildings, installations or urban furniture
- the evaluation of the CO_2 impacts of construction materials in the design phase
- the evaluation of the CO_2 performance of bidders

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Case studies

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