BMZ Federal Ministry for Economic Cooperation and Development

Future-makers.
Building the future.
Let's join forces.

Toolbox Sustainable Procurement

A guide on how to include aspects of sustainability in public procurement procedures for Financial Cooperation projects

Published by: KFW

Toolbox Sustainable Procurement

A guide on how to include aspects of sustainability in public procurement procedures for Financial Cooperation projects

Table of contents

Table of figures

List of tables

1. Summary

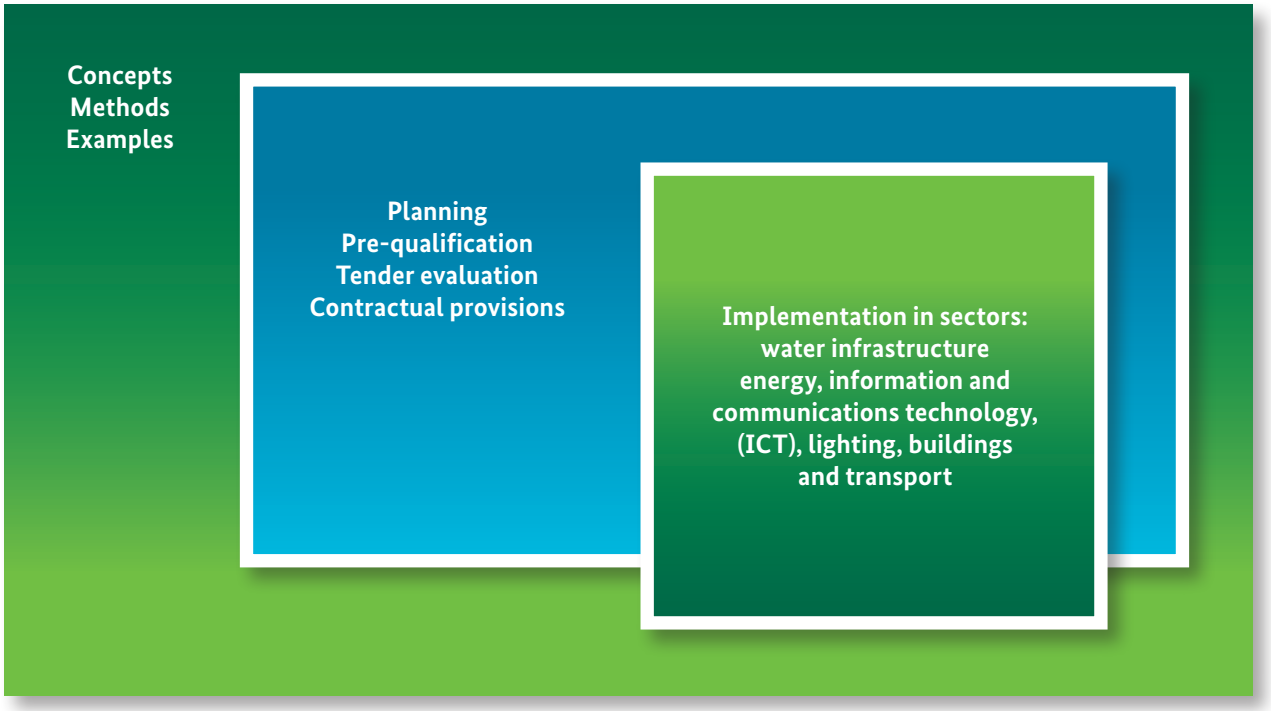
On behalf of the German Federal Government KfW Development Bank provides funds from the German Financial Cooperation (FC) to its partner countries. The overriding objective of Financial Cooperation is to promote sustainable development in partner countries. Placing a greater focus on sustainability criteria when tendering for subsidised projects, further contributes to this objective.

Sustainable procurement links ecological, economic and social aspects in the criteria, according to which public contracts are awarded. Particular consideration is given to the economic aspect when awarding contracts. The application of sustainable procurement methods means that other aspects are promoted at different levels:

- Contribution to global sustainability
- Environmental protection, health and safety at work
- Long-term financial savings with regard to the whole life cycle
- Social aims in the local environment
- Increase in local innovation

The Toolbox gives a comprehensive overview of the methods, instruments and aids which can be used to include sustainability criteria when placing orders, as well as strategies for their implementation. Due to the large number of partner countries, sectors and types of projects involved in FC, the concepts and methods presented should be viewed as a list of possibilities that need to be further refined and adapted to the relevant sector and country.
The concepts and methods for the implementation of

Fig. 1: Toolbox content



sustainable procurement contained within the Toolbox (see figure 1) are described for the various phases of a tender procedure and are supplemented with practical examples. These phases comprise of the planning phase, the pre-qualification or pre-selection of bidders phase, the evaluation phase and the contractual provisions (incl. contract management) phase. Although the Toolbox focuses on the water, wastewater/waste management, (renewable) energy sectors, as well as transport and communications, the methods and concepts presented can equally be applied to other sectors. The following aspects are dealt with:

Table 1: Aspects of sustainable procurement

Aspect	Description	Example
Definition of the contract for tender (object of the contract)	Planning a procurement procedure begins with a description of the object of the contract. Scope and designation of the contract are defined here. The object of the contract describes the products, services or construction work to be provided, and normally includes a description of the object of procurement. The description should include the requirement for aspects of environmental protection, as well as decent and fair working conditions during the manufacturing of the goods, services or works.	Text for invitation to tender: Supply of energy-efficient computer systems (instead of "supply of computer systems")
Determination of minimum requirements using quality labels, standards, bonus systems and appropriate verification procedures	The core of each sustainable procurement procedure is the application of sustainability criteria in the performance specifications. For this purpose, criteria from quality labels can be used. Procurement procedures can promote particularly sustainable offers through bonus systems, without limiting market availability. The Toolbox describes appropriate verification procedures, which help to ensure that sustainability requirements are reflected in products and services.	Energy consumption must comply with ENERGY STAR criteria. The latest version of the ENERGY STAR criteria for the product category is used as reference (e.g. LED lighting) (available at www.energystar.gov). Verification: All products with the ENERGY STAR label satisfy these requirements. Equivalent verification such as a technical dossier of the manufacturer is also acceptable.

Aspect	Description	Example
Appropriate choice of selection and exclusion criteria	The objective of the pre-qualification of bidders is to identify suitable market actors for a contract. This is generally handled using selection and exclusion criteria to establish the economic and technical suitability of a potential contractor. The assessment of technical and entrepreneurial suitability can be supplemented by aspects of environmental protection and social responsibility in terms of sustainable procurement.	Technical capability of the bidder The bidder must provide verification of sufficient experience in sustainable facility planning. Verification: The bidder must submit a comprehensive dossier illustrating his experience, with traceable references.
Award of the contract according to the most cost-effective offer	During the evaluation of tenders, the quality of offers is examined and comparisons are made before awarding the contract. Within the context of sustainable procurement, environmental and operational aspects can be considered in addition to price when awarding a contract. The Toolbox describes established procedures (most favourable price versus the most cost-effective tender, calculation of life cycle costs, evaluation and weighting, bonus system, etc.).	Bonus for more eco-friendly solutions: For procurement contracts for diesel engines, the emissions are included in the evaluation of the tender, with up to 10% of the total number of points. The system with the lowest emissions is allocated up to 10% of total points, while the others are allocated points proportionally. (Note: this must be communicated in advance.)
Introduction of other approaches, such as the application of contractual provisions to ensure sustainable contracts are implemented	In order to be able to ensure that the successful bidder can meet the environmental and social aspects put forward in their tender, and that these aspects are contractually binding, it is extremely important that these aspects are included in the contractual provisions agreed. Contractual clauses can address specific responsibilities agreed to by the successful tenderer during the procurement process (e.g. enforcement of adherence to environmental performance ratings, transparency in accordance with ILO core labour standards along the supply chain).	Maximum annual operating costs: The maximum operating costs, e.g. for a sewage treatment plan, confirmed by the contractor in his tender are fixed in the contract. If these values are not adhered to, the contract will contain provisions with contractual penalties if the confirmed parameters are not complied with.

Sustainability criteria in the context of this Toolbox are criteria (including the corresponding verification procedures) that can bring about a reduction in a negative environmental impact and/or promote social aspects (e.g. human rights). The criteria of internationally-recognised standards and quality labels are used as a standard aid for those responsible for awarding contracts. Quality labels, also called ecolabels, evaluate products and services. They are awarded to products and services that are more eco-friendly than others with regard to individual characteristics within a product group; however, they normally refer to product groups and not to whole systems.

The concepts of life cycle costing (LCC) and life cycle assessment (LCA) are presented as possibilities for evaluating systems or parts of them. LCC has been used for quite some time in Financial Cooperation: it covers acquisition costs, operating costs, maintenance costs and (to a limited extent) disposal costs for a system.

LCA evaluations assess the inherent ecological impact of products and services, from the extraction of raw materials to manufacture, transport, utilisation and recycling. This method is little used to date.

The Toolbox finishes with an overview of the future development of internationally accepted standards and sources of information. The annex contains a comprehensive list of references, an overview of further resources and guidelines, as well as a glossary on the subject of sustainable procurement.

This Toolbox is intended to support all actors (project sponsors or awarding authorities, planners and consultants, potential contractors and their financiers) with the intended greater focus on sustainability criteria within the context of contract placement in the field of Financial Cooperation.

2. Introduction

Sustainable development means placing ecological aspects on an equal footing with social and economic aspects (Council for Sustainable Development (Rat für nachhaltige Entwicklung - RNE), 2012). Sustainable procurement addresses this by linking ecological, economic and social aspects in the criteria according to which public contracts are awarded. Internationally this is referred to as green public procurement or sustainable public procurement. The former refers only to linking ecology with economy, while the latter is based on the three pillars of ecological, economic and social responsibility.

2.1. Background and objectives of Toolbox

In Financial Cooperation, which is part of the German development cooperation with partner countries, projects are being sponsored which are appropriate from a development policy perspective. KfW provides the financial resources for this purpose on behalf of the Federal German Government. Procurement procedures for consultancy services, for supplies or construction services, are issued by the responsible project sponsors in the relevant countries and are generally subject to their national laws. KfW keeps a close eye on procurement and tendering procedures, and ensures that transparent, fair, non-discriminatory and competitive procedures are complied with. The basis is provided by the Guidelines for the Award of Supply and Service Contracts in Financial Cooperation and/or the Guidelines for the Assignment of Consultants in Financial Cooperation.

The primary aim of Germany's development cooperation is the promotion of sustainable development in partner countries. One building block is the environmental and social responsibility assessment and climate test (USKP) of the project as a whole. This is carried out before actual implementation starts and aims to identify possible negative effects of the project at an early stage and to prevent them - if necessary with additional measures - or to reduce them to an acceptable degree.

The inclusion of sustainability aspects in procurement procedures does not replace the USKP. It is generally carried out during the preparatory phase of a project. The effects of the project as a whole are investigated, the project is classified (A, B or C) and - if necessary - additional measures are defined in order to avoid the undesirable effects of a project on the environment, climate or society. The sustainable procurement procedures described in the Toolbox are scheduled for a later stage and are applied during project implementation when individual contracts

Fig. 2: From project planning to the formulation of sustainable procurement procedures

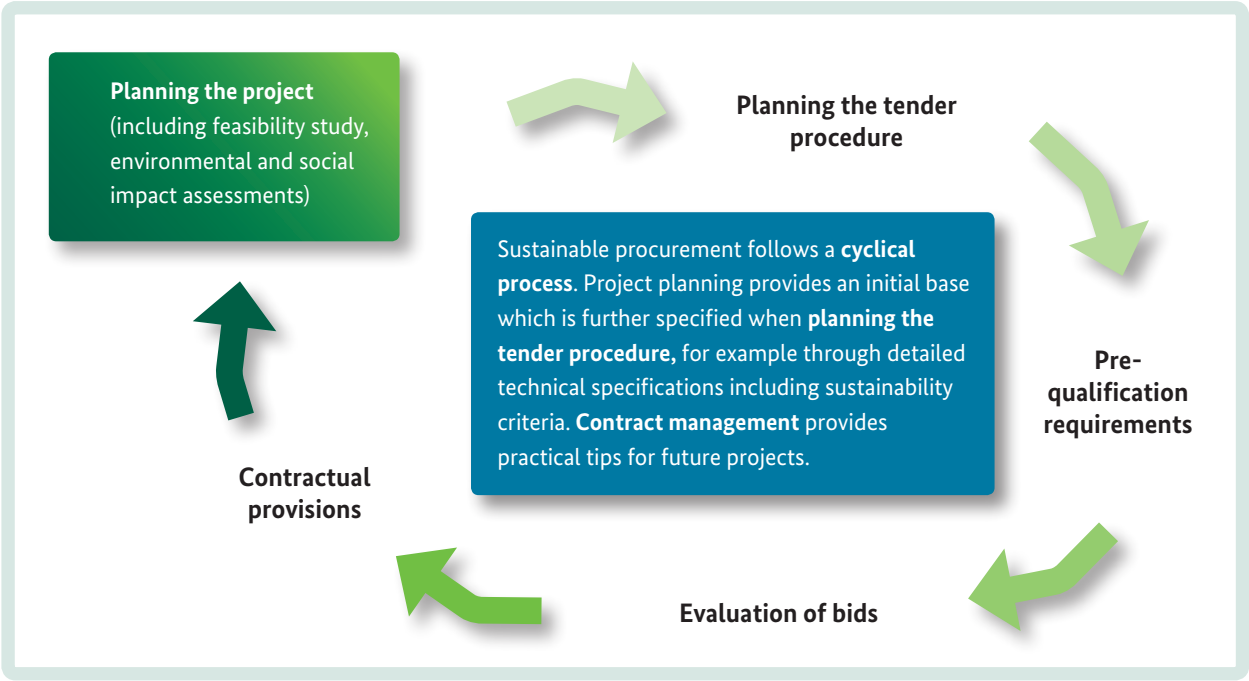
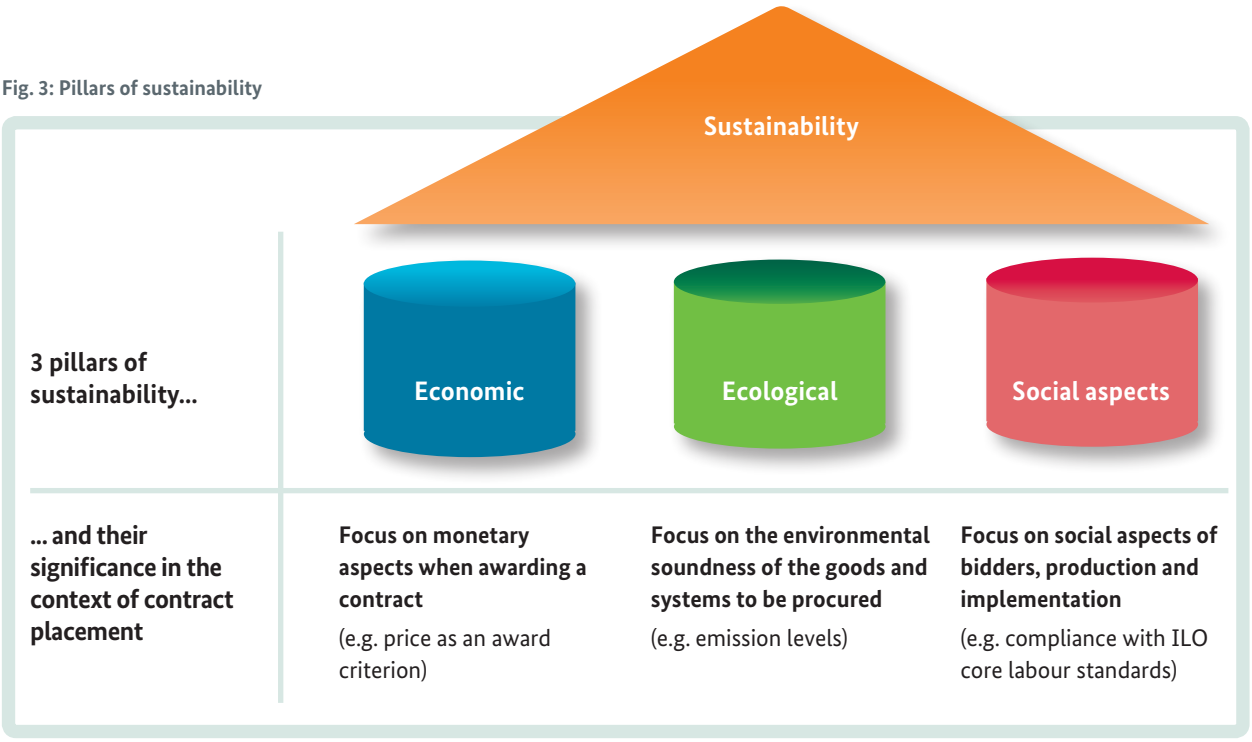


Fig. 3: Pillars of sustainability



are awarded. They can cover all or only some of the measures related to the procurement procedure, including those identified later as part of these measures during the USKP process.

The necessary fundamentals, concepts and procedures are presented and explained in this Toolbox (see Fig. 2). They are intended as an aid to all user groups participating in Financial Cooperation in order to integrate sustainability aspects into procurement and tendering procedures. They are intended to provide project managers and technical experts responsible for monitoring projects at KfW, with a guide of new approaches and, by using, illustrate how procurement procedures within a project can be specifically formulated to include more sustainability aspects.

The Toolbox is intended to provide the partners in charge of project preparation and implementation, and the consultants assisting them, with detailed criteria and approaches to enable them to develop upcoming procurement procedures with regard to their sustainability.

The Toolbox does not claim to be exhaustive; rather it presents options that appear feasible in a Financial Cooperation context. Naturally the specifics of the various partner countries must be given due consideration when applying the methods presented. Both the laws governing contract placement as well as the technical requirements in the partner countries may mean modifications are necessary. The concept of sustainability in public procurement has already taken root in some partner countries of Financial Cooperation. However, in the majority of cases this approach is likely to be largely unknown. Therefore, the Toolbox is intended as an aid to dialogue with Financial Cooperation partners when introducing sustainability aspects in procurement processes.

2.2. Sustainability in the procurement process

Fig. 3 above gives an overview of the three pillars of sustainability (ecological, economic and social aspects) and their significance in sustainable procurement.

Cost-effectiveness is the primary concern in traditional procurement procedures. Essentially the technical quality and price of the goods and systems are considered. The inclusion of ecological and social aspects in the procurement procedures extends to the operational goal of cost-effectiveness to include strategic goals, to achieve a high ecological and social benefit at a local and global level.

Since the long-term and independent operation of facilities in partner countries is the prime objective in all projects subsidised through Financial Cooperation, projects regularly include measures for training and the advanced training of personnel and possibly further services (management contracts, etc.). These are orientated to the requirements of correct operation. The measures to expand capacities of project sponsors can either be

part of the procurement procedures for facilities, or be implemented independently at an appropriate time. They are an integral part of a sustainable project concept.

All products and facilities affect the environment in the course of their whole life cycle - from extraction of raw materials through production to utilisation and disposal. Appropriate contract placement can reduce negative effects significantly, at both local and global level. Today numerous eco-friendly alternatives are available globally at competitive life cycle costs - e.g. energy-efficient buildings, construction materials composed of recycling materials, energy saving equipment for information and communication technologies (ICT) or low emission transport.

Procurement decisions taken in Financial Cooperation projects also have a social impact. Therefore, the procurement procedure can also be used to promote social improvements. This ranges from good working conditions when constructing buildings and infrastructure projects, to the creation of buildings which are accessible for the disabled, to the defence of human rights, to compliance with the core labour standards of the International Labour Organisation of the United Nations (ILO), to ensure minimum wages or support for fair trade and sustainably manufactured products.

The introduction of sustainable public procurement procedures requires strong support at a political level[1]. With this support procurement officers can use the instruments presented here in projects and contribute to sustainable development.

2.3. Relevance of the Toolbox for the various focal points of Financial Cooperation

The Toolbox is not limited to particular sectors of Financial Cooperation. The concepts and methods described can in principle be applied to all focal points of Financial Cooperation. However, in view of the type and volume of supplies and services for tender, some sectors are more suitable, others less so. Large volume procurement procedures tend to be better suited to the application of sustainable procurement concepts than those for small volumes. For example, internationally active bidders can be expected to be able to provide verification of the ecological quality of their product and scope of their offer, and have sufficient capacity to be able to demonstrate their compliance with social, environmental and labour standards during project implementation. Furthermore, they can also show how they can contribute, where necessary, to supporting the project sponsor in establishing and expanding capacities for management, operation and maintenance of facilities and equipment. This may be too much for small or local bidders. In this case the requirements must be adjusted to the market actors so as not to create any inappropriate barriers. Additionally, there are other aspects, e.g. compliance with core labour standards. Adherence to these standards can also be expected from small and medium-sized enterprises (SMEs). Since not all focal points of Financial Cooperation are equally appropriate for the application of sustainability criteria, the individual core areas were reviewed in close collaboration between ICLEI and KfW based on the following criteria:

1 http://nachhaltigkeit.kfw.de/DE_Home/Nachhaltigkeit/Nachhaltigkeitsleitsaetze_final10102012.pdf (30.11.2012)

- Relevance and volume of the sector within Financial Cooperation
- Technological eligibility of the sector for an ecological approach to planning
- Potential of the sector and the immanent product and service categories to lessen the environmental impact
- Potential to anchor a social responsibility approach to procurement for product and service groups with a high potential risk (base for evaluation: compliance with ILO core labour standards[2])

In view of the results and the core areas of Financial Cooperation it became apparent that the energy and transport sector offers the greatest potential out of all sectors of economic infrastructure. The water/wastewater and waste management sectors offer the greatest potential out of all sectors of social infrastructure.

Additionally, there are certain products or project components with cross-sectoral application; these cannot therefore be assigned to a single sector. This applies, for example, to products and systems for information and communication technologies (ICT), such as computers and monitors, which are used in a wide variety of sectors. Similarly, the construction and refurbishment of functional or administrative buildings cannot be assigned to a single sector; rather they are an integral part of projects in various sectors. In this text cross-sectoral components have been assigned to the sectors where they normally occur most frequently (see Chapter 4).

It should be emphasised that both the modalities of procurement procedures (concepts and methods), as well as quality labels and standards, are subject to constant development; consequently the Toolbox reflects the situation today (August 2013). The intention is to review the Toolbox at regular intervals and augment it with newly completed projects of Financial Cooperation.

2.4. Notes on the structure of Toolbox

In the following chapters the Toolbox presents concepts and methods for sustainable procurement procedures.

The methodological basis is illustrated in Chapter 3. Chapter 4 explains the application of sustainability criteria using examples. The examples given are not exhaustive and should be adapted to individual contexts where necessary. The focus is placed on the following sectors of Financial Cooperation:

- Water / wastewater
- Energy including renewable energy
- Transport and communication
- Health[3]

Additional examples and infoboxes illustrate the practical application. Sector-specific subsections evaluate socio-economic, legal and practical requirements. The large majority of examples can be applied to other sectors such as education (school buildings).

Chapter 5 gives an overview of the continued development of sustainable procurement procedures. Chapters 6 and 7 give sources and further background information, rounded off with a glossary.

2 Freedom of Association (C087, C098), Forced Labour (C029, C105), Discrimination (C100, C111) and Child Labour (C138, C182), details here: www.ilo.org/declaration/thedeclaration/lang--en/index.htm (12.01.2013)

3 The subject of "health" will be addressed expressly in future versions of the Toolbox.

3. Concepts, methods and examples of sustainable procurement

In order for sustainable procurement to become common practice, it is important to abide by the basic principles of public procurement and to understand the potential for sustainable procurement in the various relevant phases of the tender procedure. In an ideal procurement procedure, sustainability criteria, and possible evaluation methods, must be determined in advance. This will ensure that sustainability concepts can be implemented in procurement procedures in a legally binding and effective manner.

The Toolbox is intended for the phase after project appraisal. This means that knowledge of environmental impacts, social compatibility investigations, project sponsor analysis, and economic feasibility studies from the project appraisal should be included in the tender documentation. These form the basis for the formulation of sustainability criteria for procurement procedures.

3.1. Political framework

Political support is a decisive prerequisite for the success of sustainable procurement. Staff in public institutions worldwide have discovered that without political backing it is difficult for people who want to introduce sustainable procurement to make their voice heard within their organisation.

A written resolution by politicians on sustainable procurement provides a solid foundation for standardised and coordinated implementation. Elected policy makers should be responsible for ensuring that the resolution on sustainable procurement is also implemented. Without a written resolution efforts tend to be fragmented and based on the personal efforts of individuals. Furthermore, it can be difficult to encourage procurement officers to include environmental and social criteria in procurement processes. Political resolutions on sustainable procurement can take different forms:

Example: Pioneer in sustainable procurement

Province "X" has adopted a climate protection strategy. The aim is to reduce CO_2 emissions in the administration by 20%, in comparison with 1990, by 2015. This strategy stipulates the implementation of sustainable procurement as a decisive step to reaching this objective.

A working group from purchasing departments, FC project managers and technical experts from the regional administrative authorities was established. The group identified as priority supply and service orders, including the areas of products using energy, construction work and lighting. Strategic purchasers from various regions and cities in the province were invited to participate in the working group in order to keep abreast of sustainable procurement in the province. As a first step, an analysis of the status quo was carried out for the priority groups of orders. To this end, existing catalogues of criteria (benchmarks) were analysed worldwide and 36 indicators for energy efficiency, materials and substances, socially responsible corporate management etc., were formulated. The procurement procedures from the last five years were used, and the tender criteria, as well as the products and services purchased, were evaluated with regard to sustainability. The working group came to the conclusion that 20% of the procurement procedures (according to financial volume) contain sustainability criteria, but that the products did not comply with the stipulated requirements. In a second step, sustainability criteria were formulated that were ambitious enough to have a positive impact on environmental protection and social justice. A series of market dialogues started in parallel in order to prepare the market for this change in demand. Additionally, an internal training programme for procurement personnel was introduced.

After three years the outcome was evaluated: Procurement procedures now contain 80% sustainability criteria and a first impact study identified a positive trend regarding the market availability of eco-friendly products and a reduction in CO_2 emissions in the province (in the priority groups). The decision was taken to extend the programme to cover further product and supply tenders.

- A general requirement for sustainable procurement - for example in the form of a resolution within procurement guidelines, which requires the public institution to include environmental and social aspects in procurement.
- Comprehensive, sustainable procurement guidelines - a more global approach which also contains clearly defined aims, indicators, measures and timelines.

The following factors also play an important role in successful implementation:

- An active political and strategic orientation of the purchasing organisation with regard to sustainable procurement has been established
- Initial and advanced training for personnel with regard to the application of sustainability criteria for contract placement within Financial Cooperation is implemented on a wide scale
- Sustainability criteria that are ambitious and reliable enough to ensure an effective result, also in environmental terms, are applied consistently
- The market is prepared for demand for the provision of products and services that are environmentally-friendly and socially-responsible.

3.2. Legal framework

The legal framework in which sustainable public procurement is carried out in Financial Cooperation is generally subject to the national laws of the partner countries. National procurement laws are generally associated with laws to fight corruption and the efficient use of taxpayers' money. The core principles are implemented in the various national laws on public contract placement. The requirements for countries that have joined the WTO and ratified the Government Procurement Act (GPA) derive from Art. III - Art. IX of the GPA. These include:

- The duty to treat suppliers equally and the non-discrimination of suppliers, products and services from countries that are parties to the GPA (Art. III);
- The duty to publish notices in the sense of an invitation to participate (Art. IX), the choice of procedure (open, not open and selective procedures without prior announcement and negotiation procedures);
- The principle of product-neutral specifications (Art. IX)
- The basic principle of prior announcement of complete tender documents, including the object of the tender, specifications, selection and exclusion criteria, award criteria and contractual conditions and the required verification to be provided (Art. VIII);

Example: Brazil - laws with elements to promote sustainable procurement

Sustainable public procurement is enshrined in law in many partner countries of KfW. One example is Brazil. The most important modifications to public procurement took place in Brazil in Law No. 12.349 dated 15 December 2010. Article 3 states that the most advantageous tender must be selected, while promoting sustainable national development.

The national law on climate (LEI 12.187 dated 2009) requires, in Article 6, XII, that criteria reward tenders that result in more energy savings, less water consumption, less consumption of other natural resources, and reduce greenhouse gas emissions and waste. The national law on waste, Article 7, XI, contains the recommendation "to give priority to re-usable products as well as products, services and works that go hand in hand with the requirements and criteria of sustainability (environment), as well as socially acceptable consumption for procurement and subcontracting in the public sector".

Source: KfW (11.01.2013)

Note: Publication on the status quo in environmentally-friendly procurement in APEC countries: http://publications.apec.org/publication-detail.php?pub_id=1426 (01.08.2013)

- The basic principle of the equal treatment of bidders, including a reference to the capability of bidders (Art. VIII).

All these requirements are aimed at ensuring that public money is used transparently and efficiently, and to promote a free market. The principles of the GPA can be found in a similar form in other legal frameworks. National procurement laws in e.g. Brazil, the Maldives and Morocco, as well as the procurement guidelines of the European Union, are based on the above principles.

In summary the legal core principles of procurement for Financial Cooperation projects can be described as follows:

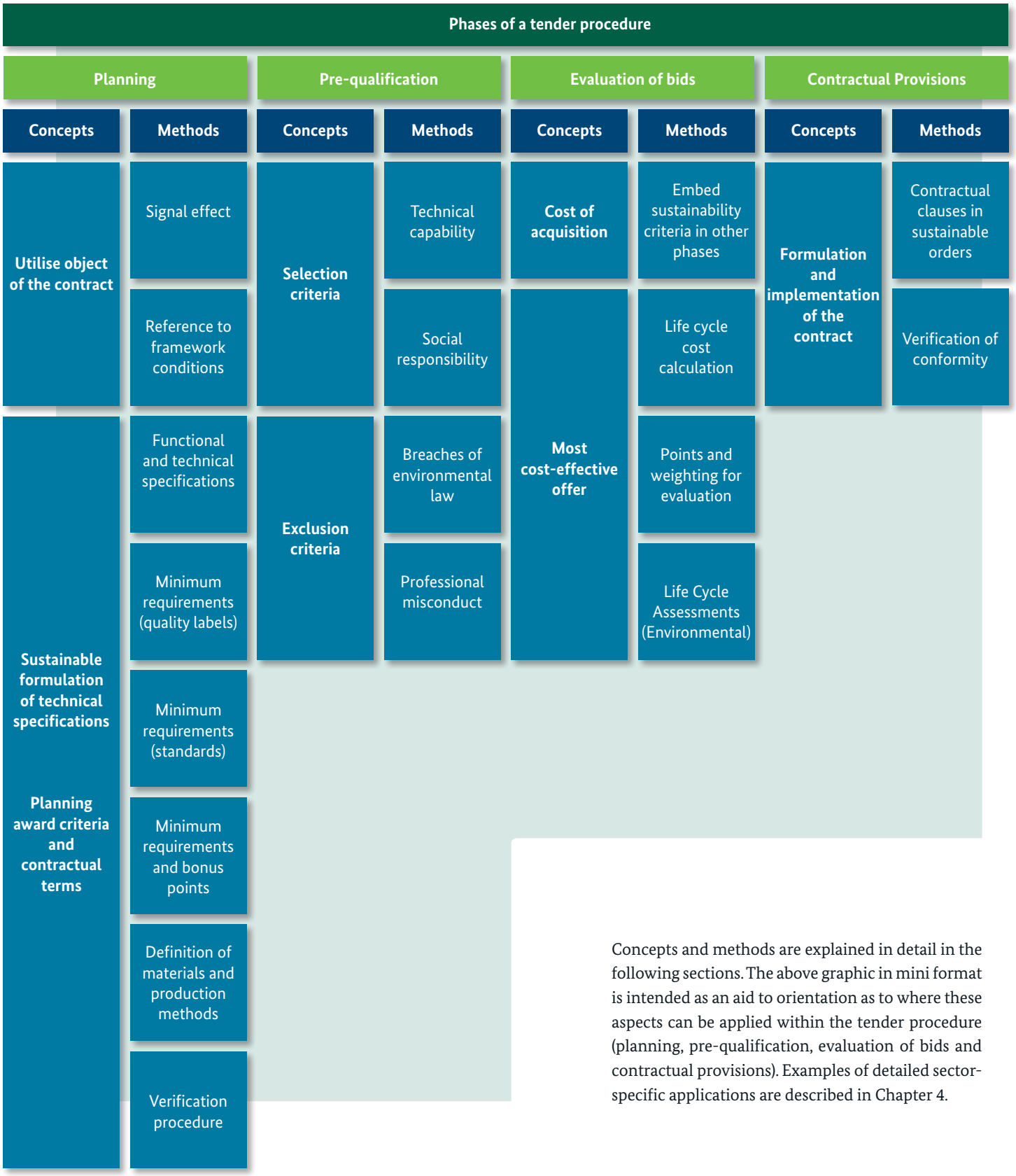
- **The principle of transparency:** Tender documents must be fully available in advance and be product and service neutral.
- **The principle of non-discrimination and fairness:** The requirements (criteria and verification) for performance must ensure equal treatment of all bidders. This is especially important for the application of sustainability criteria.

- **The principle of cost-effectiveness:** This precept is based on the efficient use of taxpayers' money when awarding public contracts. The practical implementation of several national legal systems reduces the aspect of cost-effectiveness to low costs when purchasing the product (service or construction work). The reason is normally tight public budgets and the exclusion of subsequent costs (including maintenance, operation, disposal, external costs for the health service). A definition of cost-effectiveness that is formulated comprehensively and which includes environmental aspects and life cycle cost considerations (see Chapter 3.5 LCC) with regard to the capacities of the project sponsor is necessary in order to implement sustainable public procurement. Owing to insufficient understanding or non-inclusion of such aspects in national laws, in many cases it is important to establish a common understanding with local partners before the procurement procedure is formulated.
- **The principle of competitiveness:** The contracting authority must ensure that there is competition for the provision of the service. The competitiveness principle is directly connected with the principles of transparency, non-discrimination and cost-effectiveness.
- **The principle of proportionality:** Sustainability criteria must have a factual connection to the object of the tender (see Chapter 3.3.1). For example, a procurement procedure to supply computers cannot demand that the supplier follow a comprehensive environmental management system. However, a contract for the delivery of computers can certainly contain performance criteria on the energy efficiency of the devices. Proportionality also means that the scope and qualitative requirements must be in relation to the monetary value and an efficient procurement procedure process.

Pertinent starting points for sustainable procurement procedures before, during and after a procurement procedures are described below, which are based on open award procedures with due regard to the above-mentioned legal principles. The planning, pre-qualification, evaluation of bids and contractual provisions phases are directly relevant to establishing a sustainable procurement process.

The following overview (Fig. 4) shows these phases and the concepts and methods to be applied.

Fig. 4: Phases of a tender procedure



Concepts and methods are explained in detail in the following sections. The above graphic in mini format is intended as an aid to orientation as to where these aspects can be applied within the tender procedure (planning, pre-qualification, evaluation of bids and contractual provisions). Examples of detailed sector-specific applications are described in Chapter 4.

3.3. Planning

Sustainability criteria are already applied in the planning phase of a specific tender procedure, especially when formulating the tender specifications (the technical specifications or Terms of Reference). Precise and comprehensive details on criteria and verification are necessary; environmental protection measures (e.g. reduction of CO_2 emissions) and socio-economic aspects (e.g. standards for health & safety at work) must be specified.

3.3.1. Utilise definition of the object of the contract

Planning a procurement procedure begins with a description of the object of the contract. Scope and designation of the contract are defined here. The object of the contract describes the products, services or construction work to be provided and normally includes a description of the object of procurement. The description should include the requirement for aspects of environmental protection, as well as decent and fair working conditions during the manufacture of goods, the provision of services or works.

Statutory provisions in the public procurement sector deal less with what is purchased and more with how it is purchased. It should be noted that the object of the contract should not be defined too narrowly, and in particular should not pre-empt any technical specifications that have been described comprehensively and definitively (see Chapter 3.3.2). A procurement procedure may not be limited to certain products, without allowing equivalent products (see Chapter 3.2).

Signalling effect

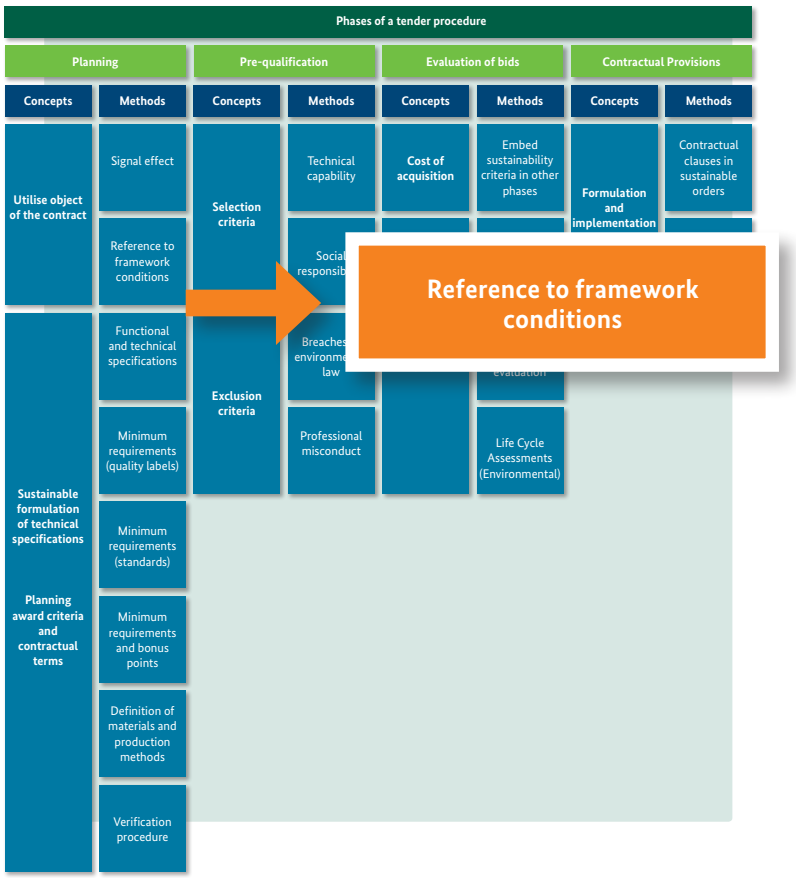
The signalling effect of the object of the contract should definitely be used in order to encourage sustainability. This decision must be taken at an early stage and the procedure designed accordingly if sustainability criteria are to be included successfully in the tender procedure. To draw an analogy: a good book title (here: object of the contract) together with the cover text (here: description of the tender) should describe the action (here: procurement procedure) in an informative and pertinent manner.

Common formulations contain:

- Construction of energy-efficient pumping stations (compared with “construction of pumping stations“)
- Supply of green electricity (compared with “supply of electricity”)
- Supply of energy-efficient computer systems manufactured in
- working conditions that respect the dignity of workers (”compared with “supply of computer systems”)
- Renovation of office block X utilising energy efficient design, eco-friendly building materials and social aspects along the supply chains for the products and services used (compared with “renovation of office block X”)

Reference to framework conditions

When describing the object of the contract the awarding authority has the opportunity to use references to the politico-strategic framework in order to illustrate the importance of sustainability criteria in the individual procurement procedure. This is helped by details of aims such as the implementation of climate protection objectives in the region, taking measures under the biodiversity convention, as well as projects related to sustainable urban and mobility planning. Titles of procurement procedures which emphasise the importance of sustainability also help to explain to potential bidders why the tender description has been extended to contain sustainability aspects in comparison with normal procurement procedures. The following example illustrates the importance of a precise object of the contract from a legal point of view.



Example: Environmental reference in the object of the contract of the City of Bremen

In 2010 the public law institution Immobilien Bremen published a tender with the title "Framework agreement for the procurement of eco-friendly office equipment". The technical specifications referred to the criteria of the Energy Star Directive and the ecolabel "Blue Angel". The eco-reference in the title indicated from the outset the environmental priorities of the city.

Example: Procurement procedure for a heating system through the construction and operation of a biomass heating plant with a heat distribution network in an open procedure (court decision of the contract awarding office for Northern Bavaria, 2.7.2008 –21 VK –3194 –29/08)

In this example the contracting authority included a reference to the special conditions for execution of the order with regard to verification of an ecological fuel supply in the announcement and the object of the contract. The contracting authority also declared that the biomass heating plant was located in a nature reserve and was part of the eco-region. Additionally, the contracting authority wanted to make a contribution to the CO_2 reduction programme of the Federal Government and to the environmental performance analysis based on the lowest possible CO_2 emissions.

A bidder then contested the proportionality of the criterion in relation to the object of the contract. On examination of the complaint of the bidder, the contract awarding office for Northern Bavaria accepted the arguments of the contracting authority. The contract awarding office for Northern Bavaria determined that the award criterion "overall ecology" had a direct connection with the heating system (the object of the contract) to be tendered for. This example shows clearly the importance of formulating the object of the contract in sustainable terms.

For further information:
www.iclei europe.org/fileadmin/templates/iclei europe/files/content/ICLEI_IS/Newsbits/Kosten_Senken/PRP_Dr._Angela_Dagef%C3%B6rde_01.pdf (11.12.2012)

3.3.2. Sustainable formulation of technical specifications

When selecting technical specifications we recommend keeping the whole tender, and in particular the required award criteria and contractual provisions, in mind. As a general rule, sustainability criteria are minimum requirements which should match the market availability of products, works and services; otherwise the worst case scenario is that no suitable bids will be received. If the market for eco-friendly and socially responsible products and services is not sufficient and has to be subsequently investigated, or if there is only limited availability for certain requirements, it would seem appropriate to include sustainability criteria regarding these aspects in the award criteria (see Chapter 3.5) and not in the tender specifications.

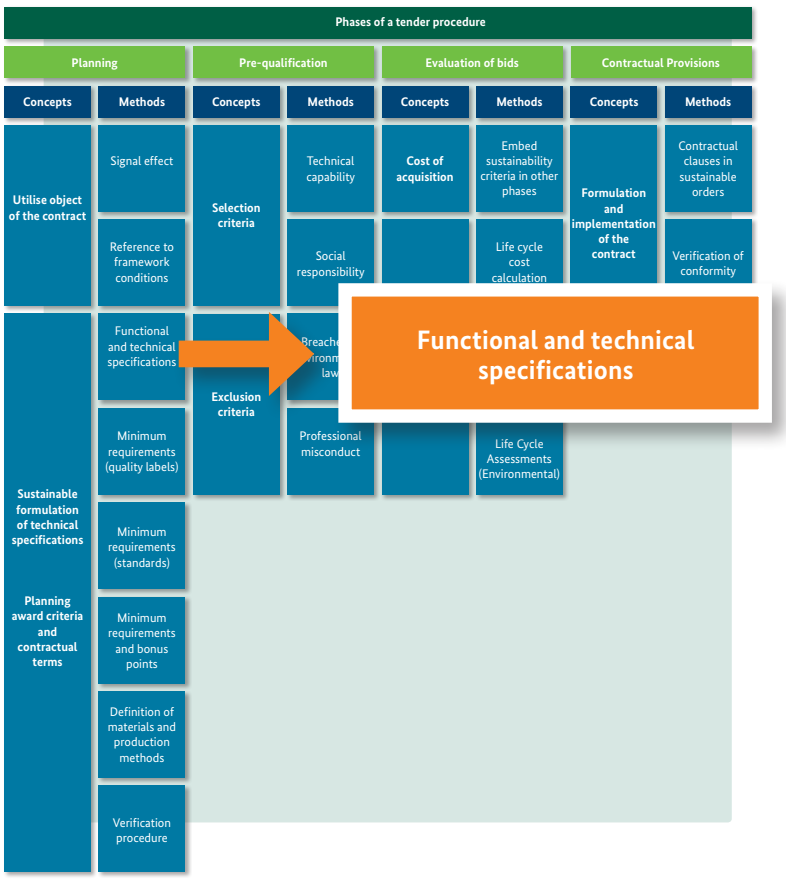
The terms of reference, with its technical specifications, is the core of all procurement procedures. The object of the contract is specified in a verifiable manner via the technical specifications, comparable with completing a painting after drawing a sketch. In contrast to the selection and exclusion criteria (see Chapter 3.4), the technical specifications must refer to performance characteristics, which is the object of the contract, and not to the general competences or qualities of economic operators. The duty of transparency requires that the technical specifications are contained in the contract award documentation itself.

In the technical specifications the contracting authority defines its requirements within a technical description and/or requirements for functionality and performance. The performance to be provided must be described clearly and understandably so that the bidding company is able to compile an offer. Furthermore, in the technical specifications the contracting authority defines which other services may be required as part of the procurement procedure, for example, initial and advanced training and operational support. Only offers that match the requirements and the tender specifications can be evaluated according to the award criteria. Common methods to embed sustainability criteria in the tender specifications are described below. The procedure for providing verification is addressed at the end of this chapter.

Functional and technical specifications

When describing the products and services for tender, the contracting authority has two essentially different concepts available:

- If the performance and the technical solution to be offered (generally through tender specifications) are specified in detail, these are known as technical (or descriptive) performance specifications. Deviations in the offer from the intended technical solution by the bidder are only possible in narrowly defined exceptions.
- However, if only an objective is defined in the tender specifications, but the bidder is free regarding the technical implementation in order to achieve the objective, these are known as functional (or result-



oriented) performance specifications. The specifications merely describe a function or performance that must be achieved.
- One variation is the performance-related specification, which is based on the formulation of target values.

The functional and performance-related specifications are more open to results with regard to technology, design and the products used, and generally lead to more sustainable results. Furthermore, they open up competition as the market is called to present solutions. A disadvantage is the greater effort required to process the tender; this requires very high technical competence of the contracting authority. First, the functional tender specifications must define the criteria underpinning decisions in a precise manner that is neutral regarding technology, as well as sufficiently detailed. Second, fair and transparent evaluation (evaluation of bids see Chapter 3.5) of at times widely differing technical solutions must be ensured. Therefore, functional procurement procedures are used primarily for technically complex, large volume projects for which the market can offer differing but technically relevant alternatives. Important in the context of FZ is also the fact that a functional tender places higher demands on the capacity of the bidder when preparing the offer procurement procedure (see Chapter 3.3.2).

In technical tender specifications care should be taken to ensure that sustainability criteria are applied as minimum requirements for example, by requesting quality labels and standards (see the following sections). Performance-related specifications are based on the availability of previous data, including energy consumption. This presupposes that previous contracts have established an adequate monitoring and controlling system, and that measurements and data analyses have been carried out. Only in this way can the necessary baseline be defined and an appraisal made of which potential improvements are realistic. Performance-related specifications are frequently the result of an in-depth market analysis or a dialogue with potential bidders of relevant (technical) solutions.

The following examples describe the application of these different types of specification.

Examples for simple, functional and technical specifications

Descriptive specifications: Supply and installation of 1,000 low energy bulbs (11 W) and 1,000 light fittings 2.

Functional specifications: Supply and installation of an energy efficient lighting system for ten classrooms for [description of user requirements such as desk lighting, light intensity in lumen per unit, etc.].

Performance-related specifications: Renovation of the lighting system in an office building: The energy efficiency of the lighting system must show energy consumption lower than X% of the energy consumption of the system currently installed while maintaining comparable light quality (illumination, light intensity, light colour, etc.).

A further example of performance-related specifications: Upgrade of a wind farm (re-powering): The system must show 15% more efficiency.

Note: Performance-related or functional specifications can be formulated in the tender specifications as well as in the award criteria (see Chapter 3.5.).

Minimum requirements (quality labels)

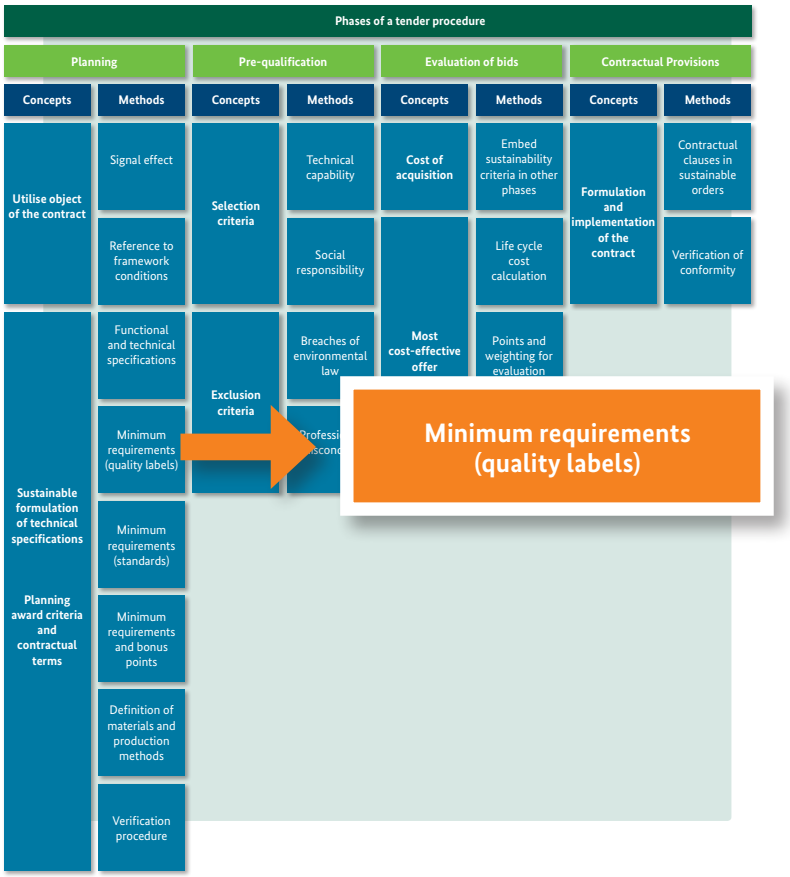
Technical specifications can be formulated as minimum requirements. This means that bidders must absolutely adhere to them. Generally these minimum requirements are evaluated as "satisfied" and "not satisfied"; if an offer is evaluated as "not satisfied" this automatically leads to exclusion from the tender process. Technical specifications can refer to appropriate requirements defined in ecolabels.

In order to use the criteria underpinning ecolabels in procurement procedures, these must satisfy certain quality requirements:

- They must be suitable for defining the characteristics of the particular supply or service, i.e. specifications from ecolabels can only be used that refer to the object of the contract (see Chapter 3.3.1).
- The criteria of the ecolabel must have been established scientifically and in a procedure that is open to interested parties (e.g. government bodies, consumers, manufacturers, dealers and environmental organisations).
- The ecolabel must be available for all manufacturers.

Standards 14021 (Type II – manufacturers' declaration), 14024 (Type I – verified by third parties) and 14025 (Type III – quantitative details based on the manufacturer's data) of the International Organization for Standardization (ISO) describe the different certification systems on which the ecolabels are based. These three types can be differentiated as follows:

- Type I quality labels are well suited to describe sustainability aspects effectively and reliably since the award of the quality labels is based on criteria established by independent organisations and associations. This ensures a high level of effectiveness and reliability in relation to the attainable possibilities of reducing the environmental impact, e.g. in the field of energy generation and the consumption of natural resources.
- Type II ecolabels are based solely on information provided by the manufacturer. Independent organisations are not involved in awarding the label. However, competition between manufacturers results in an inherent control function and mutual examination of details on the various products.
- Type III ecolabels are also based on manufacturers' details, as are Type II ecolabels. They are also designated as eco-profiles, environmental declarations for products and eco-friendly product declarations. They provide product information based on environmental performance analyses (in particular in relation to greenhouse gases, for example CO_2 equivalent emissions (CO_2eq). They enable ecological comparisons to be made between products with the same function. However, Type III ecolabels are less suited for tender procedures, since they provide only data. However, a comparison based on dedicated criteria catalogues and databases must be done by the procurer and is scarcely feasible in standard tender procedures, both technically and in terms of time.



The following overview presents globally recognised Type I ecolabels and further certification systems which are recommended for sustainable procurement. They are considered to be sophisticated and reliable quality labels and hence are suitable for sustainable procurement. This list does not claim to be exhaustive. We recommend getting an overview of regional quality labels and standards via databases, before issuing a tender procedure.[4]

4 The following databases, some of which are fee-based, provide an informative overview on quality labels and standards: www.standardsmap.org, http://www.isealalliance.org, http://oeffentlichebeschaffung.kompassnachhaltigkeit.de/nc/standardsuche.html (Date: 11.08.2013)

Table 2: Appropriate quality labels for sustainable procurement

Quality label/ organisation	Main object of certification	Issuer of certificate	Geographical distribution	Further information	Relation to FC (example)
Global Ecolabelling Network (GEN)	The Global Ecolabelling Network is an association of national Type I ecolabel organisations from all over the world.	Various (Type I)	Worldwide	A comprehensive overview of Type I ecolabels available worldwide and which have joined GEN can be found here: www.globalecolabelling.net	A project in Malaysia comprises retrofitting a court building with renewable energy sources for HVAC. GEN recommends the national certification system SIRIM and gives criteria in the ECO 37 document for solar-operated water boilers.
Blue Angel	Over 100 products and services (incl. ICT, textiles, building materials, lighting).	RAL	Germany Products available worldwide	www.blauer-engel.de www.ral-guetezeichen.de Overview: www.blauer-engel.de/de/produkte_marken/produktsuche/produkt_suche.php	A project in Africa is responsible for equipping a school with PCs. As a showcase project the PCs should meet the highest standards for environmental protection. Therefore, the criteria of RAL-UZ 78a were included in the procurement procedure.

Quality label/ organisation	Main object of certification	Issuer of certificate	Geographical distribution	Further information	Relation to FC (example)
EU Ecolabel	Over 30 products and services (incl. ICT, textiles, building materials, lighting).	EU (Type I)	EU and some other countries	www.eu-ecolabel.de An overview can be found here: www.eu-ecolabel.de/produktgruppen-kriterien.html	The project "Innovative Lighting" in Turkey is focusing on highly energy-efficient solutions. The basic criteria for the procurement procedure were taken from the EU Ecolabel (2011/331/EU).
ENERGY STAR	Energy consumption of electronic devices (incl. white goods, computers, multi-functional devices)	Manufacturer (Type II)	Worldwide	www.energystar.gov	As part of the promotion of local content, very small enterprises in Uganda are to be supported in the ICT field. Therefore, the procurement procedure for multi-functional devices for the Supreme Court includes basic sustainability criteria and refers to Energy Star criteria, which have been granted to up to 80% of all products available locally.
Forest Stewardship	Wood products	FSC	Worldwide	www.fsc.org	The project for the construction of a new school building in Nicaragua is based on timber frame constructions. Only wood products with the FSC seal are being used.
Programme for the Endorsement of Forest Certification (PEFC)	Wood products	PEFC	Worldwide	www.pefc.org	The project for the construction of a new school building in Nicaragua is based on timber frame constructions. Only wood products with the PEFC seal are being used.

Quality label/ organisation	Main object of certification	Issuer of certificate	Geographical distribution	Further information	Relation to FC (example)
Fairtrade Labelling Organisation International (FLO)	Fair trade products such as foodstuffs, toys and sports goods	FLO	Worldwide	www.fairtrade.net	The project "Go Fair" supports healthy canteen food in Russia. Requirements for a percentage of Fair Trade products are gradually being introduced into concession contracts.
World Fairtrade Organisation (WFO)	Products from fair trade such as foodstuffs, toys and sports goods WFO	WFO	Worldwide	www.wfto.com	s. o.
Rainforest Alliance (RA)	Products from fair trade such as foodstuffs, travel	RA	Worldwide	www.rainforest-alliance.org	s.o.

Note: Certain national procurement laws require participants to accept equivalent verification of adherence to the criteria of a sustainability label (such as the technical dossier of a manufacturer or the test report from a recognised entity) (see end of Chapter 3.3.2).

Example: Procurement procedure strategy for sustainable wood products (Barcelona, Spain)

In 2004 the City of Barcelona adopted the strategy of procuring wood from forests that are managed sustainably. The criteria of the FSC certification system were introduced step by step. They began with the introduction of FSC criteria as award criteria (see Chapter 3.5), and simultaneously a certificate of origin was required in the technical specifications (Chain of Custody – CoC, minimum requirement). The aim of the CoC certificate is to ensure that wood products are not from illegal forestry operations

After buyers had received in-house training, the criterion "satisfies the criteria of FSC" was included as a minimum requirement in the technical specifications.

For further information:
www.bcn.cat/agenda21/ajuntamentsostenible/english/index.htm (12.01.2013)

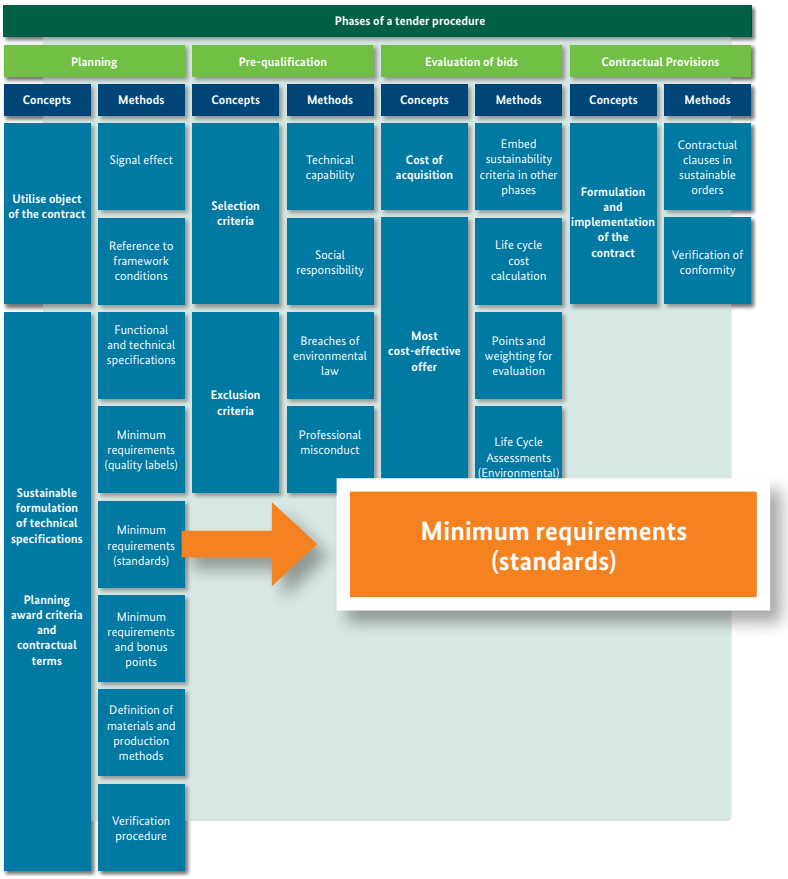
Minimum requirements (standards)

Standards are of great importance for product design and process planning and are often linked to sustainability requirements, e.g. with regard to working conditions at production sites, energy consumption or waste management.

For buyers they are a solid basis for tender criteria since they are clear and non-discriminatory. They are also generally developed in a process which includes a broad spectrum of interested parties, including national authorities, environmental organisations, consumer associations and representatives of industry.

Accordingly, solutions based on standards are widely accepted - both by manufacturers as well as by contracting authorities.

Note: Some national public tender guidelines stipulate that the addition "or equivalent" is used when referring to standards. This means that offers based on equivalent rules must be considered by the contracting authorities (equivalent standards or equivalent solutions that are not defined according to a specific standard). As verification of equivalence bidders can provide verification in any form (e.g. as a technical dossier of the manufacturer or as a test report from a recognised entity) (see Chapter 3.3.2).

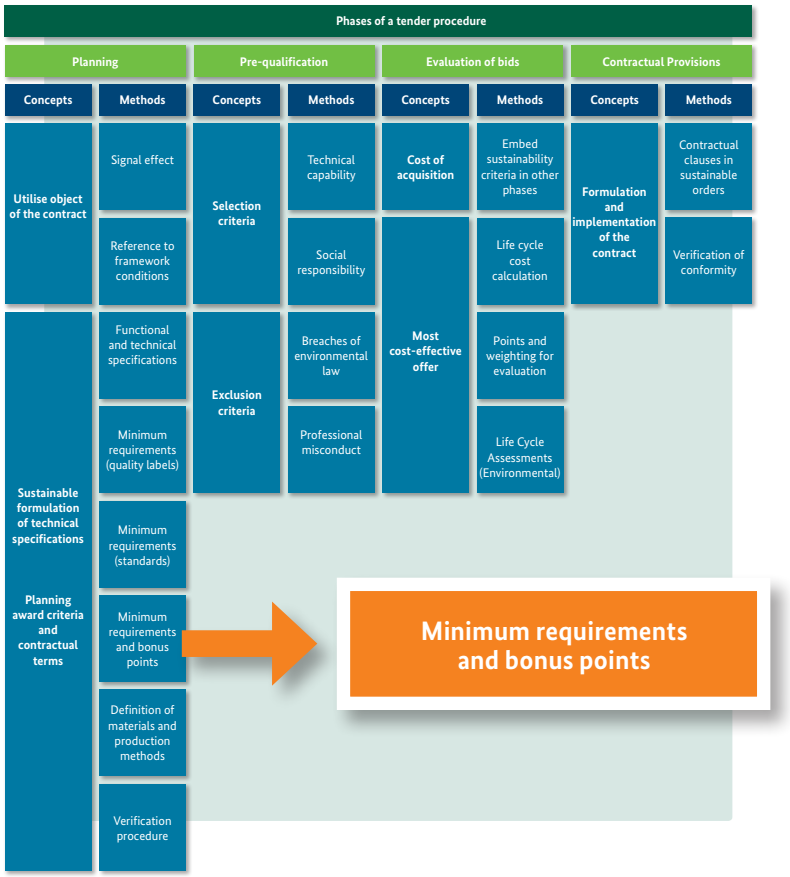


Example: Use of a DIN standard for minimum requirements for the life expectancy of light emitting diodes (LEDs)

LEDs promise high energy efficiency combined with the long life expectancy of the bulbs. In order to integrate these positive environmental characteristics in the technical specifications of a procurement procedure for lighting systems, we recommend referring to specific standards. The phrase "or equivalent" must be included.

As an example we can take the standard DIN IEC/PAS 62717; DIN SPEC 42717:2011-12 of the Deutsches Institut für Normung (German Institute for Standardisation - DIN) which describes the requirements for the mode of operation, including the life expectancy for LED modules, for general lighting systems. In a procurement procedure this would read as follows: "The LED bulbs must comply with the standards DIN IEC/PAS 62717 and DIN SPEC 42717:2011-12 or equivalent."

For further information: www.din.de, www.iso.org (17.07.2013)



Minimum requirements and bonus points

In addition to the use of quality labels or standards as minimum requirements, there is also the possibility to define project-specific minimum conformity criteria. This can make sense if there are no suitable ecolabels, sustainability labels, standards (recyclability of (building) materials, purchase of energy efficient laboratory devices such as microscopes, etc.) or if the specific market is not sufficiently developed for the procurement of environmentally - and socially-responsible products, goods or services.

For aspects that go beyond minimum requirements, bonus points or so-called B criteria could be included in award criteria. This concept means a more demanding verification process which is dealt with in Chapter 3.5 “MEAT and sustainability aspects”.

In these cases a combination of minimum requirements and bonus points is appropriate. The minimum conformity criteria should be formulated clearly, otherwise they will lead to unsuitable offers that do not satisfy requirements or contain details that are not reproducible or verifiable.

Bonus criteria/points can, in appropriate cases, be expanded to include advanced criteria (“sustainability+”) in order to achieve even greater sustainability benefits in the environmental or social field. Example: Creation of local employment opportunities and participation of local business in projects (local content).

Example: Technical specifications in procurement of information and communication technologies (ICT) in Munich

The regional capital of Munich uses a method for ICT procurement procedures which contains a combination of minimum requirements and bonus points (UfAB method).The A criteria are minimum requirements, such as compliance with ENERGY STAR criteria while B criteria allocate bonus points during evaluation and are part of the award criteria. They are used, for example, as a quantitative criterion regarding the mercury content of monitors. The number and weighting of bonus points depends on the relevance of the criterion to implement the object of the contract (see Chapter 3.3.1).

For further information: www.muenchen.de/rathaus/Stadtinfos/Ausschreibungen/Vergabestelle-3.html, www.cio.bund.de/DE/IT-Beschaffung/UfAB/ufab_inhalt.html (29.01.2013)

Sustainability+ **Local content and local employment**

The concept of local content to promote local employment, for example in infrastructure projects, is based on the principle of making procurement procedures accessible to local small and medium enterprises. The aim is to include a high percentage of local employment and economic performance.
An important approach here is to improve the chance of participation through targeted information on the probable performance packages, e.g. through orientation sessions for the private sector (possibly organised via local chambers of commerce and associations), and information for local people on potential employment opportunities and the modalities of job applications (labour force job market). At this type of event, care should be taken to describe opportunities for employment and orders realistically in order to avoid conflicts later (expectation management).
Ways of including local firms include the increased use of contract phases and batches, division of material and personnel costs, exceptions for financial guarantees and the introduction of advanced payment systems (see URL below for examples of contract award configuration). Award criteria can favour bidders with a high percentage of local content. For example, 5-10% of the award criteria per contract can be awarded with reference to the largest possible percentage of local content (see Chapter 3.4).
Examples are the use of locally produced materials or cooperation with smaller local firms in construction projects. Within these forms of cooperation training measures can be agreed by international suppliers for local firms (formal training or on-the-job training, for example as implemented in a KfW Financial Cooperation project for labour-intensive road construction in Namibia and Mozambique - see also Chapter 4.5.1). During contract execution, rules on payment and the monitoring of performance must be examined, especially with regard to aspects in the field of environmental protection and working conditions (see Chapter 3.6).
Increased use of the concept of local content can help to support local enterprises in accepting responsibility, and hence make a decisive contribution towards reliable operation and maintenance.

In addition to the positive effects of local content requirements on the development projects presented here, challenges and risks will also arise. In the case of complex technical projects, inappropriately high local content requirements can ask too much of the capabilities of local market players. Delays or, in the worst case, dissatisfactory quality can be the result. Furthermore, inappropriately high local content requirements, specifically in tight market situations, can distort the market and/or encourage quasi-monopoly situations, with undesirable effects on costs and the future development of the market.
Recently local content requirements, especially in the field of renewable energies, have resulted in disputes being brought before the WTO. Essentially it is a question of ensuring that feed-in tariffs for renewable energies are linked with the use of a certain percentage of local components in the construction of the plants.

For further information: ICE – Increasing local content in the procurement of infrastructure projects in low income countries: www.engineersagainstpoverty.org/_db/_documents/Local_content_briefing_note.pdf (11.03.2013)

For further information: BMWi Information - Bestehende „Local-Content"-Regelungen, 2012 (see: www.wto.org as well as http://www.exportinitiative.bmwi.de/EEE/Navigation/meldungen,did=545490.html?view=renderPrint) (10.07.2013).

Another example of possible sustainability+ criteria is labour market integration.

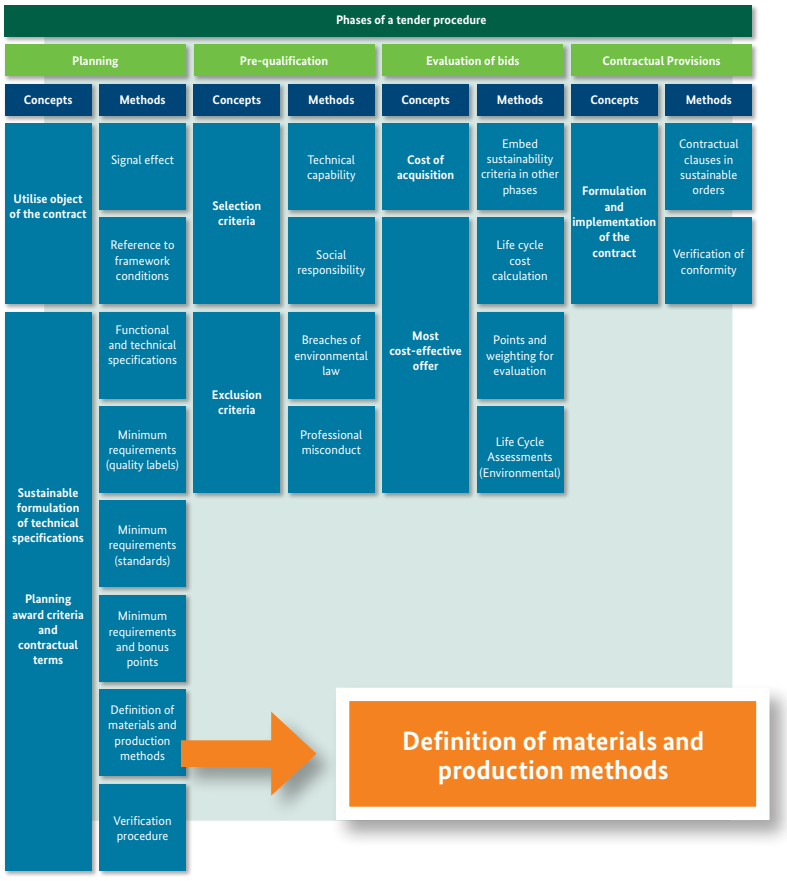
Sustainability+ **Labour market integration**

In addition to including the local economy (see local content), the effect on local employment can be increased through, for example the labour-intensive planning of infrastructural measures.
Furthermore, appropriate cases agreements can be concluded to hire a certain percentage of personnel from the social economy (e.g. sheltered workshops where people with physical disabilities work). The contracting partners should present corresponding certification of the company or authority in question in order to provide verification that the employment requirements have been satisfied.

Definition of materials and production methods

The contracting authority can insist that the purchased product is made of a certain material. This freedom of choice of materials refers specifically to environmental aspects. The above minimum requirements based on standards and quality labels often incorporate an implicit selection of materials with a potential reduction in environmental impact, e.g. a high degree of recyclable materials in the product.

Materials or chemical substances in the product that are injurious to health or the environment can be excluded. A more stringent way is to refer to criteria of the Type I ecolabel (see above) and to national environmental protection regulations. Examples from Europe that are applied in a similar fashion around the world are references to the RoHS Directive[5] or the REACH Regulation[6].



Technical specifications for goods, services and construction work can also prescribe production processes and production methods. However, only requirements that are connected with the production of the product and its characteristics should be included. These requirements do not have to be directly visible from the specifications, however.

In the course of the development of social criteria for tender specifications, greater focus is placed on the supply and production chain. Corporate standards such as SA 8000[7] contain requirements on working conditions in the production process, the effects of which cannot be seen in the end product (e.g. manufacture of goods compliant with standards of health & safety at work). In the case of social criteria in the tender specifications it is just as important to connect the specifications with the object of the contract. References to the production process and the principles of fair trade should be included here, together with compliance with criteria of socially-responsible corporate management. Criteria of the corporate standard SA 8000 or equivalent standards can be determined in the technical specifications (see Chapter 3.3.2).

5 Directive 2002/95/EC of the European Parliament and of the Council dated 27 January 2003 on the restriction of hazardous substances in electric and electronic devices

6 Regulation (EC) No. 1907/2006 of the European Parliament and of the Council dated 18 December 2006 on the registration, evaluation, authorisation and restriction of chemical substances

7 The SA 8000 standard goes further than the ILO core labour standards and certifies companies that have proved that they also comply with the following criteria and human rights: prohibition of child and forced labour, prohibition of discrimination based on race, sex and religion, freedom of association, freedom of organisation in trade unions and collective bargaining, determination of the maximum number of working hours to 48 hours per week with one day off, guarantee of a wage upon which one can live, demand for and introduction of working conditions compatible with human dignity, systematic improvement of workplace conditions and external documentation through certification. For further information: www.sa-intl.org/index.cfm?fuseaction=Page.ViewPage&PageID=937 (11.03.2013). Manufacturing companies with SA 8000 certification: www.saasaccreditation.org/ certfacilitieslist.htm (11.03.2013).

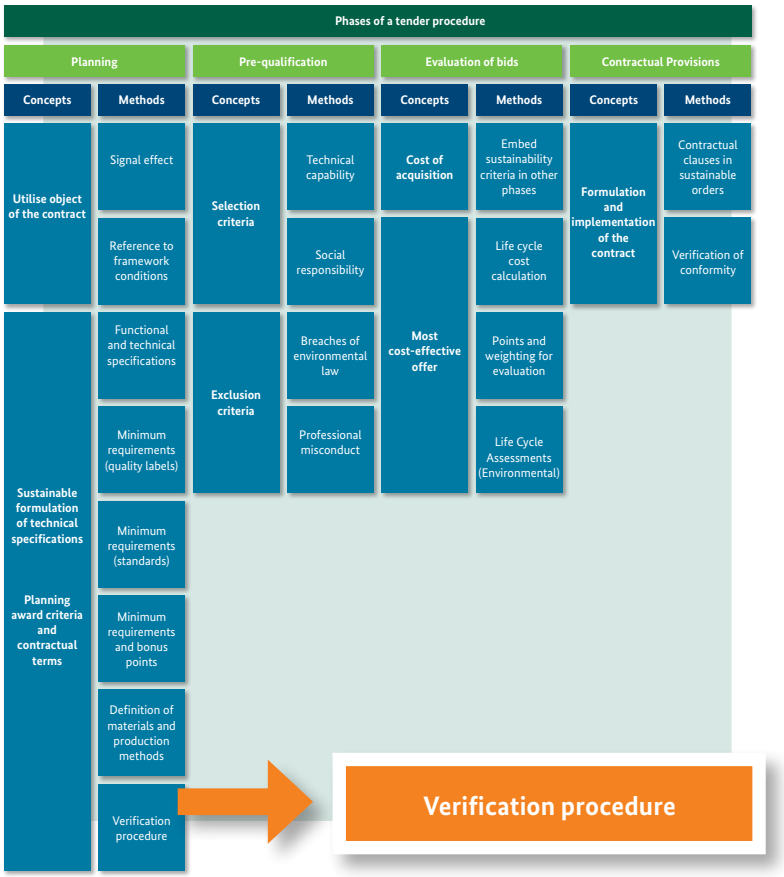
Award of service contracts

If during the project appraisal stage it becomes clear that the company leading the project is not capable of properly operating and maintaining the facilities and equipment to which they have agreed, the procurement procedure can also cover services to create the necessary capacities. The procurement procedure should then specify and describe the type and content of the service, the scope, at which site and at what time the service is to be provided as part of the overall procurement procedures. Furthermore, details on the qualifications and experience of the required experts, the methods to be used and the level of knowledge to be aimed for by the project sponsor should be given at the end of the service to be provided.

Verification procedure

How can implementation of the specifications be verified during the tender procedure? Essentially the specifications should be verifiable in a transparent and effective manner. This means that when formulating the specifications appropriate verification should be considered and included, and the time and effort of verification should be calculated.

The above mentioned sustainability criteria, quality labels and standards, offer a decided advantage: the referenced standard or quality label can be used and accepted as verification. However, accepted verification can also include technical dossiers, independent test reports or, e.g. as is normal in the construction sector, qualitative jury decisions for aesthetic decisions. The contracting authority frequently gives an indicative, i.e. not an exclusive, list of appropriate verification. However, it should be pointed out that a manufacturer's declaration is not suitable verification of compliance with specifications since less time and costs are incurred than is the case of applicants and bidders who actually provide verification of compliance with requirements through certification. This can result in substantial inequality in the treatment of applicants and bidders which should be avoided in accordance with the principles of equal treatment and non-discrimination. Hence a simple declaration by a manufacturer would not be suitable verification.



Example: Promotion and demand for sustainable production processes

It is possible to require that electricity is generated from renewable sources, that devices consuming energy such as bulbs are to be manufactured using energy saving production processes, or that food products must be produced using organic farming methods, since these production methods are accessible to all economic players. Social criteria for the production process, such as the prohibition of exploitative child labour and aspects of health & safety at work, are included. However, you should not insist on a production process that is protected by copyright or otherwise is only accessible to one contractor or to contractors from a certain country or region.

Further information: Der Fall „Wienstrom" (C-448/01 vom 4. Dezember 2003) http://ec.europa.eu/environment/gpp/case_law_en.htm (29.01.2013)

The following example illustrates the role of technical specifications in the tender procedure.

Example: Conformity testing

The specifications for a procurement procedure for the supply of energy-efficient computers contain a minimum requirement for energy efficiency based on the criterion of the ENERGY STAR 5.0 quality label for personal computers (PC). Accepted verification included the ENERGY STAR 5.0 quality label, as well as further suitable verification such as an independent certificate from a test laboratory.

Four bids are received. Bid A features the ENERGY STAR 5.0 quality label, bid B features the ENERGY STAR 4.0 quality label, bid C features the quality label "Blue Angel" and bid D is accompanied by a technical dossier of the manufacturer (manufacturer's declaration).

The bids are now evaluated with regard to their conformity with the specifications. For bid A this is done time-effectively: 100% conformity. For bid B this is done quickly: not satisfied since the quality label is obsolete (=exclusion). For bid C the buyer must do some research and check the criteria on which the Blue Angel is based with regard to their conformity with ENERGY STAR 5.0 criteria. A glance at the field of energy efficiency suffices and the buyer finds that the Blue Angel refers to the requirements of ENERGY STAR 5.0 and hence the minimum requirement is satisfied 100%. Bid D is checked briefly and classified as a manufacturer's declaration, and therefore as an unsuitable form of verification. Bid D is excluded. Bids A and C remain.

A technical dossier as verification should be structured according to the data sheets "best available technology (BAT)[8]", available from the Federal Environment Agency (UBA): www.bvt.umweltbundesamt.de (14.03.2013). BAT is a European technical term based on the European Directive 2010/75/EU on industrial emissions (IE-R) and largely corresponds to the concept of state-of-the-art which is traditionally used in Germany. A technical term is a reference in laws, regulations or contracts, that reflects a level of knowledge in science and technology. They are defined primarily via technical standards and scientific publications.

The state-of-the-art for science and technology is the third and highest level of performance ratings; they describe top technological achievements that are supported scientifically. They should be used in sustainable procurement.

8 According to Art. 3, 10 of the Industrial Emissions Directive, the expression best available techniques describes "the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole;
- "Techniques", both the applied technology as well as the way in which the facility is planned, built, maintained, operated and decommissioned;
- "available" the techniques that have been developed at a scale which, with consideration of the cost/benefit ratio in the pertinent industrial sector, allows for economically and technically acceptable conditions, irrespective of whether these techniques are used or produced within the pertinent member state as long as they are accessible under acceptable conditions for the operator;
- "best", the techniques that are most effective in achieving a generally high level of protection for the environment as a whole."

Example: Total energy consumption of a sewage treatment plant (functional specifications)

The following example illustrates the symbiotic use of technical specifications with award criteria through the determination of the total energy consumption of a sewage treatment plant for 150,000 inhabitants.

Technical specifications

The total energy consumption of the plant for water (extraction, treatment and distribution), wastewater (transport and treatment) and for treatment of sewage sludge does not exceed 32 kWh/ inhabitant.

Verification: Technical dossier and concept.

Award criterion

Lower energy consumption per inhabitant for purified water in relation to the minimum requirement.

Verification: Planning and concept. Gradual, quantitative evaluation system (max. 10 points for the bid with the lowest energy consumption).

Contractual provision

The guaranteed total energy consumption for the facility must be satisfied according to the details in the award criteria. Energy consumption is measured on completion of the facility and before handover by an independent expert. The bidder bears the costs of the expert. If the measured energy consumption exceeds the guaranteed energy consumption by a previously defined value, the supplier of the plant is required to take remedial action within a specified time or to pay a contractual penalty.

Note: The amount of the contractual penalty must be carefully considered and be proportional to its purpose. If the amount is set too low, a bidder can include this sum in his calculations (and supply products that are of inferior quality and lower priced); if it is too high, this can lead to unacceptably high safety premiums in all bids.

3.4. Pre-qualification (PQ phase)

The objective of the pre-qualification of bidders is to identify suitable market players for a contract. This is generally achieved using selection and exclusion criteria in order to determine the economic and technical suitability of a potential bidder. Assessment of their technical and entrepreneurial suitability can be supplemented with environmental and social responsibility aspects in the sense of sustainable procurement. These must be connected to the object of the contract, i.e. they must be decisive for execution of the contract - as stated in the definition of the object of the contract.

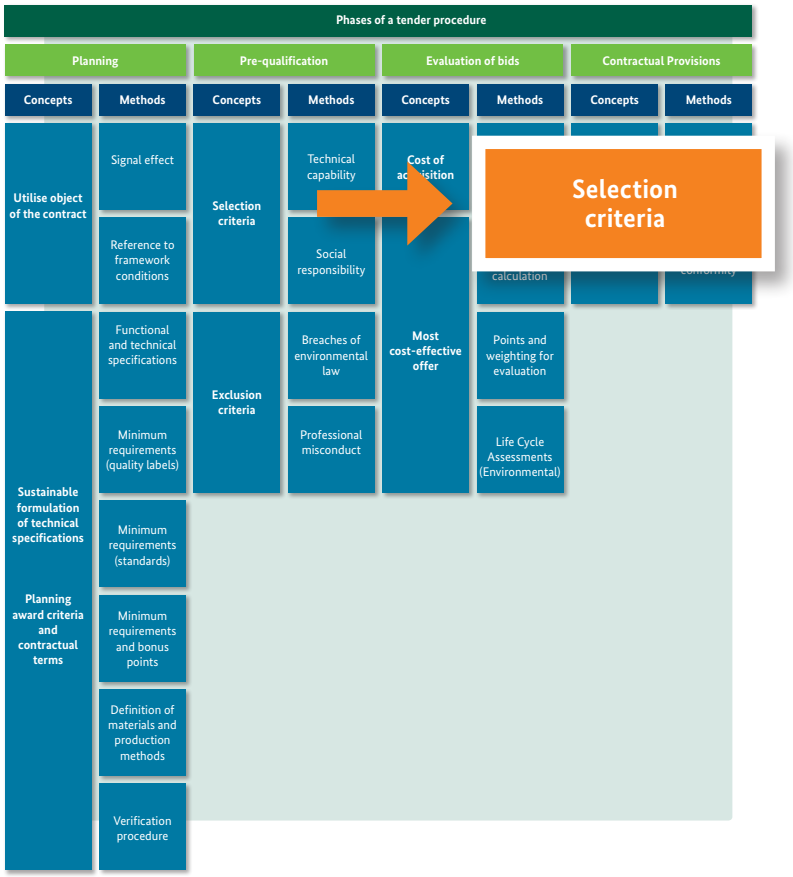
The suitability of subcontractors can also be defined using selection criteria as long as they implement significant parts of the tasks (key activities) and/or a bidder refers to the performance of a subcontractor as verification of suitability.

When assessing the capability of executing the contract, awarding authorities can consider specific experience and competence in relation to environmental aspects and socially responsible corporate management. They can also exclude companies that have contravened environmental and social regulations in certain areas, and can scrutinise their capability of implementing environmental management measures as part of the execution of the contract.

Selection criteria

Public procurement means that the requirement for comprehensive verification of the technical competence of a company to execute a contract can be verified. In addition to the general verification of technical suitability, technical competence in environmental terms can be checked as shown in the following examples:

- technical competence to minimise the accumulation of waste, avoidance of
- the flow/leakage of contaminants
- reduction of fuel consumption or
- minimisation of damage to natural habitats



- The bidder must provide specific verification that he can satisfy the following requirements, for example (pass/fail criteria):
- Personnel or access to personnel with the required educational and professional qualifications and experience to carry out the environmental tasks of the contract
- Access to the required technical equipment for environmental protection
- Provision of the required means to ensure the quality of the environmental aspects of the contract (e.g. access to the relevant technical bodies and measures)

Technical capability

Technical capability with reference to the sustainable execution of the contract can be demonstrated by records of orders already carried out (references). It is important to state exactly which types of information are considered relevant, and what written verification should be submitted. In order to prove competence to strengthen the capacities of the project sponsor, a description of the relevant experts in the bidding company can be provided, including a short description of their technical expertise.

Environmental management systems are systems-specific to an organisation and are intended to improve the overall environmental performance of the organisation, in this case of the bidder. They provide organisations with an exact picture of their environmental impact. They help organisations to identify a significant impact and to handle it properly and hence continually improve their environmental performance. Important areas where improvements can be made are the utilisation of natural resources such as water and energy, training personnel, and the application of environmentally-friendly production methods. They can be given as verification of technical capability.

Example: Selection criteria for a construction tender

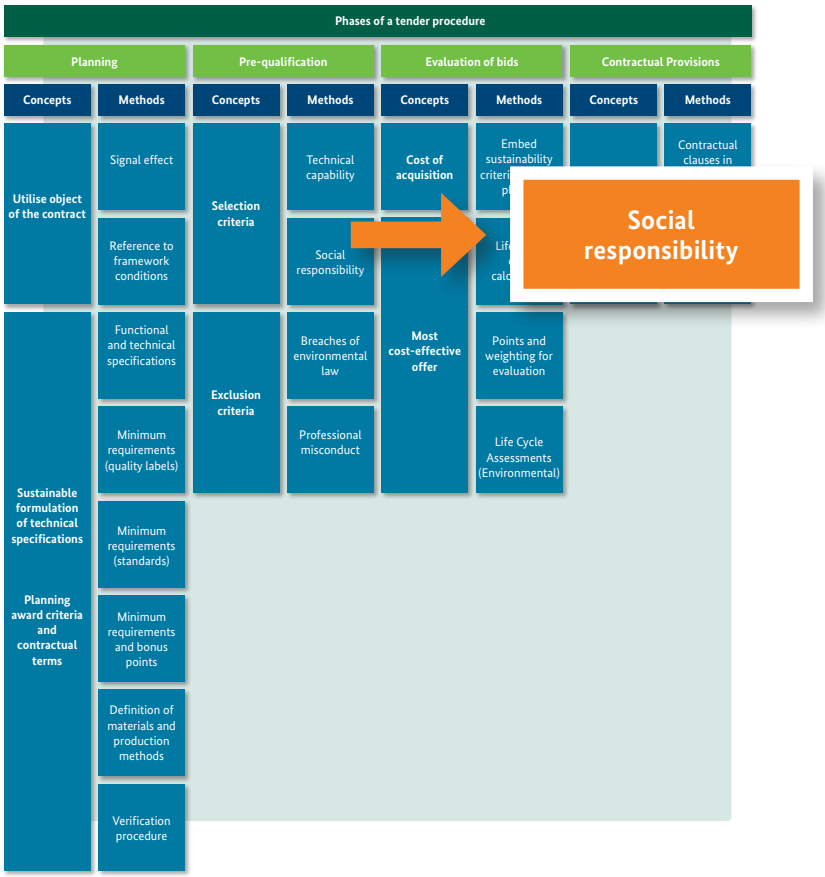
Category: Technical capability of the bidder

The bidder must provide verification of sufficient experience in sustainable facility planning.

Verification: The bidder must submit a comprehensive dossier illustrating his experience with traceable references in the following fields (list of examples):

- Use of building materials produced in a socially responsible manner (e.g. natural stone)
- Environmental requirements: e.g. energy-efficient construction in accordance with national legislation on the total energy efficiency of buildings; bioclimatic architecture in order to achieve energy efficiency (e.g. lighting using daylighting systems, bionics, etc.); reduction of CO_2 emissions both in the construction as well as in the utilisation and disposal phases.

A qualitative evaluation is then carried out in methodological terms.



Social responsibility

If social criteria are part of the tender specifications, it is also a question of the technical capability to satisfy these social requirements. The buyer could, for example, require appropriate qualifications to ensure the necessary health & safety measures are implemented. In accordance with the principle of proportionality, the sustainability criteria must be connected to the object of the contract and should be appropriate. In the bidder pre-selection phase certifications or equivalent verification based on certain environmental or social standards or a certain management system can be required (e.g. OHSAS 18001, EMAS, ISO 14001, BSCI/SA8000 – see Annex; in appropriate cases (high relevance for energy consumption) also ISO 50001 on energy management systems. This type of certification can therefore be important verification of the necessary technical and professional qualification of a market player. For example, if a buyer wishes to see university degrees and professional qualifications in the field of health & safety at work, certificates that presuppose these elements can be considered as verification. Other types of verification may have to be assessed on an individual basis.

Social responsibility along the production and supply chain

The production and supply chains[9] cover numerous phases that range from the extraction or recycling of raw materials such as copper through the production of individual components to final assembly and delivery. The most relevant phases must be identified when considering social requirements related to working conditions. These phases may differ from sector to sector. For natural stone, for example, the phases of excavation in the quarry and finishing are especially relevant.

9 The International Finance Corporation" of the World Bank Group publishes 'performance standards' on the subject of supply chains. The current version can be found here: www.ifc.org/performancestandards (13.03.2013).

In the pre-qualification phase investigation of social criteria at bidders or suppliers and subsequently manufacturers and their subcontractors can provide important signals that can be picked up at a later stage (e.g. checking details on ILO core labour standards or statutory minimum wages when implementing the contract). Furthermore, this procedure gives buyers a good overview of the opportunities to target socially relevant aspects in the subsequent procurement procedure. Suitable questions would be:

- Are you a member of a multi-stakeholder initiative (e.g. Ethical Trading Initiative) or in an independent monitoring organisation (e.g. Social Accountability International corporate programme)?
  Verification: Verification of membership
- Is an independent, up-to-date (not older than two years) audit of working conditions in the supply chain available?
  Verification: Audit report
- Does the manufacturer carry out an internal audit of working conditions in the supply chain?
  Verification: Audit report
- Is a code of conduct including ILO core working standards available in the supply chain?
  Verification: Code of conduct
- Is the supply chain shown as transparent by the manufacturer?
  Verification: Description of the supply chain

These documents form the basis for contractual provisions on the continuous improvement of working conditions within the framework of the contract and hence are directly relevant for implementation of the contract (see Chapter 3.6).

Exclusion criteria

There are two types of exclusion criteria: those that necessarily lead to exclusion and those where buyers can decide whether to exclude bidders. The first category includes serious breaches of law such as corruption, fraud, money laundering or if the bidder is on a sanctions list of the UN or EU. The second category can cover numerous other situations such as bankruptcy, professional misconduct and non-payment of taxes or social insurance contributions.

Example: Pre-qualification for large construction projects

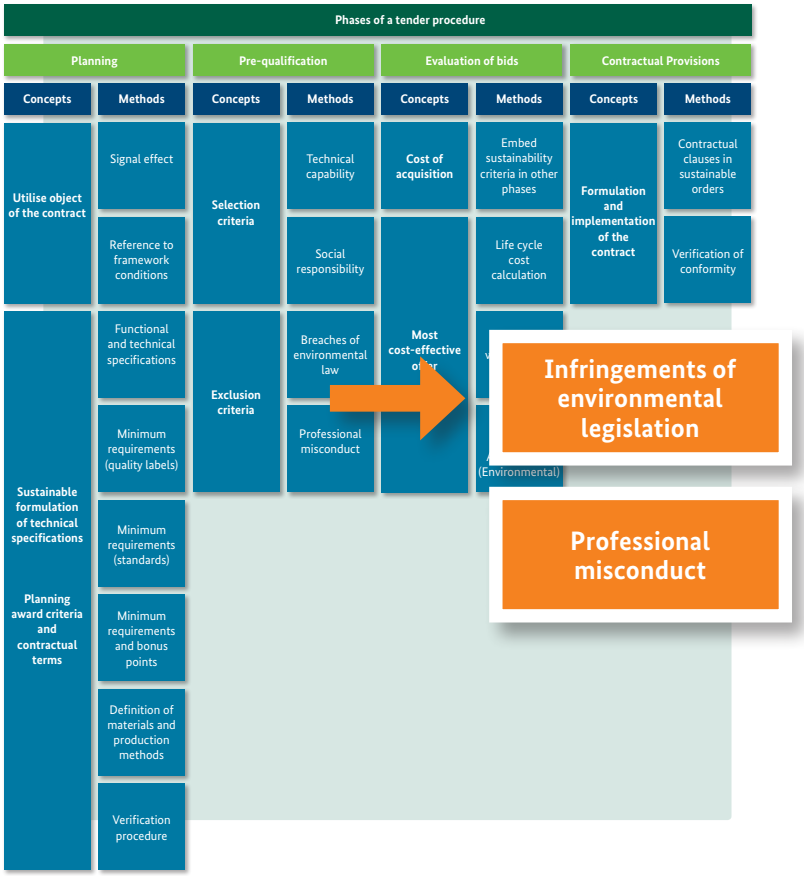
On the basis of the "Harmonized Version of Prequalifications for Works" of the multilateral KfW Development Banks, KfW has drawn up a template for pre-qualification of companies in large international construction projects (construction contracts generally > EUR 50 million). Since the implementation of such projects in the context of development cooperation requires a high level of environmental and social expertise of companies, the criteria of the "Harmonized Version" have been supplemented with these aspects.

As a minimum requirement in the field of sustainable business activities, internationally-recognised certifications for environmental management (ISO 14001 or comparable) and for health & safety at work (OHSAS 8001 or comparable) are stipulated. Implementation and integration of these aspects in the bidder's business processes are investigated and evaluated separately at a qualitative evaluation level. The aim of evaluation is to allow the bidder to demonstrate, via a catalogue of questions, that certifications have been adopted comprehensively (substantially) in his business processes and procedures. This means that the bidder adheres to these certifications. A further questionnaire addresses social aspects and the Code of Conduct of the bidder via the ILO core labour standards (See Chapter 8 Glossary). The core labour standards as minimum requirements must be complied with absolutely; regarding the Code of Conduct it must be apparent that the bidder has such a Code and completely adheres to it.

Infringements of environmental legislation and unprofessional behaviour

Non-compliance with environmental regulations (documented through a judgement by the final court of appeal according to national or international law) may possibly be considered to be professional misconduct according to national law, which itself means the pertinent company can be excluded. The options to do so are determined by national legislation on public procurement. Generally speaking public authorities must take into consideration the principle of proportionality and consider all relevant circumstances and measures (e.g. self-cleaning) which the economic player has taken in order to rectify a negative situation which restricts his entitlement to participate in the tender.

Exclusion criteria can normally only be applied to applicants, bidders or joint bidders, the potential contractual partners. However, subcontractors are not affected. These facts are important from the social responsibility viewpoint when formulating pre-qualification aspects. In order to ensure that subcontractors also comply with the environmental and socially relevant obligations guaranteed by the main contractor, the contractual provisions can require that the latter is obliged to pass on these guarantees to subcontractors. In order to ensure transparent procedures this should be stated at the pre-qualification stage.



Example: Exclusion criteria for a construction tender

Category: Professional misconduct and infringement of social legislation

Bidders will be excluded from participation in a tender procedure if they:

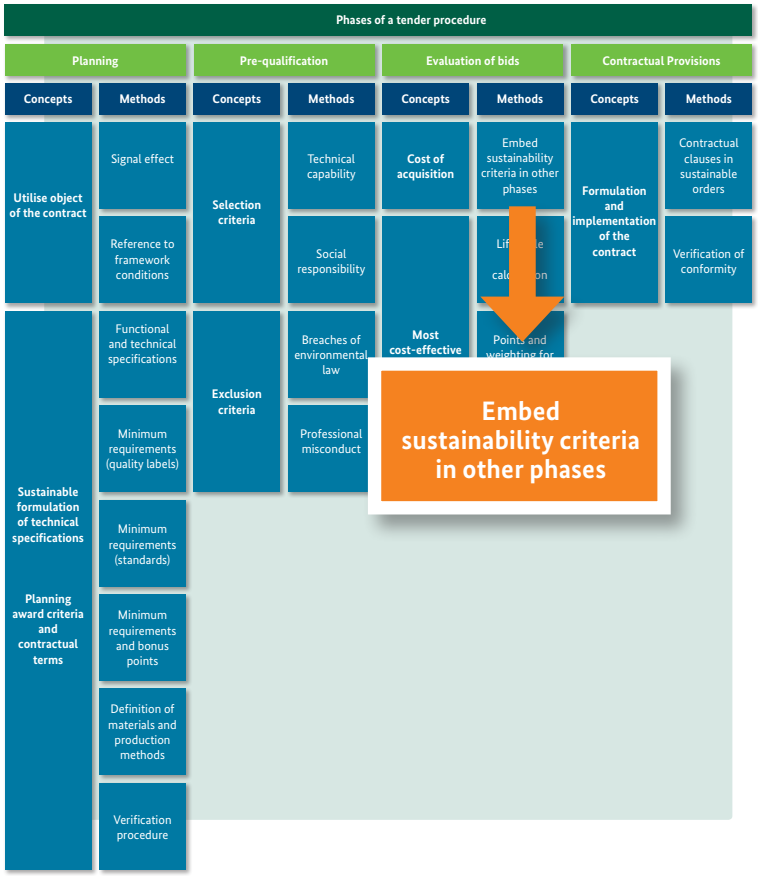
- are guilty of serious professional misconduct which can be proven by the contracting authority by any means and, for example, if no automatic-cleaning is carried out by the bidder following previous procedural infringements; and
- do not comply with their obligations to pay social insurance contributions (in accordance with the statutory regulations in the country where the company is registered or in the country of the contracting authority.

3.5. Tender evaluation (tender phase)

During the tender evaluation phase the quality of tenders is checked and cost comparisons made in order to come to a decision on awarding the contract. This is done on the basis of previously defined and published award criteria. You can refer to the importance of considerations of environmental protection and social aspects.

Essentially there are two options:

- Selection of the tender with the lowest acquisition costs (see Chapter 4) or
- Selection of the Most Economically Advantageous Tender (MEAT - see Chapter 4). The MEAT approach includes both operating and disposal costs as well as evaluation of acquisition costs and also other award criteria related to sustainability (e.g. training programmes, high energy efficiency in comparison with the minimum requirements). However, 'economic' is not necessarily synonymous with "cost-effective"; this decision is based on the consideration of all economic, technical and efficiency aspects.



Lowest acquisition costs

Frequently simple or small projects are planned in detail by the contracting entity or the consultant and the technical design refined accordingly. The bidder is obliged to offer the specified devices or facilities in accordance with the specifications. In this technical procurement procedure the bidder has little scope when formulating his technical bid, in contrast to a functional procurement procedure (see also Chapter 3.3.2). Therefore, the award criterion in technical procurement procedures, are generally only based on the bid price, i.e. the cost of acquisition. In order to include sustainability criteria in such cases, the design and related technical specifications must include them as well (see Chapter 3.3.2). This can be the use of LED bulbs instead of incandescent light bulbs, or an electricity supply generated by solar installations instead of traditional diesel generators.

In appropriate cases it can make sense to formulate a technical procurement procedure but to opt for functional formulation of certain components, e.g. services to be provided to improve the capacities of the project sponsor. The award criteria to be published in advance define the weighted evaluation for the technical part evaluated solely on price and the functional part of the procurement procedure evaluated on points and price.

Most economically advantageous tender

When awarding the contract to the most economically advantageous tender (MEAT), not only the pure acquisition costs are considered: other types of costs are included in the evaluation. The life cycle cost concept comprises of the following cost types:

- acquisition costs (e.g. purchase price for device X, construction costs for building Y, possibly including the costs for building up capacities for operation and maintenance at the project sponsor)
- operating costs (e.g. energy consumption throughout the life cycle of device X)
- maintenance costs (e.g. maintenance interval and replacement interval for component X, recycling and

disposal costs (e.g. recycling of component X, special waste disposal of component Z)
- other costs/revenue (e.g. taxes and charges when operating device X, subsidies for technology Y)

Life cycle costing

Life cycle costing (LCC) combines all relevant costs which a product generates throughout its whole product life cycle. This allows a direct comparison of differing technical alternatives (e.g. conventional versus ecological products, ecological variant 1 versus ecological variant 2 or decentralised versus central, e.g. wastewater purification system). This means it can be determined which alternative scores better from an economic perspective throughout the life cycle of the product.

LCC is generally defined as the calculation and evaluation of all costs connected with a specific product or service and borne directly by one or more actors in the life cycle of the product/service (Hunkeler, D. et al. 2008). The buyer should appraise to what extent a significant part of the life cycle costs of the procurement procedures occur in the utilisation and disposal phase. The application of LCC in procurement procedures is especially appropriate in such cases.

In the construction sector the ratio of acquisition costs to user costs with an assumed life cycle of a building of 50 years can be 20% to 80%. This means that a multiple of costs occurs during utilisation through energy and water consumption, as well as maintenance and repairs. Disposal costs are often not included in these calculations.

This shows that when evaluating LCC the scope and forecast for costs over a certain time (life cycle) are decisive parameters. Public budgets are committed to the economical use of taxpayers' money (see Chapter 3.2). However, annual budgets often do not allow for the necessary flexibility to justify the generally higher acquisition costs of sustainably cost-effective solutions. This is compounded by the fact that life cycle costs are borne by different actors. For example, the awarding authority of a new school building is certainly interested in keeping building costs low; however the later operator has a contrary interest, namely, to keep user costs low. This dilemma must be addressed particularly in Financial Cooperation projects by using LCC in procurement procedure, and to set the course for long-term sustainability at an early stage. For life cycle costing in public procurement this means that this must always be carried out under the eye of the responsible buyer: *All relevant costs connected with the product and which will actually be borne by the authority/ entity responsible and possibly other subsequent users must be included in the analysis.*

In Financial Cooperation projects this way of viewing cost effectiveness is a standard instrument that is applied in the preparation phase of the project, generally as part of a feasibility study. However, the results are not yet specific to products and services; from the many design and technical options the focus is placed on only a few economically sensible options. Since normally different technical solutions or systems (or parts thereof) are compared when using LCC in contract placement, this presupposes a functional procurement procedure (e.g. sewage treatment plant). In a purely technical or descriptive procurement procedure the technical solution is defined in the concept (e.g. a wastewater network).

In the discussion regarding the internalisation of external costs (e.g. subsequent health costs caused by air pollution, partly from combustion processes in the mobility sector), a further aspect of LCC becomes important: The monetary evaluation of emissions (CO_2eq, SO_2, NO_x, particles, etc.) as part of the award evaluation. This can be applied especially in the infrastructure and transport sector.

Core principles for LCC

LCC should be applied in the following conditions:

- **Functional equivalence:** The functional unit (quantifiable use) of the alternatives under consideration must be equal and hence provide the same technical benefit.
  Example: Generation of local heating X MWh for X households (= functional unit). Alternative A: Gas-fired cogeneration plant, alternative B: decentralised geothermal installation.
- **Definition of the physical life cycle of the product:** LCC must be defined based on an analysis of directly relevant costs. The cost definition considers:
  - acquisition costs (possibly incl. planning costs)
  - set-up and installation costs (incl. costs for building up capacities for operation and maintenance at the project sponsor, e.g. through training or initial operational support through long-term experts)

- user costs (incl. consumables, maintenance) and
- disposal costs (incl. buy-back values, special waste disposal).

This means that costs are relevant that differ for conventional and more sustainable alternatives. Furthermore, only costs should be considered that make up a significant part of the total costs of a product or a service (e.g. acquisition costs, energy costs, maintenance costs). Owing to the non-discrimination precept the same cost elements must be assessed for all alternatives investigated in all cases. It should be noted that in partner countries for Financial Cooperation, disposal costs can only be defined with difficulty in many cases due to non-existent or insufficient recycling processes.

- **Discounting:** Different costs occur at different times within the life cycle of a product. This must be allowed for in calculations using discounting. Discounting is applied when calculating life cycle costs using the net present value or annuity method. Both methods are dynamic procedures of calculating investment costs. Comprehensive aids and calculation tools (see Chapter 7 Annex) are already available for determining the net present value and annuities. In this way the time and effort needed for a procurement procedure can be kept as low as possible. In comparison to the traditional calculation of cost effectiveness, the additional time and effort is normally reduced to determining applicable consumption data for the utilisation and disposal phase.

- **Price development throughout the life cycle:** An especially important component when calculating life cycle costs are costs caused by the consumption of fuels and spare parts (electricity, oil, paper, toner, etc.) during the period of use. For comprehensive LCC both current prices must be determined and their future trend estimated. Indications can be derived from national statistics on inflation rates for certain products such as fuel, as well as past and forecast inflation rates.

Implementation in a procurement procedure

Life cycle costing can be carried out before, during and after a procurement procedure. LCC is often carried out prior to feasibility studies in order to identify in advance the technical solutions that are more or less suitable (e.g. heat pump v. solar thermal installation v. electric heating).

Infobox: LCC tools for public procurement

- www.lcc-tool.eu - The LCC tool from ICLEI and the Öko-Institut can be used to demonstrate both the life cycle costs for numerous product groups and simultaneously the emissions caused (CO_2, CO_2eq, NO_x, SO_2, etc.). As well as emissions from the utilisation phase, those which arise as a result of production, transport or disposal ("grey emissions") can also be considered.
- www.zvei.org/Themen/Energieeffizienz/Documents/Lifecycle%20Cost%20
- Evaluation%20%28LCE%29/ZVEI-Berechnungstool-LCE.xls - The LCC tool of the Zentralverband Elektrotechnik- und Elektronikindustrie e.V. (ZVEI - German Electrical and Electronic Manufacturers' Association) is oriented in its structure to the three phases; installation, operation and deinstallation. LCC and energy efficiency are represented using economic cost categories. The tool is primarily suited to planning large projects such as sewage treatment plants.
- www.buy-smart.info - The calculation aids of the Berliner Energieagentur (Berlin Energy Agency) for the product groups lighting, vehicles, domestic appliances, IT and green electricity can be used without comprehensive prior knowledge. This ensures a quick start to LCC calculations.

If several technical solutions are viable as the project is fleshed out and the solutions are put out for tender via functional specifications, it is sensible to award the contract based on calculation of the most economically advantageous tender throughout the defined life cycle. Special attention should be paid to accurate data collection before the procurement procedure and definition of the data to be supplied by the bidders, and to embed this in the Technical Specifications (see Chapter 3.3.2). It is practical to include references to recognised, relevant standards, criteria and quality labels as well as the corresponding verification in LCC calculation requirements. The decisive factor for the application and ultimately the acceptance of LCC as a basis for awarding contracts is that the values supplied by bidders and used as a basis in the evaluation, are reflected in detail in the contractual provisions.

Example: Importance of good initial data for LCC

The street lighting for an inner city road of 1 km length is to be purchased (LED technology). The decisive cost factor is the type of lighting and the assumed life cycle calculated in hours at system conditions (ambient temperature: 15 °C, fluctuation: +15 °C, -35 °C).

When calculating LCC the bidders must submit data on the average life cycle of the tendered lighting. In view of the non-discrimination of bidders this calculation must be based on an ISO standard. Bidder A gives a life cycle per light of 30,000 hours and bidder B 50,000 hours. Both bidders prove this using a technical dossier from the manufacturer, thus satisfying the requirements for verification.

The offers can be compared within LCC. The LCC from tender B is characterised by fewer replacement cycles; this has a positive effect on the calculation of both the acquisition and operating costs (in this case: maintenance).

Furthermore, the information should be verified during contract management (see Chapter 3.6), e.g. through regular test series and evaluation of installed monitoring systems (e.g. for energy consumption) and enforced through agreed contractual penalties if necessary. Alternative forms of verification for the life cycle are guarantees of performance and warranties from the manufacturer/bidder.

In order to ensure a full calculation of all costs, the contract awarding authority must inform bidders of the underlying assumptions and typically provide the following data:

- **Planning horizon:** The time frame for which the performance is designed. Infrastructure measures such as water purification plants, street lighting and buildings have significantly longer utilisation periods than, e.g. ICT solutions. The choice of a suitable planning horizon has a decisive impact on the replacement costs and correlates to the expected life cycle.
- **Life cycle:** The contracting authority must provide information on the length of use, on the basis of which the life cycle is calculated, together with the information from the bidders.
- **Discount rate (nominal and real):** Since the costs for acquisition, replacement, operation, maintenance and disposal occur at different times in the planning horizon, the monetary value at the corresponding time must be included in the calculations in order to arrive at a new, realistic result. The data can be requested from statistical offices and central banks. Since this is a forecast for the future, average values for at least the last five years must be used.
- **Emission factors:** If indirect costs (see below) of emissions are evaluated simultaneously, the applicable emission factors of the energy sources (oil, gas, coal, electricity, petrol, etc.) must be given. These can be obtained from national databases or the International Energy Agency (IEA). In order to adapt emission factors to local conditions, asking the local energy service provider is a good idea.
- **Number of products:** If a pre-defined number of products (e.g. computer systems) are planned, the contracting authority will state this. However, in a functional procurement procedure (e.g. for printer, scan and fax services) a different number of products can come to the same functional result (multi-functional device versus three separate components).
- **Operating costs:** The purchase prices for the various energy sources (e.g. EUR / kWh electricity) are determined by the buyer. Additionally, the assumed price inflation rate for various energy sources based on statistical data is given.
- **Maintenance costs:** The buyer states maintenance intervals and maintenance coefficients.
- **Other costs / revenue:** The buyer may stipulate categories for the resale value, taxes, charges and subsidies.

The bidder must normally provide the following data and verify these with suitable verification:

- **Life cycle:** The guaranteed and accepted availability in years of the product / performance. Together with utilisation intensity and with due regard for the planning horizon this reveals the replacement costs.
- **Purchase price, installation costs, training costs:** These costs must be specified by the bidder based on the specifications.
- **Operating costs:** With the user mode provided by the awarding authority (e.g. stand-by mode, full load, 75% lighting) and using suitable verification (quality labels, technical dossier, etc.) the bidder will give the pertinent consumption.
- **Maintenance costs:** The bidder gives the costs for the maintenance services provided.
- **Disposal and site clearance costs:** The bidder must state the estimated disposal and site clearance costs based on the materials used. This must be described in depth and explained. If cost calculations should not be possible due to insufficiently developed waste and recycling structures and markets, we recommend taking the disposal and site clearance costs out of the LCC method and including instead a qualitative evaluation component at the contract award stage (MEAT) (see the following section).
- **Other costs / revenue:** The bidder must fill out data on the resale value, taxes, charges and subsidies.

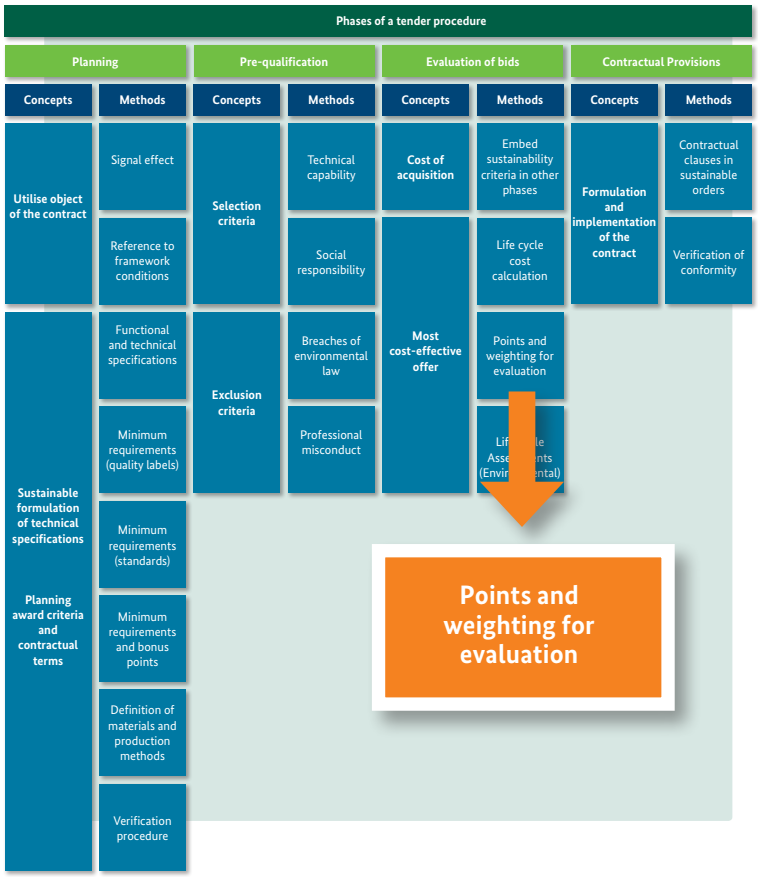
The evaluation of the life cycle is therefore a decision-making tool, in order to make an economic decision between alternative designs, technologies and components. Additionally, it is helpful to plan operative costs in advance.

MEAT and sustainability aspects

The LCC concept can be part of a MEAT approach. Additionally, other non-monetary aspects can be considered in a MEAT concept as part of tender evaluation. The following table gives a non-exhaustive overview of sustainability criteria.

Table 3: Examples of contract award criteria

Award criterion (MEAT)	Example
Sustainability aspect Training and customer service	Max. 10 points (corresponds to 10% of evaluation) are awarded on the basis of the training and customer service offered and evaluated qualitatively (see also Chapter 4.4).
Environmental aspect: improved energy consumption	Max. 10 points (corresponds to 10% of evaluation) are awarded in a graded evaluation for lower energy consumption of plant X in comparison with the minimum requirements.
Environmental aspect: Lower CO_2 emissions on delivery	Max. 10 points (corresponds to 10% of evaluation) are awarded in a graded evaluation for the lowest CO_2 emissions resulting from the delivery of the products. The bidder must give details of the distance and number of deliveries. The awarding authority calculates the CO_2 emissions on the basis of standard emission factors and models for different transport modes (Note: this must be announced in advance).
Social responsibility Percentage for fair trade products	Max. 15 points (corresponds to 15% of evaluation) are awarded in a graded evaluation for a higher percentage of fair trade products based on the definition and criteria of Fairtrade International (FLO), or comparable and in comparison with the minimum requirements (here: 20% according to weight must be from fair trade).
Environmental aspect: Percentage of recycled materials (new construction)	Additional points (max. 5, corresponds to 5% of evaluation) for the percentage of recycled building materials (e.g. concrete, wood, insulation, plastics) are awarded based on a comparative weighting of tenders.
Social responsibility: Sheltered workshops	Additional points (max. 10, corresponding to 10% of the evaluation) are awarded for the percentage of employees from the social economy (e.g. sheltered workshops), based on a comparative weighting of tenders.
Environmental aspect: Disposal and site clearance	Max. 10 points (corresponds to 10% of evaluation) are awarded in a graded, qualitative evaluation of the disposal and site clearance required and the foreseeable environmental impact. 100% of the maximum points available are awarded if there are an insignificant number of hazardous waste products (Comment: must be defined by the awarding authority). 50% of the maximum points available are awarded if the number of hazardous waste products does not exceed X% (according to weight) of the cubic capacity (Comment: must be defined by the awarding authority). 0% of the maximum points available are awarded if the number of hazardous waste products occurs in significant numbers.



Example: MEAT tender evaluation ICT procurement procedures (relative weighting)

Award criteria: 100 points maximum (= 100%). Acquisition price (70%), environmental aspects(10%: no mercury, 10%: improved energy efficiency, better than ENERGY STAR 5.0), 10%: Maintenance & service

Criterion	Tender A	Tender B
Price	USD 1,000	USD 1,200
Environmental aspect no mercury	0 out of 10 points	10 out of 10 points
Environmental aspect improved energy efficienc	0 out of 10 points	10 out of 10 points
Maintenance & service	5 out of 10 points	10 out of 10 points

Tender A is given 70 points for price, 0 points for environmental aspects and 5 points for maintenance & service - total: 75 points from a maximum of 100 points. Tender B is given: 58.3 points for price, 20 points for environmental aspects and 10 points for maintenance & service - total: 88.3 points from a maximum of 100 points. Tender B is awarded the contract.

Points and weighting for evaluation

Since the best tender is generally determined on the basis of different sub-criteria, various techniques can be applied for comparison and weighting of the different sub-criteria.

The most common methods are:

- **Matrix comparison**: A form of qualitative assessment using previously defined criteria. This is used where user tests (e.g. ergonomics of devices) are performed.
- **Relative weighting:** The individual criteria are weighted based on their relevance to the object of the contract. Weighting uses a predefined formula, e.g. (points of the corresponding tender or price of the economically most advantageous tender / (possible highest score for this category or price of tender) * 100 * weighting factor (%); this principle is used frequently in Financial Cooperation.
- **Bonus systems**: The technical specifications have been divided here into A (mandatory) and B (optional) criteria. They result in a maximum score based on predefined evaluations. This means that bidders with more eco-friendly products can offset higher acquisition costs with bonus points. This is used frequently in ICT procurement procedures. This is illustrated by the above example.

There is no upper limit for weighting environmental criteria. In order to achieve appropriate weighting, it is important to consider environmental aims in comparison with other considerations, such as costs and general quality of the contract.

Award criteria and/or minimum requirements

It is possible to stipulate a combination of specifications and award criteria for one and the same aspect (e.g. energy efficiency) in the evaluation phase. Minimum requirements (e.g. compliance with the requirements of a quality label) ensure that certain sustainability aspects considered to be important are always satisfied. Additionally, the award criteria can stipulate that installations or products where the characteristics exceed the minimum requirements are given an appropriate bonus on evaluation. On the one hand this satisfies the minimum requirements, and on the other, guides competition to sustainable aspects. This gives a bidder who offers especially eco-friendly installations/ products, for example, a good opportunity to succeed in competition. This is illustrated in the following table.

Table 4: Utilisation of technical specifications, contract award criteria (and both simultaneously)

Approach			Example
Technical specifications with sustainability criteria			The product must comply with the requirements for ENERGY STAR.
Award criteria contain sustainability aspects			Tenders with a higher percentage of recycled building materials (in %) have a better chance of winning the contract.
Technical specifications with sustainability criteria	+	Award criteria with sustainability aspects	The product must comply with the requirements for ENERGY STAR. Products with lower energy consumption have a better chance of winning the contract via the award criterion “highly energy efficient”.

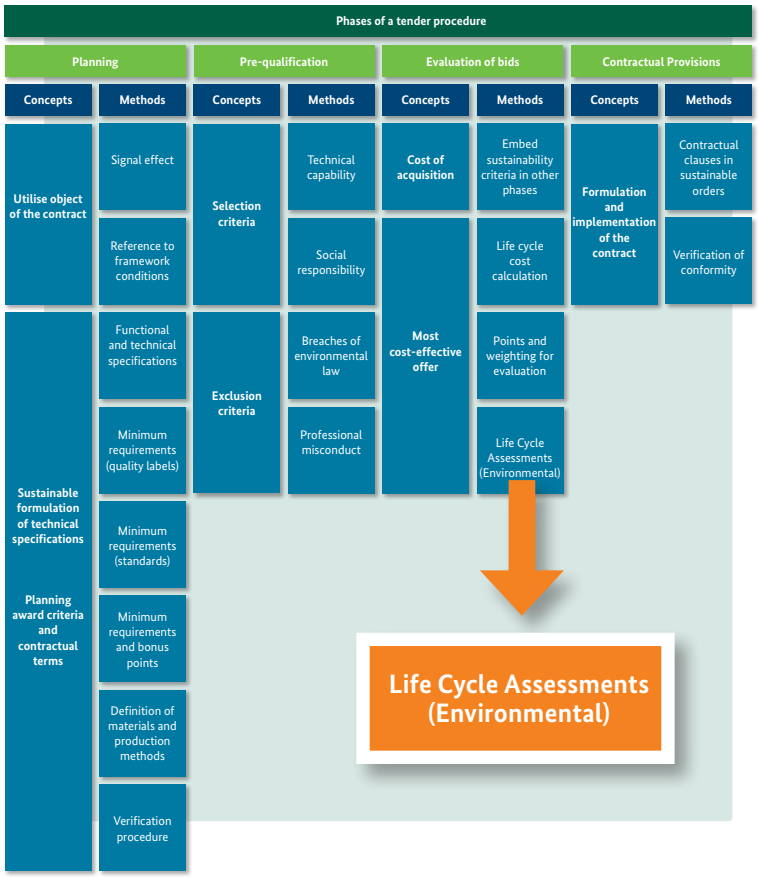
The classification of technical specifications and pre-qualification criteria is important. It is also important to preclude double evaluations (e.g. application of an environmental management system, requirements for energy efficiency in the pre-qualification and award phase) in the various phases of the award procedure.

In order to ensure correct legal application reference must be made to the core legal principles of public procurement (see Chapter 3.2). Requirements for the formulation and application of award criteria include transparency (publication of criteria and weighting in advance) and fairness (award criteria may not be discriminatory or encourage arbitrary decisions. A further prerequisite is that the criteria must be connected to the object of the contract, i.e. they may not refer to things outside the scope of application. Direct or indirect discrimination based on the location of the market player is not permitted. Furthermore, thought should be given to how adherence to criteria during execution of the contract (see Chapter 3.6) can be monitored or enforced.

With due consideration of these conditions award criteria can be elaborated that allow a decision to be made between tenders with different sociological value, i.e. not solely based on economic and financial considerations.

Fig. 5: Life Cycle Assessments (Environmental)

Image: SYKE/ A. Nissinen



Life Cycle Assessments (Environmental)

The life cycle assessment of a product or service allows the environmental impact from production to disposal to be analysed (see below Fig. 5). Hence it covers extraction and processing of raw materials, manufacture and other production phases, through to utilisation and disposal of the product. Carrying out a life cycle assessment for a single contract means significantly more work which is generally not effective. For the criteria of standard Type I ecolabels (see Chapter 3.3.2) the relevant products and service groups are generally submitted to a life cycle assessment (e.g. comparison of recycled paper to virgin fibre paper), thus creating a solid basis for sustainable procurement.

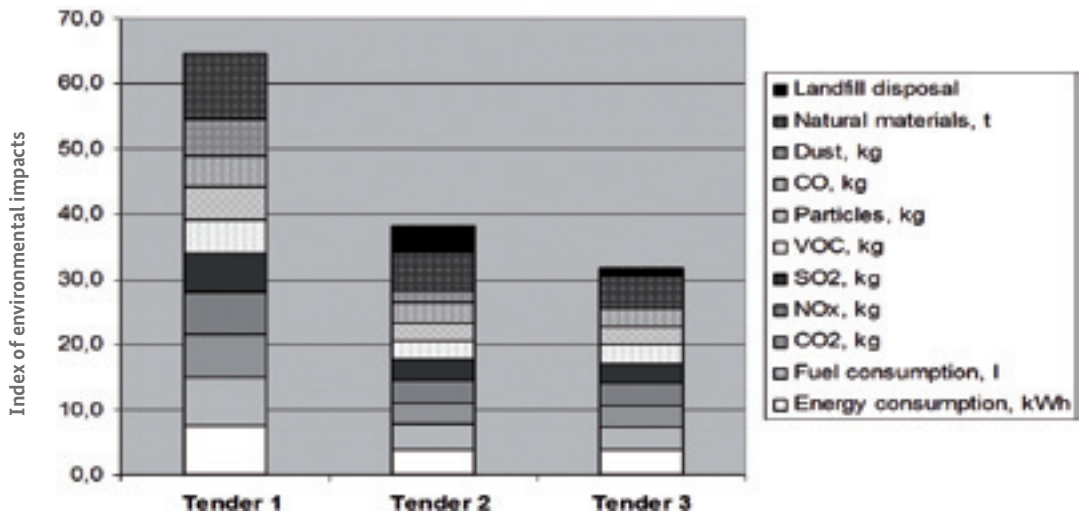
The inclusion of environmental performance analyses is sensible in large Financial Cooperation project since the extra effort during the tendering procedure (time, money) is in a reasonable ratio to the contract volume. Since the concept will become more important in the future, it is described here for the sake of completeness. Detailed information on the implementation of a life cycle assessment can be found here:

- Joint Research Centre (JRC) of the European Commission (incl. ILCD manual on life cycle assessments): http://lct.jrc. ec.europa.eu/assessment (13.03.2013)
- Tools: http://lca.jrc.ec.europa.eu/lcainfohub/toolList.vm, z. B. GaBi, KCL-EKO, openLCA, CCaLC, SimaPro (13.03.2013)
- Databases with life cycle assessment data for various products / substances: http://lca.jrc.ec.europa.eu/lcainfohub/databaseList.vm (14.03.2013)

Fig. 6: Example of an environmental performance analysis

Example: Reworking of motorway 9, Finland

In Finland, when extending and reworking motorway 9 over a length of 1.2 km, the life cycle assessment of the construction work, incl. materials used, was included in the award phase with a weighting of 10%. The graphic below shows the differences in the environmental impact of the three tenders received.



Source: Parikka-Alhola, K., Nissinen A. 2011, submitted paper (Katriina.Alhola@ymparisto.fi)

3.6. Contractual provisions

Contractual clauses in sustainable orders

In order to secure environmentally relevant and social aspects confirmed by the bidder and the quality of services offered by the bidder to strengthen the capacities of the project sponsor for management, operation and maintenance of the installations during execution of the contract, it is important to include this in the contractual provisions. Adherence to the contractual provisions must be monitored during the execution of the contract. Contractual provisions can contain specific obligations that are entered into within the procurement process (e.g. enforcement of adherence to the environmental performance levels stated in the tender, transparency in relation to the ILO core labour standards along the supply chain). Contractual provisions must be stated in advance and clearly in the procurement procedure in order to ensure that companies are aware of all contractual provisions, and are in a position to include them in their tender. Furthermore they should demonstrate a connection to the execution of the contract, i.e. they must refer to tasks that are necessary for the manufacture and provision of the products, services or construction work (see Chapter 3.3.1).

The conditions to be agreed contractually can be distinguished roughly as follows:

- guaranteed performance parameters
- environmental aspects of implementation
- social aspects of implementation.

Guaranteed performance parameters are values guaranteed, for example, for LCC. They normally lie between acceptable agreed deviations (e.g. total energy

consumption of a building X kWh/ m2/ a +/- 5 %). If deviations are identified when checking the execution of the contract, instructions for remedy and resolution are issued within specific deadlines and possibly with contractual penalties. In individual cases the contract can also be voided and compensation claimed under civil law. If the contract (e.g. with integrated maintenance and quality assurance) or the functional guarantee have expired, the guaranteed performance parameters can no longer be demanded. Therefore, when formulating a contract, particular attention should be paid to long-term guarantees on the provision of performance and function (see Chapter 4 for sector-specific approaches).

Environmental aspects of implementation especially for supply contracts mean:

- **For suppliers: product takeback (and recycling or re-utilisation) of product packaging** as a condition (this has the double advantage that packaging processes are centralised before re-use or recycling and suppliers are given an incentive to avoid unnecessary packaging)
- **Details on eco-friendly packaging** (PVC-free, recyclable materials such as cardboard, paper, protective foil)

For construction and service contracts these can be supplemented with the following aspects:

- **Minimisation of waste generated during the execution of the contract,** e.g. through the inclusion of specific targets or by defining maximum amounts and corresponding penalty or bonus clauses
- **Utilisation of re-usable containers** or packaging for transport
- **Reduction of CO_2 emissions generated by transport** or other greenhouse gases and emissions (nitrogen oxide, sulphur dioxide, fine particles, etc.)

Social aspects of implementation

The agreement of the "Fédération Internationale des Ingénieurs - Conseils" (FIDIC MDB Edition) used by KfW Development Banks for multi-lateral projects contains contractual requirements regarding socially-responsible execution of performance. Chapter 6 of FIDIC MDB Edition addresses contractual provisions and (human) rights regarding employees and working conditions. The contractual provisions which are important for a sustainable approach are given below.

Table 5: FIDIC MDB Edition (with commentary)

FIDIC MDB Edition – clause	Description
6.2 Performance	The contractual partner should pay at least the statutory or otherwise defined national or regional minimum wages for the field of work. Comment: The ILO Agreement on minimum pay (No. 26/1928 and No. 131/1970) specifies requirements in that remuneration must cover basic needs (food, clothing and accommodation) of employees and their family members.
6.4 Workers' rights	The contractual partner should comply with current labour laws (especially with regard to employment, health, safety, welfare, immigration and emigration).
6.5 Working hours	Work may not be performed on locally regulated days of rest or outside regular working hours. Comment: Maximum working hours must be taken from the ILO Convention on the regulation of weekly working hours in industry (No. 001/1921). This is not included in the ILO core labour standards.
6.7 Health & safety at work	This gives detailed instructions on health & safety at work, first aid equipment, regular training of personnel as well as measures to prevent HIV.
6.20 Forced labour	The exclusion of forced labour is orientated to the formulation of the relevant ILO core labour standards (Convention 29: Forced labour and Convention 105: Abolition of forced labour).
6.21 Child labour	A reference to application of national legislation and based on the relevant ILO core labour standard (Convention 182: Prohibition and immediate measures to abolish the worst forms of child labour).
6.23 Trade unions	A requirement to allow the establishment of trade unions and organisations similar to trade unions on the basis of national laws and to aim for positive cooperation on the part of the contracting parties. Comment: The ILO core labour standard on freedom of association (Convention 87: Freedom of association and protection of the right to organise and Convention 98: Right to organise and collective bargaining) describes the requirements in detail. The contract could be extended effectively to include these aspects, especially if adherence to ILO core labour standards is required as part of the exclusion assessment (see Chapter 3.4).
6.24 Non-discrimination and equal opportunities	Based on the ILO core labour standards this refers to the principles of equal treatment for all employees of the contractual partner. A reference is made especially to the aspects of hiring, advertising, remuneration, working conditions, labour contracts, access to training, promotion, end of contract / dismissal, retirement and disciplinary measures.

Declarations of conformity

Contractual provisions related to sustainability are only effective if their compliance is duly monitored. This can be done in several ways:

- The contractor can be required to provide declarations of conformity
- The awarding authority can carry out on-site checks
- An independent entity can be authorised to monitor conformity.

The contract should also include appropriate penalties for infringements or bonuses for good performance. Buyers should assess realistically the opportunities for actively supervising and monitoring obligations. Effective monitoring of sustainability criteria is important here, e.g. checking ecolabels on delivery and adherence to reporting obligations with regard to compliance with ILO core labour standards along selected points of the supply chain (e.g. through on-site checks).

For contracts awarded on the basis of life cycle costing, it is especially important that compliance with the costs in the utilisation phase is documented. This is relevant for widely varying sectors of Financial Cooperation but is indispensable for monitoring the energy efficiency of renovated and refurbished buildings. This is illustrated by the example below.

Following a procurement procedure we recommend creating a database containing the results of procurement procedures. This means that costs can be observed over the years and possibly controlled. A database offers a decisive advantage for future calls to tender: reference data have already been collected. This also helps when formulating technical specifications or requirements for criteria with the aim of determining the economically most advantageous tender.

Example: Monitoring conformity with the stipulated reduction in CO_2 values

The Latvian Ministry of the Environment sponsors sustainable construction projects as part of the climate change financing instrument (CCFI) with around EUR 50 million annually. The funds are allocated in a selection procedure. Applicants can select criteria from a checklist in order to win extra points in the evaluation phase of the project application. Adherence to these criteria is binding as a precondition for financing.

All CCFI financed projects are monitored for five years after completion. If non-conformity with the reduced CO_2 emission values set in the project application and in the contract, is determined when monitoring the project in the first and second year, the successful applicant must present a plan to remedy the defects and finance execution of the plan independently. If the party continues to contravene instructions, the funds allocated to the project from the CCFI will be considered to have been granted wrongly and will be recovered.

Source: Buying Green! A handbook on green public procurement. 2nd edition. European Commission

4. Sector-specific sustainability criteria

This part of the Toolbox takes a further look at the concepts and methods from Chapter 3 and deals with specific criteria as examples for procurement procedures in certain sectors for selected supply and service contracts. This is supplemented by accompanying practical examples and comments on legal, technical and socio-economic feasibility. The examples given are not intended as an exhaustive list. In view of the rapid technological development in partial sectors, e.g. lighting, the criteria must be checked in advance to ensure they are up to date (date: July 2013).

The criteria catalogues describe the sustainability criteria, including the verification procedure and comments. These criteria are extended at the appropriate point with more advanced criteria (sustainability+) in order to achieve even greater benefits for sustainability. When formulating sustainability criteria for specific projects one should investigate which criteria in the relevant country/project can be applied[10]. The following criteria should be applied as a minimum:

- suitability
- availability of products with corresponding environmental product declarations
- possibility of checking manufacturers' declarations

4.1 Water infrastructure (wastewater, drinking water)

The infrastructure of the municipal water system satisfies people's basic needs and is therefore one of the core services for the public. The investments to establish and maintain this infrastructure are considerable and regularly present public authorities with great challenges.

Municipal water infrastructure projects (MWIP) which impact the water supply or wastewater offtake and disposal, or reconfigure it, are large-scale, complex and capital intensive. Financial Cooperation has been heavily involved in this sector for many years.

This chapter describes how the sustainability of MWIP projects can be increased as part of procurement. The aim is to increase the benefits for the community and to eliminate or minimise the negative effects of MWIP which occur in financial, social and ecological terms during construction or through operation.

Sustainability of MWIP is ensured first through procurement and second through operation. The cost-benefit ratio of an infrastructure is therefore determined largely by the capacity of the entity that manages and operates the installations.

If the project sponsor is not sufficiently prepared for this, this can call the sustainability of the investment into question. Installations may not supply the planned performance, repair costs can be higher than planned and re-investments (and hence the environmental impact) can be necessary earlier than calculated. Special attention should be paid from the beginning to the capacities of the project sponsor in the field of water infrastructure.

4.1.1. Planning

A few important environmental aspects must be considered at the planning stage when investing in water infrastructure. This applies both to planning water catchment and supply, as well as wastewater offtake and disposal.

- **Energy utilisation:** Energy consumption is one of the most important characteristics for evaluation of the sustainability of MWIP since almost all water infrastructure systems are largely determined by the energy consumption needed for their operation. The costs for energy consumption can account for up to 96% of total costs[11] calculated over the life cycle of an electric motor (e.g. for pumping).

10 Note: Some national contract award guidelines stipulate the addition "or equivalent" when referring to quality labels and standards. This means that tenders based on comparable regulations must be considered by the awarding authorities (equivalent quality labels, standards or equivalent solutions that are not certified according to a certain standard). As verification of equivalence, bidders must be able to provide verification in any form (e.g. as a technical dossier of the manufacturer or as a test report from a recognised entity).

11 Source: Bundesministerium für Wirtschaft und Technologie (Federal Ministry for Economic Affairs and Energy), 2008

Image: Grundfos MANAGEMENTAS

- **Water consumption:** Although water is used in many processes of the water infrastructure (cleaning, rinsing, diluting, etc.) the main focus here is on minimising water loss, above all in the water supply. Municipal water loss in the supply networks can, in extreme cases, account for up to 50% and hence has a significant impact on operating costs and energy consumption (and hence on the carbon footprint of the service).
- **Re-utilisation of wastewater and residues:** Sustainability can also be increased by reducing the need for raw materials. Treated wastewater can have a further use in MWIP projects, e.g. with re-use for cooling purposes, instead of feeding it into a river. Residues that occur in wastewater treatment, e.g. sewage sludge can also be re-used instead of being disposed of at waste sites. As this example of Lake Managua shows, these residues can be used in agriculture through the use of solar sewage sludge drying installations and significant energy savings made.
- **Emissions:** Significant emissions can occur, particularly in wastewater treatment, but these can be significantly minimised through careful planning. The volume of greenhouse gases in emissions, odours in the immediate vicinity and noise produced by the operation are important aspects.
- **Construction material and products used for the project:** The construction materials used to establish the MWIP can contain potentially hazardous substances such as heavy metals, fire protection agents and others, which can have a negative impact on the environment. Some of these substances are contained inside the material for some construction materials and are not released until after use, so at the disposal stage. This aspect is dealt with in more detail in the section Sustainable building (see Chapters 4.4 and 4.5).

Sustainable formulation of technical specifications

The sustainability criteria described below address the most important ecological aspects of MWIP. The criteria presented in this context are of great importance and are based on proven procedural standards. Core criteria are, for example, targets for wastewater emissions from sewage treatment plants fed into water, or quality standards for the supply of drinking water.

This set of criteria is supplemented by the "Sustainability+" boxes. This selection requires additional administrative commitment or higher costs from customers and contractors during operation, monitoring and verification of ecological performance. They include, e.g. the recovery of bio-based substances from treatment processes to support electricity generation for operating the plant.

The inclusion of sustainability criteria in the public procurement of products and services for water supply and distribution also depends on the type of procurement procedure. In the case of technical procurement procedures with unit price contracts (e.g. sewerage systems for wastewater) there is little scope for bidders to offer alternative, sustainable solutions, so that sustainability criteria are less relevant for the award of a contract. Sustainability aspects should be considered, particularly when designing and planning facilities. In addition, during the preselection of bidders sustainability aspects can be considered in relation to bidders and in planning terms by setting minimum standards in the form of quality labels and/or advanced standards for the largest volume products, since it is here that the individual components can be described in the individual items of the tender specifications in multi-supplier terms, as well as in detail.

In functional or systemic procurement procedures the minimum requirements are described via the function or performance of the facility. This allows the market to propose the best solution to satisfy the requirements, thus leaving scope for alternative solutions to be proposed. For example, a procurement procedure for the "provision of a reverse osmosis system for treating sea water to drinking water quality" can exclude many potential bidders; a technically less closed formulation such as "provision of a desalination plant for treating sea water to drinking water quality" may be better suited. In order to stimulate the innovative force of the market in relation to sustainability, the type of evaluation methodology and formulation of the award criteria are of great importance, in addition to a meaningful title (see Chapter 4.1.3).

The following overview shows a few possible sustainability criteria that can be required in technical specifications as facility parameters:

12 'X' must be defined by expert with regard to estimating needs and based on the required capacity of the facility and local conditions.
13 See notes on energy efficiency in water treatment and wastewater plants: www.epa.gov/region9/waterinfrastructure/technology.html (13.03.2013). See also: KfW guidelines on energy efficiency in sewage treatment plants in Turkey. Investigation to increase the energy efficiency in urban sewage plants in Turkey illustrated by the examples of Antalya, Bursa and Izmir (rough analysis).
14 There are no universally recognised international standards for drinking water).
15 www.who.int/water_sanitation_health/dwq/gdwq3rev/en (10.12.2012)
16 See the example of a project in Lebanon financed by BMZ/KfW, which has developed national standards for the re-utilisation of wastewater: Vorgeschlagene Nationale Standards für die Wiederverwertung von häuslichen Abwässern zur Bewässerung (Proposed National Standard for Treated Domestic Wastewater Reuse for Irrigation, www.bgr.bund.de/EN/Themen/Wasser/Projekte/laufend/TZ/Libanon/spec_rep_4.pdf?__blob=publicationFile&v=4 (13.03.2013))

Table 6: Technical specifications for MWIP

MWP aspect	Sustainability criteria
Life cycle costs (LCC)	**Max. LCC of X (EUR/ USD)** Verification: Calculation according to procedure X
Energy consumption	**The total energy consumption of the installation is not greater than:** • X[12] kWh/ EW or kWh/ m^3 for water (catchment, treatment,[13] and distribution) • X kWh/ EW or kWh/ m^3 for wastewater (transport and treatment) • X kWh/ tonne or kWh/ m^3 for treatment of sewage sludge Verification: Technisches Dossier und Konzept.
	At least X% of the plant processes should be powered by in-house or local renewable energy sources. Verification: Technical dossier and concept.
	The bidder must submit a management plan and an overview of the content for employee training sessions on the subject of energy management. Verification: Management plan.
Efficiency of treatment processes in the production of drinking water	**Treatment standards** The technology offered must satisfy the parameters for water quality stipulated in the standards of the country concerned.[14] If no national standards have been defined, the water quality should comply with the values for water quality recommended in the guidelines of the World Health Organisation (WHO).[15] Verification: Technical dossier and concept.
	Requirements for the max. use of chemicals • Max. amount (g) per m^3 of disinfectant (chlorine, ozone, etc.) for the process Verification: Technical dossier and concept.
Efficiency of procedures for wastewater treatment	**Requirements for standards for water drainage** The proposed technology must comply with the standards for wastewater discharge of the corresponding country. If there are no national standards, appropriate standards of other countries can be used. However, a careful check should be made whether and how these standards can be adapted by the partner country in question and then a decision should be made on whether the technology is realistic.[16] Notes: • The necessary treatment stages (first, second and third) should be defined by an expert based on an analysis of needs. • In many partner countries the third stage to reduce N, P and heavy metals may not be directly feasible owing to comparably high costs and the expertise required. An optional procurement procedure could be issued. Verification: Technical report and draft plan.
	Requirements for the max. use of chemicals Max. amount (g) per m^3 of coagulants (aluminium and ferrous compounds) pH regulators, flocculation aids and other chemicals required for the process. Verification: Technical dossier and concept.

Sustainability+ **Re-utilisation of wastewater and residues in combination with renewable energies**

Conventionally constructed wastewater plants mostly follow a linear principle, with the inflow (combined wastewater flows) fed in and the outflow (treated wastewater and sewage sludge) being discharged at the end. Although this procedure, if well planned and maintained, minimises risks to health from wastewater, it is not able to exploit the full value of the substances contained in the wastewater.

Alternatively, wastewater treatment can be designed with an eye to natural resources, thus increasing cost effectiveness as well as the overall sustainability of the facility. Nutrients can be re-used as fertiliser. Energy can be generated from the treatment process and treated wastewater can be used in agriculture.

As in all solutions for water systems, sustainability of re-utilisation of wastewater and its substances depend on the local context. However, should demand exist and the economic conditions are good, re-utilisation of wastewater and the resources it contains can offer significant advantages.

This is shown by the example of the project for increased energy efficiency of a wastewater plant and the re-utilisation of sewage sludge in Managua, Nicaragua. In a project financed by Financial Cooperation funds to reduce the biological contamination of Lake Managua, a central sewage treatment plant came into operation at the end of 2009 for the megacity of Managua.

Each year c. 26,000 m³ of sewage sludge is produced as a result of wastewater treatment. The large amount of sewage sludge to be disposed of presented the authorities in Managua with a great challenge. Initially the sewage sludge was to be disposed of in a nearby waste site; however, this was met with strong resistance from the local residents.

After comprehensive studies it was found that a combination of passive solar sludge drying and re-utilisation in agriculture was best suited. With the installation of a solar sewage sludge drying plant the energy consumption of 800-1,000 kWh/ t p.a. was reduced to 20 kWh/ t, since the solar dryer uses significantly less energy. This was accompanied by a clear reduction in operating costs for the plant.

For further information:

www.worldwaterweek.org/documents/WWW_PDF/2010/monday/K21/Suecia_sep1.pdf

Report by Deutsche Welle on the programme:

www.dw.de/dw/article/0,,15868960,00.html (13.03.2013)

Sustainability+ **Renewable energy for water services**

All large installations using energy require water and wastewater plants, as well as large amounts of fossil energy, and consequently emit large amounts of greenhouse gases.
In order to reduce greenhouse gases, bidders for water services can therefore give priority to plants which are powered partly - or in the case of smaller plants completely - by renewable energies. For example, the Danish Development Society (DANIDA) recently published a procurement procedure for small- and medium- sized water catchment units powered solely by renewable energies as part of its projects to support the National Programme for Water and Sanitary Installations of the Vietnamese government. With the installation of solar or wind-powered pumping stations throughout Vietnam, this procurement procedure illustrates the benefits of using renewable energies for the water supply in rural areas. Training specialists on site and generally raising public awareness for sustainable rural water supplies throughout the whole Mekong Delta is being sponsored. In order to achieve this, the minimum requirement was defined as operation of the pumping station with solar or wind energy, or a combination of the two.

Source: Tender documentation for water supply through renewable energies in the Mekong Delta - Specifications (DANIDA 2012)

4.1.2. Pre-qualification

The requirements described in Chapter 3, and with slight restrictions those from Chapters 4.4 and 4.5, apply to pre-qualification of suitable bidders in principle.

Example: Pre-qualification for infrastructure programmes in Calgary, Canada

If sustainability aspects are to be introduced in the pre-qualification phase for MWIPs, environmental key data and the social responsibility of bidders play a primary role as evaluation criteria. This type of evaluation procedure should contain requirements for bidders with regard to the environmental and social regulations, vis-à-vis the main effects of their activities. The manner in which these core environmental and social effects are handled by bidders is of equal importance.

In a procurement procedure for infrastructural measures in the city of Calgary, Canada, the bidders had to show in the pre-qualification phase that in addition to the mandatory financial and safety criteria they also satisfied environmental criteria (including presentation of environmental certification equivalent to ISO 14001; before they were even admitted to the technical screening. This included measures in the company regarding environmental management systems, as well as the company's experience with similar measures in environmental protection. Each bidder that is not able to provide verification of these fundamental principles is considered to be non-compliant and is not considered in the continued selection process.

For further information:
http://www.calgary.ca/CA/fs/Documents/Bid-and-Vendor-Information/Construction-13-010-Prequalification-for-Construction-Prime-Contractor.pdf (29.07.2013)

4.1.3. Evaluation of bids

The following overview presents sustainability criteria as award criteria in a functional procurement procedure for a wastewater treatment plant. The weighting of the individual aspects is indicative and must be adapted to each individual project. Care should be taken to ensure that the aspects listed under energy efficiency are not evaluated twice via the LCC evaluation. Parts of these aspects can also be considered for other evaluation methods presented in Chapter 3, such as the bonus system. Relative weighting is suitable as the evaluation system (see Chapter 3.5). The relevant MWIP aspects should not necessarily be viewed accumulatively; rather they represent an indicative list and consideration of the importance of individual sustainability aspects.

Table 7: MWIP award criteria

MWIP aspect	Award criteria
Life cycle costs (LCC)	**Lowest LCC** Verification: Calculation based on instructions using LCC Tool X (specified by awarding authority). Weighting: significant percentage (30-60%)
Energy efficiency	**Lower energy consumption per m³ of purified water** Verification: Planning and concept Weighting: 10-20 % *Energy consumption can also be divided into individual components:* **Energy efficiency regarding kg of oxygen per kWh of oxygen transferred to the water (aeration systems) More points the lower the energy consumption** Verification: Simulation, technical concept incl. efficiency of technical devices Weighting: up to 5% **Energy efficiency of dehydration of sewage sludge in kWh per tonne of sewage sludge.** The more points the lower the energy consumption. Verification: Simulation, technical concept incl. efficiency of technical devices Weighting: up to 5% **Percentage of energy consumption generated from renewable energy sources** (incl. energy generation through actual operation of the plant). The greater the percentage, the more the points. Verification: Planning and technical concept incl. installations for the energy supply Weighting: up to 10% **Pump efficiency Lower energy consumption in W per m³/ h per metre of pipeline. The lower the energy consumption the more the points.** Verification: Simulation, technical concept incl. efficiency of technical devices Weighting: up to 3%

MWIP aspect	Award criteria
Efficiency of wastewater treatment	**Compared with the average in similar plants [state value] lower percentage of consumption in precipitants per m³ of treated wastewater** More points for fewer precipitants. Verification: Planning and technical concept Weighting: up to 3% Based on statutory minimum criteria on the maximum content of heavy metals, a higher percentage of treatment efficiency for heavy metals.[17] The more efficient, the more points. Verification: Planning and technical concept Weighting: up to 3%
Phosphate recovery	**Compared with the minimum criteria a higher rate of recovery of phosphates (in kg) from wastewater and/or sewage sludge treatment.** The more points the lower the phosphate. Verification: Planning and technical concept Weighting: up to 3%
Construction, operation, maintenance	**Quality of the operating and maintenance plan with due regard for locally available products and spare parts, where necessary initial and advanced training for local specialists, operating personnel and management of the plant.** Verification: Operating and maintenance plan, initial and advanced training, CVs of specialists for initial and advanced training Weighting: up to 10%
Social and environmental impact	**Compared with the minimum requirements lower greenhouse gas emissions (CO_2eq) per m³ of purified water** Verification: Simulation, technical concept incl. efficiency of technical devices and type of energy supply Weighting: up to 10% **Operating noise level lies below the statutory minimum requirements (in dB).** Verification: Simulation and technical concept Weighting: up to 3%

17 See example for reducing the concentration of heavy metals in wastewater via wetlands. http://sti.srs.gov/fulltext/ms2002600/ms2002600.html (13.03.2013)

Example: Life cycle costing in tender evaluation - FC project wastewater plant Samsun/Turkey

Life cycle costs are being integrated in this procurement procedure in order to identify the most economically advantageous tender for a functional tender procedure. In an ideal case the performance costing will cover the costs of the life cycle. This means that all costs that occur through the project during manufacture, initial and advanced training, operation, maintenance and dismantling will be taken into consideration. Chapter 3 contains further information on life cycle costing.

The Municipal Wastewater Treatment project in Samsun (Turkey), supported by FC funds, is a successful example of a procurement procedure based on life cycle costing. By including life cycle costs in the procurement procedure the contractors were encouraged to plan, develop and offer solutions that are profitable and long-term. That gave bidders the opportunity to differentiate themselves from other bidders through quality and service.

The procurement procedure required bidders to submit an estimate of (a) the costs for the design, plus (b) the costs for construction, plus (c) operating and maintenance costs for ten months and for five years, plus (d) operational unit costs for years 6 to 25.

The procurement procedure was then awarded to the tender with the lowest price for design and construction, including the net present value for operating and maintenance costs. During the award process the awarding authority and the bidders collected valuable insights into further optimisation of the installations and processes, in particular on electricity and chemicals consumption in the plant's processes. The procurement procedure successfully lowered operating costs without impacting the performance of the plant. In addition the processes for production and disposal of sewage sludge were examined in detail since life cycle costs occur here also. This forced bidders to offer the most cost-effective option for disposing of the sludge.

In view of the size of the contract and the high level of expertise of the tenders, the submitted tenders for design-construction-operation were evaluated as cost-effective by the award board. This is a good indicator that the award process ensured healthy competition between the bidders.

Source: KfW

4.1.4. Contractual provisions

The contract signed with the successful bidder must contain all necessary provisions in order to ensure that the project is implemented as described in the tender submitted (and evaluated).

How far contractual provisions for MWIP projects can contain confirmed parameters for individual plant components (product level), individual functional units, or the plant as a whole, depends on the type of contract: Unit price contract or performance programme. Since planning the installation is the responsibility of the awarding authority in the case of unit price contracts, only the values of individual components or functional units can be determined contractually. If performance programmes are agreed for a wastewater treatment plant, for example, the contractor bids for the parameters required in the procurement procedure and it is necessary to agree the confirmed parameters legally in the contract. If awarding the contract is based on a prior LCC, the award has been allocated on the basis of parameters, adherence to which the bidder must guarantee contractually for a certain period of time.

On the basis of correspondingly or time-based graded key data the contractually confirmed key data are valid as indicators for acceptance and possibly beyond the conclusion of trial operation. The contract documents should also contain a clear ruling on how the awarding authority is to be compensated in the case of non-compliance with the indicators. Special care is needed: if compensation is too low, lower than the additional costs for the contractor for sustainable execution of his offer, there is a danger that "unreliable" bidders will consciously include the compensation sum in their calculations and therefore the intended sustainability will not be achieved. Therefore, this is of great importance because with an LCC-based award a bidder can be given the contract for an installation with higher investment costs but with lower future operating costs. This can lead to problems of acceptance for some public contracting authorities; this can only be countered with clear contractual provisions that cover overall cost-effectiveness, i.e. investment and operational phase of the project.

Further concepts and methods for formulating contracts can be found in Chapter 3.6.

4.1.5. Evaluation of feasibility

The aim of water infrastructure installations is to provide drinking water and wastewater treatment at the lowest possible cost. In an ideal case these costs allow for economic, social and ecological effects of the installations as well as the capacities of the project sponsor. Water infrastructure projects undergo strict social and environmental compatibility tests in the planning phase in an attempt to avoid or compensate for undesirable consequences. Furthermore, the procurement phase of a project gives the opportunity to improve the environmental and social compatibility of water infrastructure projects even further.

Water infrastructure requires a significant supply of energy and high material usage for their operation. Therefore, in connection with sustainable water infrastructure projects, a high value should be placed on resource efficiency. Not only the opportunity to lower the cost of material and energy consumption can be utilised here, but also ecological and social consequences can be prevented or constricted. In order to achieve resource efficiency in water infrastructure projects, the following aspects are important within sustainable public procurement:

- **Energy efficiency** through the use of energy-efficient products (e.g. motors/drives) and energy-efficient processes (utilisation of natural purification processes instead of energy-intensive mechanical/chemical purification).
- **Treatment efficiency** can be reached by choosing a process or procedure that achieves a higher or better result for purification.
- **Reduced water consumption** through procurement of qualitatively high value equipment (best available technology), process optimisation and utilisation of non-conventional water sources (e.g. rainwater or purified wastewater).
- **Recycling of residual materials and side products:** Recycling of purified wastewater and sewage sludge in agriculture or as industrial water.
- **Renewable energy sources** as an energy supply for industrial and commercial buildings, for processes within the facility (e.g. drying sewage sludge using solar energy).

Example: Operational management and maintenance plan

Operation and maintenance are of major importance for many water supply and distribution projects throughout the whole life cycle of the facility. In such cases the operational management and maintenance plans of bidders should form a core part when comparing tenders. In order to better monitor the performance of the contractor subsequently, the plans submitted for the procurement procedures should clearly distinguish the planned maintenance measures and associated costs.

In its publication "Sustainability criteria for sustainable public procurement for sewage works and installations for treatment of sewage sludge" (2011), the Dutch Ministry for Infrastructure and Environment determined that operational management and maintenance plans for water and wastewater plants should contain the following information:

- Description of the materials used
- Inspection intervals during the project duration of X years and the corresponding work instructions (at least a description of the installations and methods to be inspected)
- Maintenance intervals observed during the project duration of X years together with the corresponding work instructions (at least a description of the activities and materials required)

Significant influence can be brought to bear on this even in the planning phase. Depending on the type of facility to be put out for tender, one or other aspect may be of more importance. Even more influence can be exerted on individual aspects during the tendering and award phases to utilise the innovative capacity of the market. In order to ensure that implementation is successful and is accepted by the parties concerned, the proven principles of public procurement should first be considered: open competition, absolute fairness, high transparency and well-balanced risk structures. The latter is especially important when applying new forms of evaluation and award processes. If great value is placed on the appropriate allocation of rights and duties between the awarding authority (public administration) and the contractor (market) during a procurement procedure, this will help to promote acceptance and so ensure successful implementation.

4.2. Energy with the focus on renewables

This chapter looks at the energy value chain: Production, transmission and consumption of energy (electricity and heating). The following table contains an extract from the relevant product groups in the chain:

As an example this chapter looks at the infrastructure used to generate electricity or which has a high consumption of electricity and therefore is a key factor in improving energy efficiency. Furthermore, sustainability criteria for lighting (interior lighting and street lighting) as well as infrastructure projects for electricity and heat generation in the field of renewable energies (wind, water, biomass, solar), are presented. For interior lighting the focus is on office and residential buildings. Regarding street lighting the Toolbox refers to permanent lighting without tunnels, private car parks, commercial or industrial sites, sports facilities or lighting to improve buildings and monuments. However, it can normally be transferred to other fields of application.

4.2.1. Planning

Planning focuses on the use of technologies which represent BAT (best available technology). The emphasis here is on short maintenance intervals and energy-efficient products as well as the use of resource-friendly materials and sustainable building materials (here: biomass).

Table 8: Energy generation, transmission and consumption (product groups)

Production		Production	Transmission
Electricity generation	Heat generation	Networks	Systems
Biomass power station	Biomass power station	Transformers	Street lighting
Wind turbine	Solar heating	Switchgear	Interior lighting
Hydroelectric power station			Electric drives
Photovoltaics			

Image: iStock / Nikada

Lighting systems

The design of lighting systems is based on a detailed efficiency analysis which includes utilisation times and savings through dimming, sensor control and other monitoring and control systems. The advantages of LED technology for lighting systems should be emphasised here. The following table gives an overview and compares advantages and disadvantages.

Sustainability +
Solar street lighting with LEDs

In areas with sufficient hours of sunlight per year a distributed solution using solar panels to provide lighting with energy is appropriate. Particularly at sites where the local electricity grid is not sufficiently developed, this solution is an alternative to installations powered by diesel generators.

As indicated by the overview, LED solutions also incur lower maintenance costs. Additional advantages in the ecological field are that they are less attractive to insects and offer energy savings since they need less cooling.

There are various tools available around the world to help in the design phase for lighting systems, i.e. calculating the most energy-efficient solution while considering functional requirements. The "SEAD Street Lighting Evaluation Tool[18]" is a good choice as a start.

18 Available at: www.superefficient.org/Activities/Procurement/Download%20SEAD%20Street%20Lighting%20Evaluation%20Tool.aspx (10.12.2012)

Table 9: Advantages and disadvantages of LED lighting

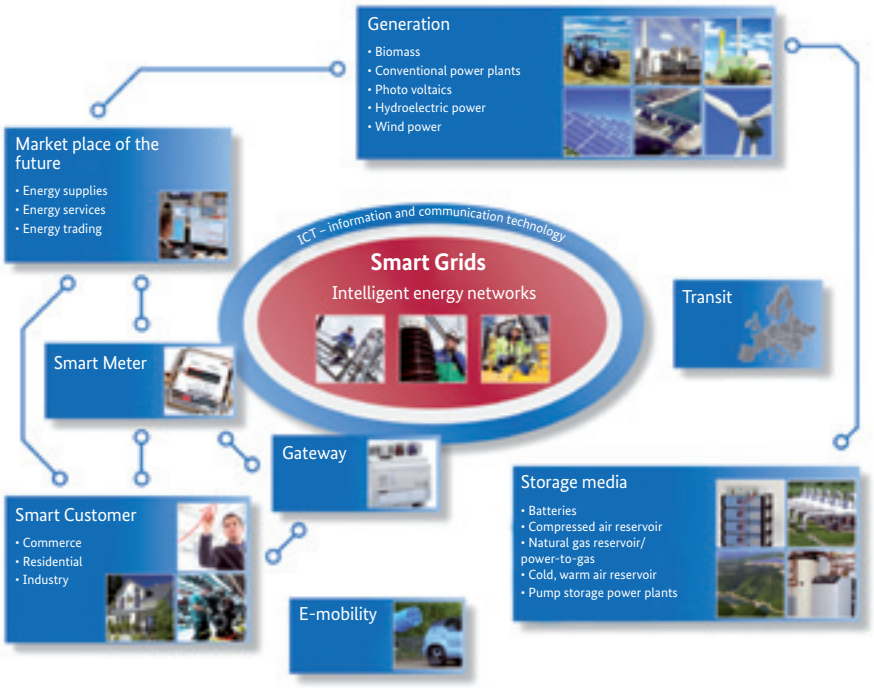
Advantages of LED lighting (compared with conventionaldischarge technologies)	Disadvantages of LED lighting
High efficiency, low electricity consumption and low voltage required for operation	Relatively high acquisition cost, therefore long amortisation time
Very long life span (up to 100,000 hours compared with c. 10,000 hours for conventional discharge lamps)	Sensitive to fluctuations in voltage, require voltage regulator
Low susceptibility to faults and no immediate stop of the functionality of the light source	Heat sensitive: performance is dependent on the ambient temperature
Can be switched on and off quickly (direct light intensity)	
Small, space-saving, resistant to shocks, mercury-free	
Low heat generation (high quality LEDs are characterised by efficient cooling systems, e.g. ribs)	

Electricity generation

For electricity generation plants using wind, water, sun and biomass, the sustainability criteria in the design phase refer to the aspects of energy efficiency (here: level of efficiency), the use of eco-friendly materials and fuels (here: biomass), as well as aspects of the environmental and social compatibility of systems and building activity. Although this is not addressed in detail in this Toolbox due to the fact that these activities occur before the actual tendering phase (cf. project appraisal), an understanding of the energy value chain is of particular importance for the tender procedure. Decisive points along this energy value chain are identified in the project appraisal.

Fig. 7 illustrates important aspects of this using the example of the "Smart Grid" concept. The German Electrical and Electronic Manufacturers' Association (Verband der deutschen Elektroindustrie - ZVEI) and the German Association of Energy and Water Industries (Bundesverband der Energie- und Wasserwirtschaft e. V. - bdew) define „Smart Grids" as follows: "*A Smart Grid is an energy grid that integrates the consumption and feed-in behaviour of all market participants connected with it. It ensures an economically efficient, sustainable supply system with low losses and high availability.*" The technology supplies energy-efficient distributed solutions; however, it also has high requirements regarding the networkability of the generation and transmission components through to the consumer. In some countries it can make more sense to start with simpler (upwardly compatible) solutions and work towards Smart Grid solutions with subsequent expansion stages.

Figure 7: Smart Grids



Source: ZVEI / bdew: Smart Grids in Deutschland (Smart Grids in Germany). March 2012. p. 4

Photovoltaics and solar heating

With regard to energy systems for the electrification of rural areas, the applications and types of use should be determined in advance. The need and, if necessary the opportunities to create new service and productive applications have to be included in the planning phase. For on-grid electricity generation the corresponding details are generally determined in advance.

Solar heating offers many possible applications which can be divided into the fields of hot water supply, heating for small and large residential buildings, as well as commercial buildings, local and district heating, the provision of heat for industrial pre-heating, washing and drying processes, the operation of cooling units and water purification. As with photovoltaics, the starting point for design is the plant layout and user behaviour.

These decisions have a decisive influence on planning the award procedure.

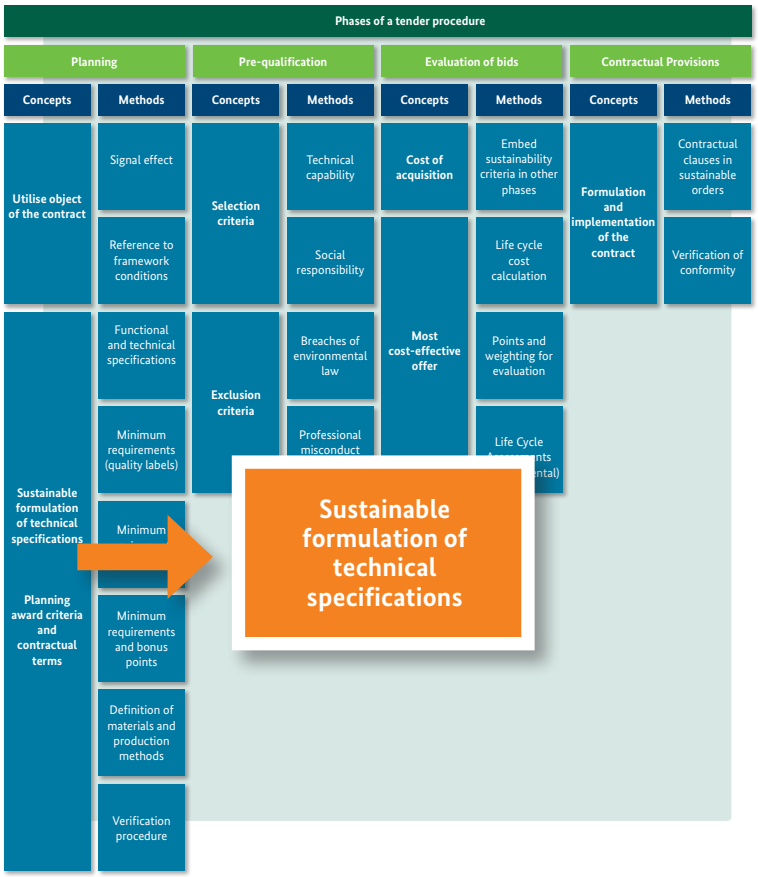
Object of the contract

- Supply and installation of an energy-efficient and low-maintenance lighting system [street lighting, interior lighting]
- System service and construction work for the energy- and resource-efficient generation of electricity or heating via [wind power, hydro power, biomass, solar thermal energy, photovoltaics]

Note: Operation of the energy production plant should be an integral part of the object of the contract. Such performance contracts, where planning, construction, operation and maintenance are agreed, are cost-effective and sustainable, thus leading to improved cost transparency and economies of time. Furthermore, they lead to a reduction - in relation to the life cycle - of overall costs of the project since minimum requirements can be defined over an appropriate period of time.

Sustainable formulation of technical specifications

In this section technical specifications with the focus on sustainability are presented. They are supplemented with suitable verification.



Energy production

Functional procurement procedure for energy production

In order to ensure the sustainability (permanence) of energy production infrastructures, in some cases functional performance specifications regarding the volume and quality of the energy to be supplied are appropriate, in addition to technical performance specifications.

Functional procurement procedures can be undertaken by agencies of the partner government who distribute the payments for the energy produced throughout the life span of an energy supply contract (normally 20 years). Linking the procurement procedures to payments for the energy produced creates incentives for sustained operation of the plant and the use of high quality system technology. This increases the sustainability of the plant.

Utilisation of a functional performance specification makes high demands on evaluation of the tenders submitted since a high level of expertise is needed to compare the diverse technical designs (see Chapter 3.3).

Furthermore, in the case of a functional performance specification, a power purchase agreement (PPA) or a purchase agreement for heat must be concluded between the operator of the plant and the consumer/network operator.

Biomass

The most important sustainability factor for electricity and heat generation plants operated with biomass is the sustainability of the fuel (in this case biomass) itself.

Biomass (solid and gaseous) for plants over 50 kW must satisfy the following criteria:[19]

- Details on the constituent parts, form, mass or volume as well as the **country of origin** and its status as an energy crop (in contrast to foodstuffs)
- The biomass may **not** be sourced from **primary forests**, swamps, wetlands and designated conservation areas
- Biomass may **not compete with other primary uses** (food production, land improvement)

Verification: Certification with the Green Gold Label (comprehensive), FSC label (limited: does not include wetlands) and other Chain of Custody (CoC) certificates. Equivalent verification such as Type II CoC of the manufacturer (including contact data along the production chain), aerial photographs, satellite images, maps, land registries and independent reports from on-site inspections from the country/region of origin are also accepted. Verification of land utilisation and records of sufficient areas for food production in the region where the energy crops are sourced must be submitted.

Example: Procurement procedure for the construction and operation of plants for electricity generation using solar power with output above 250 kWp in France

In a public procurement procedure issued by the Ministry for Environment, Sustainable Development and Energy tenders were requested for the construction and operation of a photovoltaic installation.

The passage on operation reads: "In accordance with the provisions of Article L311-10 of the French Energy Code (Code de l'enérgie) the applicant must be the operator of the production facility. He may not state in his tender that, should his project be selected, another company will operate the facility.

However, a change in operator is possible if:

- in the case of facilities considered to be licensed the Minister for Energy is informed of the fact
- in the case of facilities requiring official approval for operation the transfer of the operating permit from the holder of this permit to the new applicant is accepted by decision of the Minister for Energy. This is subject to application of Article L.311.5 of the French Energy Code and under the conditions stipulated in Article 9 of Decree No. 2000-877 dated 7 September 2000 on operating permits for electricity generation plants. This change can be refused, especially if the financial reserves offered by the newly created company do not match those of the applicant company.

19 The transport distance may not be too long (if possible less than 50 km) and the transport may not lead to unacceptable additional environmental impact (e.g. a large lorry passing through narrow village streets every 10 minutes).

Example: Supply and installation of multi-functional PV systems in Burundi

"Energising Development" (EnDev) sponsors access to sustainable energy services around the globe.[20] In Burundi 120 solar multi-service stations with an output of 170 Wp each were put out to tender via EnDev. Small businesses (especially hairdressers, restaurants) and end customers benefit from the improved electricity supply (e.g. battery charging stations). The systems were installed in rural communes in the Burundian provinces of Gitega and Mwaro.

The aim was and continues to be to improve sustainably the population's access to appropriate and affordable energy services. A condition for the award of the contract was that German or European solar component suppliers must cooperate with a local installation company in order to generate revenue from the installation of solar powered multi-service stations and hence strengthen local structures sustainably. Furthermore, it was agreed with the contractor that the local subcontractor would sign a maintenance contract with the operators of the facility on completion of the installation.

In order to identify qualified installation engineers, a list of criteria was compiled for evaluation of installation companies. The experience of companies was checked and assessed in relation to PV installations, the technical qualification of the personnel deployed, in-house mechanisms for quality control and assurance, an installation and service plan with milestones, as well as safety measures as part of installation.

Regarding solar components care was taken to ensure that the solar modules were tested and certified from accredited test laboratories, the solar batteries are eco-friendly and fully recyclable, and the fluorescent tubes contain a maximum of 10 mg of mercury.

In addition to the technical capability test of the installation firms and the high requirements for solar components, the acceptance of integrity and social standards (UN Global Compact) was also a precondition for awarding the contract and was considered an integral part of the contract.

Source: GIZ

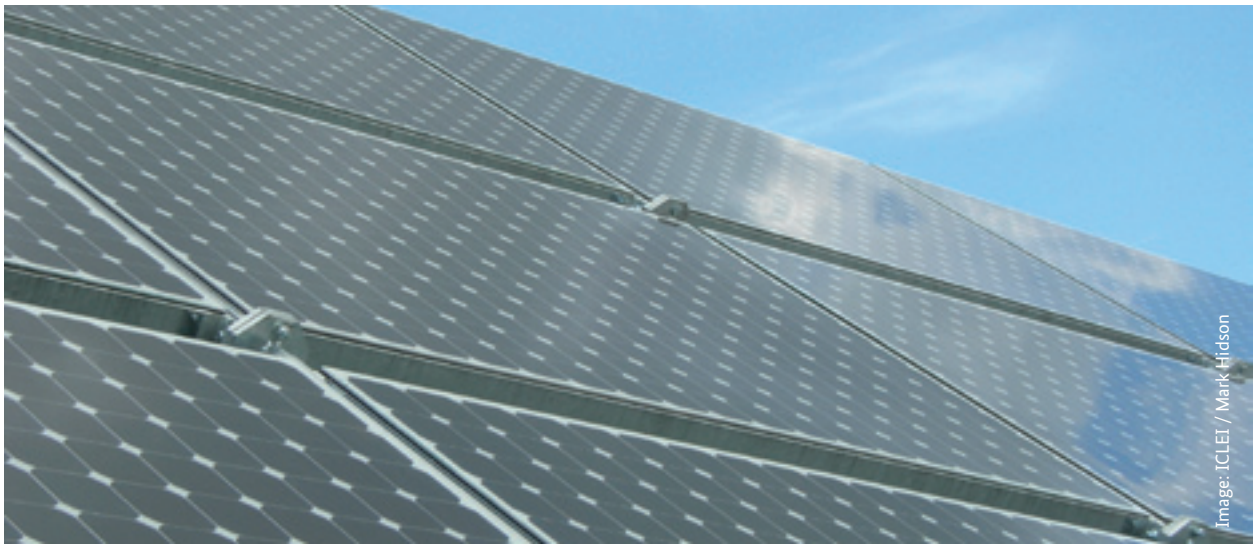


Image: ICLEI / Mark Hidson

20 For further information see: www.endev.info (17.07.2013)

Hydroelectric power

Hydroelectric power stations must comply with the requirements of the "International Hydropower Association (IHA) Hydropower Sustainability Assessment Protocols" (IHA 2011) (description of state). Germany has committed to adhere to the recommendations of the World Commission on Dams (WCD). A reference to the WCD must be included in the requirements contained in the tender specifications.

The protocol refers to sustainability in the development, preparatory, implementation and operational phase of hydroelectric power stations. It was adopted with the participation of a multi-stakeholder group of NGOs (such as Oxfam, Transparency International, WWF), governments (such as China, Germany, Iceland and Norway), the World Bank and representatives of the hydropower sector (represented by the IHA) - and is recommended by the United Nations.

Since there are conflicting goals as regards the utilisation of hydropower to generate energy between climate protection (affected e.g. by logging operations) and water conservation (affected by dams), these projects should be submitted to comprehensive environmental and social compatibility studies before the tender procedure begins.

Wind power

Technical specifications (sustainability criteria) can be found in the sustainability and due diligence guidelines of the World Wind Energy Association: www.wwindea.org/technology/ch02/de/2_6_1.html (14.12.2012).

According to Martinez et al. 2009, the environmental impact of the construction of wind turbines to generate electricity can largely be attributed to the following components (calculated with the standard ISO 14040):

- Cement: production and waste
- Steel towers: recyclable
- Rotors, generators and electricity distribution:

Photovoltaics and solar thermal energy

A look at the approach taken in Ireland can be worthwhile when talking about solar thermal systems: Guideline on procurement of solar thermal heat generation: www.seai.ie/Solar_Procurement_Guidelines.pdf (10.12.2012). The guideline helps developers, architects and other experts to develop tender criteria for the procurement of solar thermal plants and services for heat generation. Reference is made to standards and examples.

Technical specifications (sustainability criteria) can be found in the SEMI standards for photovoltaic systems.[21] These contain information on selection of material, design, identification of components and their reusability and recycling possibilities for the USA, Europe and Asia.

Verification: Technisches Dossier und Prüfzertifikate.

Solar thermal systems – efficiency

The "Solar Keymark" can be used as a quality label for solar thermal systems (www.solarkeymark.org, 17.07.2013).

Verification: The product is certified with the Solar Keymark. Equivalent verification such as a technical dossier is also accepted.

Evaluation of solar irradiance

The plant must have suitable devices and systems to measure the solar irradiance and be equipped with a performance test. The bidder must submit a corresponding concept.

Verification: Qualitatively suitable concept incl. references for the application.

21 http://ams.semi.org/ebusiness/standards/SEMIStandard-Detail.aspx?ProductID=211&DownloadID=1199 (14.12.2012).

System optimisation

Good practice to support the development of the renewable energy sector in developing countries is to include an obligation to cooperate with research and development institutions such as an innovation platform. Part of the procurement procedure could be the free provision of data on solar irradiance and weather conditions. Equipping the system with the corresponding measuring equipment and the obligation to collect and provide data must be included in the tender specifications.

Example: Research and development in the solar sector. French procurement procedure

Every solar facility must be equipped with devices that allow safe transmission of data from a public research institute specialising in solar energy, to a competitive cluster specialising in solar energy, or an innovation platform defined according to the future investment programme. The institution selected by the applicant is described as an innovation platform is as follows.

The applicant undertakes, should his tender be selected by the minister responsible for energy, to transmit the data described above free of charge to the innovation platform selected by him.

Collaboration with an innovation platform

Together with the application the applicant must submit the agreement signed with an innovation platform in which he undertakes to provide this platform with data free of charge on the production, solar irradiance and weather conditions in relation to this plant. This agreement determines how the data are to be collected by the application, transmission to the innovation platform and use of the plant data by the innovation platform, as well as non-disclosure clauses.

The applicant must attach an annex to his application in which all obligations are described which he has assumed with the aim of promoting collaboration with the research and development institutions, as well as with institutions in charge of collecting information and statistics in the field of solar power. This document must reflect the details specified in the customer specifications. He will endeavour to create a summary (c. 20 pages) of his direct contribution to a new research and development project in the solar field.

In particular the applicant will present the quantified aims that he hopes to achieve with this research and development programme. Furthermore he must submit an estimated costs projection for each individual research and development action that he wishes to execute and either self finance the project or seek financing from partners. Possible co-financing should also be listed. The applicant must list all elements with which the financial power of this research and development project is ensured.

Energy transmission

Switchgear

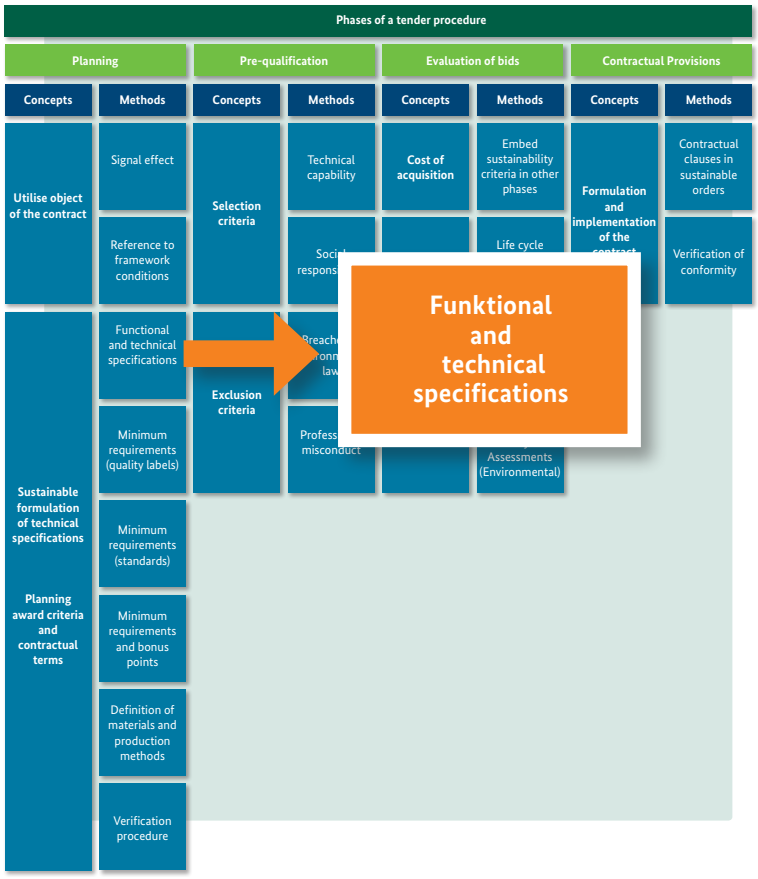
Internationally-recognised standards for switchgear, switching devices and accessories, including gas-insulated HV switchgear, must be met (see Annex).

Verification: Technical dossier and test certificates

Transformers

Internationally-recognised standards for transformers and accessories must be met (see Annex).

Verification: Technical dossier and test certificates.



Energy consumption

Functional specifications - LED lighting

LED lighting must comply with the following requirements

- Low energy consumption of around 30% in comparison with conventional technologies (gas discharge lamps).
- Lower CO_2 emissions over the utilisation phase – of at least 25% in comparison with conventional technologies (gas discharge lamps).
- Retrofits: It must be possible to install the LED system without replacing the infrastructure (lamp-posts, connection to power supply).
- Light intensity, diffusion and light colour must comply with statutory requirements and (in the case of retrofits) must at least maintain the standard of the system currently installed.

Verification: Calculations based on technical dossiers of the manufacturer and calculations from the design phase.

Example: LED street lighting installation in Hong Kong

Hong Kong, the special administrative region of the People's Republic of China, adopted a comprehensive package of measures to lower CO_2 emissions in 2010. Around one sixth of Hong Kong's emissions are caused by the street lighting in the metropolis. The aim was to achieve significant CO_2 savings through sustainable public procurement.

The Traffic Agency started to gradually replace conventional bulbs in traffic lights with LEDs. The following technical specifications were applied in order to purchase safe but energy saving LEDs:

- Under daylight conditions a 210 mm LED may not exceed nominal consumption of 15 W.
- At night the LED should not exceed nominal consumption of 10 W.
- For 300 mm LEDs the nominal consumption may not exceed 25 W (day) and 20 W (night)
- All LED sizes must have an average operating time between outages of a minimum of 61,320 hours.

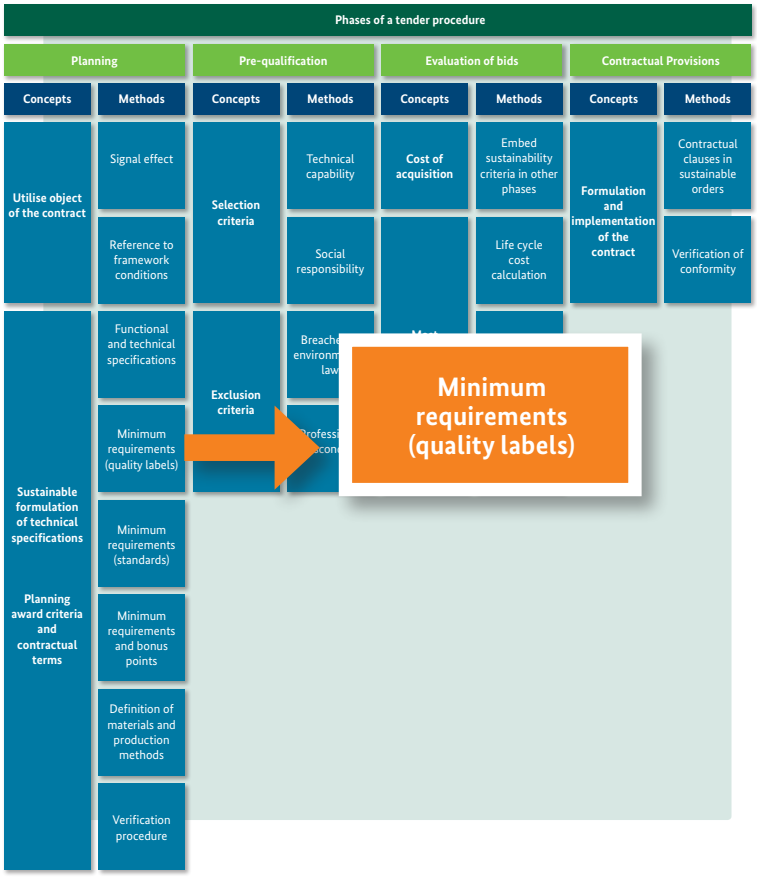
To date more than 60% of traffic lights in Hong Kong have been retrofitted with LEDs. During the whole life span of the LEDs it is estimated that USD 340,000 can be saved. At the same time the longer life span of LEDs means that 2.7% of maintenance costs can be saved.

Source: Traffic Control Division, Transport Department Government of HKSAR

Energy consumption

Energy consumption must comply with ENERGY STAR criteria. The latest version of the ENERGY STAR criteria for the product category is used as reference (e.g. LED lighting) (available at www.energystar.gov).

Verification: All products with the ENERGY STAR label meet these requirements. Equivalent verification such as a technical dossier of the manufacturer is also acceptable.



LED street lighting - efficiency

LED lights should have the following minimum efficiency requirements (light intensity (lumen) per energy unit (W) = lm/W).

Table 10: Efficiency Watt (nominal) LEDs

Nominal watt (W)	Calculated efficiency (lm/W)
Up to 65	At least 75
Over 65 Up to 100	At least 85
Over 100 Up to 150	At least 90
Over 150	At least 98

Verification: Technical dossier of the manufacturer or equivalent verification.

LED interior lighting - efficiency

LED lights should have the following minimum efficiency requirements (light intensity (lumen) per energy unit (W) = lm/W).

Table 11: Efficiency of LED lights (interior)

Nominal watt (W)	Calculated efficiency (lm/W)
Up to 25 W	At least 75
Over 25 W	At least 90

Verification: Products with the Blue Angel satisfy these requirements. Alternative verification: Technical dossier of the manufacturer.

Electric drives

Electric motors in the sense of EC Regulation 640/2009 of the European Commission[22] must reach the efficiency level described in Article 3.1.

Verification: The verification listed in Annex II of EC Regulation 640/2009 of the European Commission must be provided.

4.2.2. Pre-qualification

The manufacture of lighting systems requires the highest levels of health and safety measures due to volatile toxic chemicals such as mercury. Therefore, it is recommended to include pointers to efficient environmental management systems with reference to the criteria of EMAS, ISO 14001 or comparable.

For infrastructures we refer to the pre-qualification criteria presented in Chapter 3.4. Special care should be taken that suppliers meet international standards on environmental management and quality management, in particular ISO 9001 and ISO 14001 or comparable.

22 Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:191:0026:0034:DE:PDF (16.07.2013)

4.2.3. Tender evaluation

Energy production

Electricity and heat generation

Biomass

The generation of electricity or heat from biomass results in gases that are damaging to the climate (CO_2, methane, NO_x, etc.). The **emissions arising from utilisation** must be specified. Calculations are performed using Tool X [e.g. Ofgem Carbon Calculator, SMART SPP LCC Emissions Tool]. More points are given the fewer greenhouse gas emissions occur over the life span.

Verification: Calculation and simulation based on the specified calculation procedure

Weighting: up to 20%

Turbines (efficiency) Evaluation of the amount of electricity that can be generated over the life span

The starting point is the amount of electricity that can be generated (per unit of energy input) and which is above the minimum requirements contained in the technical specifications. Tool X (see below) is used for calculations. A full calculation of predictable energy production and hence a complete balance of energy and finance represents a sustainable approach. Examples of tools for standards in this context are listed below:

- Overview of standards and procurement procedures as examples (including technical specifications and award criteria): http://hydroturbine-valve.com/hydraulic-turbine/some-codes (10.12.2012)
- International Electrotechnical Commission Technical Committee 4: (hydraulic rotating machinery and associated equipment allied with hydropower development): http://tc4.iec.ch/index-tc4.html (10.12.2012)
- International standard for electro-mechanical devices in small hydroelectric power stations: http://webstore.iec.ch/preview/info_iec61116%7Bed1.0%7Db.img.pdf (10.12.2012)

Costs for construction, operation and disposal (life cycle costs)

When evaluating tenders for renewable energy projects the life cycle costs for systems (foreseeable costs for replacing components, maintenance, etc.), in addition to the costs for construction of the plant, must be included.

The bidder must explain the life cycle costs for the life span (15-20 years) comprehensibly and transparently in his tender. Tenders with lower life cycle costs should be evaluated higher than tenders with higher LCC, even if the initial investment costs are higher. When including disposal costs caution should be exercised in view of the uncertainties involved.

Detailed information on the use of life cycle costing in the evaluation of tenders can be found in Chapter 3.5.

Recyclability and re-usability of materials, substances (PV systems)

And components used (photovoltaic modules, batteries and inverters) can be applied to a limited extent in the evaluation.

Verification: Technical dossier on materials and substances used as well as test certificates.

Energy transmission

Transformers

Evaluation of transformer losses

As an example for the inclusion of transformer losses which are borne by the distributor, the calculation of losses can be included in the assessment. The contract will be awarded to the most economically advantageous tender. The following formula can be used to calculate losses (CCL – capitalised cost of losses):

$$\boldsymbol{CCL} = \boldsymbol{P}kwh \times \left(\frac{1}{r}\left(1 - \frac{1}{[1+r]^{n-1}}\right)\right) \times (8760 \times \boldsymbol{W}0 + \boldsymbol{d} \times \boldsymbol{W}\mathbf{L})$$

Where:
- **CCL**: Capitalised cost of transformer losses
- **PkWh**: Current cost price of distributed kWh
- **r**: discount rate
- **n**: the life-cycle of transformer (years)
- **W0**: No-load losses (kW)
- **WL**: Load losses (kW)
- **d**: yearly equivalent duration of transformer use with full load, in hours (per year)

No-load losses and load losses must be specified by the bidder.

Verification: Technical dossier based on a standardised test procedure in accordance with DIN or equivalent.

Note: In order to avoid values being used for the calculation of losses that are based on assumptions (e.g. expressed in XX €/ kW no load losses und XX €/ load losses), it would make sense to allow the buyer to calculate the CCL.

Note: Country-specific data (e.g. electricity price per kWh) can or must be included in the calculations to assess transformer losses.

Note: Whether a CCL should be applied during the contract award phase also depends on whether the tariffs are calculated to cover costs. If this is not the case then maximum values for transformer losses may have to be included in the technical specifications in order to establish a minimum standard with regard to the energy efficiency of the system.

Switchgear

When evaluating switchgear additional points can be awarded using a comparative weighting of tenders for GIS switchgear with higher impermeability to SF6 gas and lower amounts of SF6 gas used. The starting point is the maximum gas loss defined in the relevant IED standards (see Annex).

Verification: Technical dossier and test certificates.

Note: Full compliance with impermeability criteria in relation to SF6 as minimum criteria must be achieved in the case of switchgear (see Technical Specifications). SF6 switchgear is permanently filled with this protective gas and only has to be checked during inspections. SF6 is highly damaging to the environment if it escapes (e.g. owing to leaks). The above criterion is only used to identify bidders who satisfy the minimum requirements of the technical specifications better. This award criterion should never be included alone in the technical specifications without minimum requirements

Energy consumption

Lighting systems

Dimmable installations and control systems

Points are awarded for control systems that control light intensity and hence energy consumption automatically and intelligently. The systems should satisfy the following requirements:

- use of dimmable lighting
- installation of intelligent control systems that control the required light intensity based on the parameters availability of daylight, traffic and weather conditions

Verification: Technical dossier of the manufacturer and concept based on the requirements from the design phase.

Weighting: 10-20%

Life cycle costs for lighting systems

The costs for the lighting system are calculated according to the life cycle costs. The acquisition costs (supply and installation), energy costs based on the specified life span [length of utilisation such as operating hours over the planning horizon], replacement costs for light bulbs, maintenance costs (cleaning, replacement of light bulbs) and disposal costs using the tool [insert the tool, e.g. the SMART SPP tool used in the planning phase or adapted for the contract award phase: www.lcc-tool.eu] are calculated.]

Weighting: 20-80%

Electric drives - improved efficiency

In order to include the efficiency of electric drives (electric motors) the European Union provided a basis for classifying electric drives according to the level of efficiency with the EC Directive 640/2009. There are three efficiency classes.

Verification: The verification listed in Annex II of EC Directive 640/2009 of the European Commission must be provided.

Note: Class 1 is satisfied by many electric drives, class 2 should be satisfied more generally by 2015, and class 3 not until 2017.

4.2.4. Contractual provisions

Training on energy-efficient operation of lighting systems

The bidder is required to provide detailed training on the energy-efficient operation of the lighting system upon handover. The bidder must check the system one year after completion with regard to energy efficiency, make adjustments and provide further training for the operator as necessary.

4.2.5. Evaluation of feasibility

Sustainability criteria in the application of renewable energies and in this case the construction of infrastructure projects for electricity and heat generation can be applied comprehensively. Substantial practical examples are available for energy consuming systems such as lighting systems which focus on LED technologies - here, too, the sustainability criteria can be applied extensively around the globe.

The above sustainability criteria bear comparison with the legal requirements of the "Government Procurement Act" of the World Trade Organization (WTO). In exceptional cases we recommend checking the procurement guidelines that apply to the contracting organisation/public institution in the partner country for transferability, although essentially it can be assumed that the criteria and required verification are legally compliant if the basic principles of competition are respected.

Looked at in socio-economic terms, sustainability criteria lead to lower costs in the medium term (high acquisition price with lower running costs) and have a positive effect on the quality of the environment (ecosystem quality, biodiversity and lower CO_2 emissions) in partner countries (also through appropriate recycling and re-use). Furthermore, the use of renewable energies has a socially positive influence on the health of the population (lower emissions).

4.3. Information and communication technology (ICT) - computers

For many ICT products the energy consumption over the life span and beyond is a decisive environmental factor. Furthermore, the impact on the environment from the actual production process is considerable. A study on life cycle assessment by Eric Williams comes to the conclusion that the production phase is responsible for the greatest part of the environmental impact (energy, materials and water consumption) (Williams, E. 2005). This was confirmed in a study by Fujitsu on laptops (Fujitsu 2005). For monitors, this was confirmed in a study by the American environmental agency EPA in a comparison of CRT and LCD monitors (US EPA 2005) (see Chapter 3.5.).

However, it is generally not effective to include life cycle assessments in ICT procurement procedures and is far too expensive measured against the procedural costs incurred. Therefore, the following sustainability criteria are of special relevance in the utilisation phase for procurement in Financial Cooperation:

Warranty and guarantees to promote long-term results

Example: Construction of a PV installation with a long-term guarantee of earnings

Image: dreamstime.com / Aiv photo

In southern Asia KfW subsidised the construction of a large grid-connected photovoltaic power station with an output of 125 MW. In order to accommodate the operator's ambition for a long-term and high-quality plant, an innovative approach was developed during the procurement procedure, which goes far beyond the usual guarantee and warranty claims to date. In addition to the functional and parts guarantee, a further warranty for achieving an agreed amount of energy generated each year, as well as average availability, was agreed with the bidders.

Each year the output to be achieved is calculated based on actual solar irradiance. Compliance with this warranty was ensured via a penalty which becomes due if the guaranteed amount of energy to be generated each year is not reached. The penalty is calculated as a percentage of the contractual value and is withheld on completion of the plant. For the first 10 years of operation an annual assessment is made on whether the agreed goals were met and if the corresponding figure is reached, the amount for the year in question is paid.

This gives the operator of the plant greater security that the whole plant will generate the guaranteed energy over a comparatively long life span. Quality-oriented bidders had a clear advantage in this award procedure: the requirement for a 10 year warranty signalled that quality and sustainability were the main focus here. This gave them the opportunity to differentiate themselves via the quality of their planning, selection of components and execution and not simply via the tender price.

The challenge posed by this type of approach lies in a balanced formulation of conditions in legal, technical and commercial terms. On the one hand they must define sophisticated requirements clearly and maintain the possibility of applying penalties to the operation over the whole period of time. On the other hand, bidders should not be overwhelmed since this can deter bidders. Therefore, it is important to provide opportunities where both parties can review and check certain parameters continuously.

Source: KfW

4.3.1. Planning

The ICT system (here: computers) requires a comprehensive utilisation study as part of project appraisal; this must include the required number of computer workstations, the applications to be used (simple Office applications or processor-intensive graphics applications?) and the future development of user behaviour from the point of view of sustainability. Analyses can focus on the most important sustainability criteria (see above). Furthermore, technological alternatives can be considered (see example below).

Table 12: Sustainability requirements for ICT systems

Robustness of the ICT system including maintainability and low costs for utilisation and maintenance.
Low electricity consumption and a high level of self-sufficiency of the ICT system in view of an often insufficient electricity supply.
Upgradeability and reliable supply of spare parts.
Lower percentage of toxic substances since there are rarely appropriate recycling systems (mono-fraction recycling) in the region.

Example: ICT containers for laboratories and training centres, Uganda

The aim was to provide an ICT infrastructure for training centres which satisfied high sustainability standards. The challenge was to set up ten computer workstations for Office and internet applications so that a stable, easy to maintain and cost-effective ICT tender could be provided despite the unreliable electricity supply.

In the planning phase a comparison between traditional desk top computers and thin clients was carried out; the latter connect the user to a shared server but do not themselves have any storage media for programs. The great advantage of thin clients from the point of view of environmental protection lies in the lower consumption of resources per computer workstation. Thin clients are significantly smaller and use fewer materials such as rare earths, copper and aluminium. Furthermore, they only have to be replaced every seven years (compared with three to four years for PCs and laptops). This is based on mechanical parts that are less prone to failure (no fan or hard disk) and fewer software updates are required since the processing power is at the server.

Both alternatives are based on an electricity supply with solar modules which is specially secured against theft. The expected energy consumption of the solid state alternative was 6.2 kW per day (only 17% compared with conventional types). The acquisition costs for the ICT system and the electricity supply were 81% less at USD 18,000, which can be attributed to the lower number of solar modules required.

The result was clear: the thin client alternative was more cost-effective and easier to maintain due to fewer mechanical parts. Furthermore, the solution was more sustainable in operation since lower running costs for the electricity supply and maintenance of devices could be expected.

Source: KfW

A whole series of certifications in the ICT field is available in the market. The most common and recognised Type 1 ecolabels and Type 3 manufacturers' declarations for computers worldwide are listed in the following table.

Table 13: Quality labels (ICT)

Quality Label / organisation	Focus / website
ENERGY STAR	Energy consumption www.energystar.gov
DER BLAUE ENGEL	Energy consumption, materials, pollutants, ergonomics www.blauer-engel.de
	Energy consumption, materials, pollutants, ergonomics www.eu-ecolabel.de
TCO CERTIFIED	Energy consumption, materials, pollutants, ergonomics www.tco-development.com
epeat	Energy consumption, materials, pollutants, ergonomics. Available at three levels (bronze, silver, gold). www.epeat.net
THE ECO DECLARATION	Energy consumption, materials, pollutants (manufacturer's declaration based on standard) www.bitkom.org/de/themen/54806_55862.aspx

Object of the contract

The signalling effect sent out by the object of the contract should certainly be used in a procurement procedure for computers (see Chapter 3.3.1). Common formulations contain:

- Supply of energy and resource-efficient computers that have been manufactured in a socially-responsible manner
- Supply of low-maintenance, energy- and resource-efficient computers that have been manufactured in a socially-responsible manner

Sustainable formulation of technical specifications

In this section technical specifications with the focus on sustainability are presented. They are supplemented with suitable verification.

Product life span and resource efficiency

The computers offered must be upgradable. This applies in particular to replacement and upgrade of the hard disk / SSD drive, RAM, CD/ DVD drive and batteries.

Verification: All products with the latest EU ecolabel, the Nordic Swan, the Blue Angel, the EPEAT label and the TCO label, satisfy this criterion. An ECO DECLARATION (ECMA-370) submitted to the corresponding authorities, technical dossiers and other suitable documents from the manufacturer can also be used as verification of compliance with requirements.

The bidder must guarantee the availability of spare parts for at least three years after completion of the production process.

Verification: All products with the latest EU ecolabel, the Nordic Swan, the Blue Angel, the EPEAT label and the TCO label satisfy this criterion. An ECO DECLARATION (ECMA-370) submitted to the corresponding authorities can also be used as verification of compliance with requirements.

The bidder must guarantee the availability of spare parts for at least five years after completion of the production process.

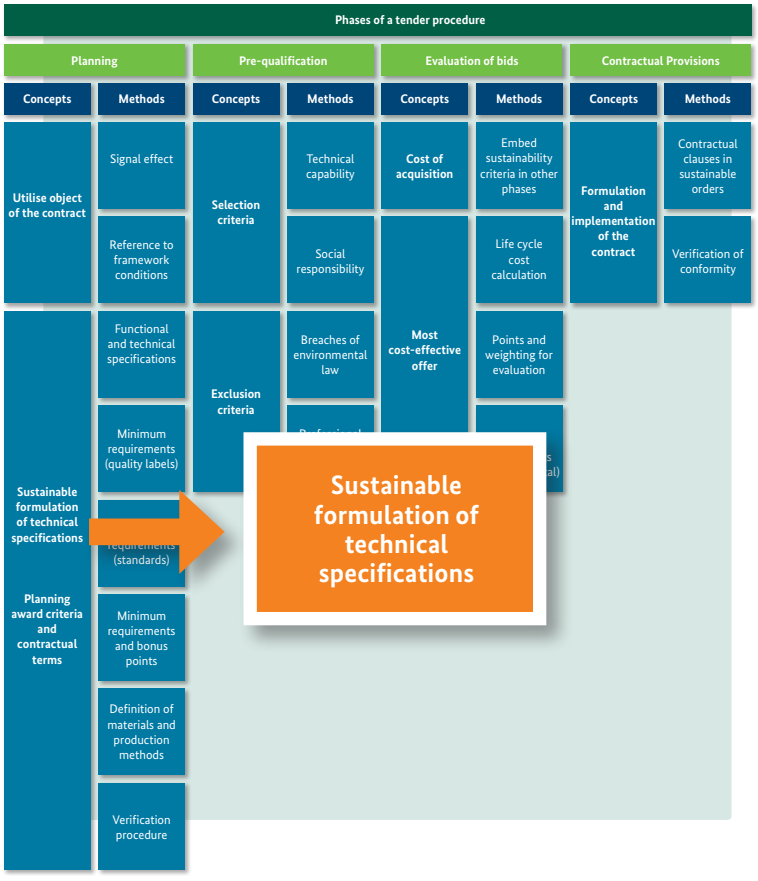
Verification: see above

The bidder must offer a product take-back and re-use guarantee for the devices and in addition must explain how eco-friendly and socially- responsible re-use, recycling and scrapping will be carried out (minimum requirement: pass/ fail).

Verification: All products with the Blue Angel label. Further indicative verification is provided by the EPEAT label if the criteria “Provision of product take-back service” and “Auditing of recycling services” are mentioned and satisfied.

Energy efficiency

Energy consumption must comply with ENERGY STAR criteria. As reference the latest version of the ENERGY STAR criteria for the product category (e.g. PCs, thin clients) is used (available at www.energystar.gov).



Sustainability+

The bidder must offer a product take-back and re-use guarantee for the devices and in addition must explain how eco-friendly and socially- responsible re-use, recycling and scrapping will be carried out (minimum requirement: pass/ fail).

Verification: All products with the ENERGY STAR label, the Blue Angel and the TCO label satisfy these requirements.

In order to reduce **energy consumption in an OFF state** to zero, computers must be supplied with multiple sockets with disconnect function.

Verification: A sufficient number of multiple sockets with disconnect function is included in the tender.

Hazardous substances

The products may not contain the following substances:

- **Lead** (except for (1) lead oxide in glass, used to combine front and rear substrates of flat fluorescent bulbs in LCD monitors, (2) lead compounds to connect pins with microprocessors with a lead content of over 80% and 85% in relation to weight)
- **Mercury** (except for backlighting in monitors – see below)
- **Cadmium**
- **Hexavalent chromium**
- **Polybrominated biphenyl** (PBB)
- **Polybrominated diphenyl** (PBDE)

Verification: Declaration of conformity with the European RoHS Directive (2002/95/EC) or an equivalent technical dossier from an independent testing laboratory.

Imaging devices such as LCD monitors may not contain more than 0.1 mg average of mercury or mercury compounds for backlighting per bulb.

Verification: All products with the Blue Angel label in its current version satisfy this criterion. An ECO DECLARATION (ECMA-370) submitted to the corresponding authorities or the EPEAT label can also be used as verification of compliance with requirements.

Noise emissions

According to ISO 9296 computers in idle mode should have maximum noise emissions of 38 dB, when starting up the hard disk a maximum of 42 dB, and when starting an optical drive a maximum of 50 dB (A-evaluated sound power level).

Verification: Technical dossier of the manufacturer and products with the EU ecolabel, the Blue Angel and the Nordic Swan.

Sustainability+

Exclusion of halogenated product components: Halogenated polymers and additives of halogen organic compounds as flame retardants are not permitted. Exceptions to this rule:

- organofluorine additives (e.g. anti-dripping reagents), used to improve the physical properties of plastics as long as they do not exceed 0.5 percentage by weight
- fluorinated plastics such as PTFE
- plastic parts weighing less than 25g (except for keyboards). The latter may not contain any chlorinated paraffin, polybrominated biphenyls (PBB) or polybrominated diphenylethers (PBDE).
- process-related and technically unavoidable impurities are excepted.

Verification: Manufacturer's declaration and declaration of the plastics manufacturer/supplier. Products with the Blue Angel label.

4.3.2. Pre-qualification

Since procurement procedures for computers and monitors involve supply performance, requirements for environmental management can only be applied in exceptional cases. Independent of the product level the bidder should prove that the company understands the environmental impact of its activities and introduces measures to improve its environmental performance.

Verification: Declaration by bidder or certification according to an environmental management system (EMAS, ISO 14001 or comparable).

4.3.3. Evaluation of bids

Common award criteria for computers and monitors are described below.

Sustainability criteria

Imaging devices such as LCD monitors may not contain mercury or mercury compounds for backlighting.

Verification: Manufacturer's declaration/technical dossier. An ECO DECLARATION (ECMA-370) submitted to the corresponding authorities or the EPEAT label (normally Gold Standard) can also be used as verification of compliance with requirements.

Weighting: 1-5%
The requirements for monitor ergonomics are satisfied according to the criteria of the TCO label.

Verification: Latest version of the TCO label.

Weighting: 1-5%

Infobox: Fair trade computers

In the ICT field it is especially important to question social responsibility along the supply chain since dangerous working conditions are frequent in this sector. The situation at suppliers of certain manufacturers can be checked here: www.fair-computer.ch.

4.3.4. Contractual provisions

The concepts and methods from Chapter 3 apply. Furthermore, the following clause should be included: The energy saving mode must be activated in the pre-configuration for delivery.

4.3.5. Evaluation of feasibility

The environmental requirements for ICT systems are primarily determined in Europe and North America. In view of the standard production landscape around the globe and equal availability of the products (a world market), these requirements have a direct influence on the positive availability of eco-friendly devices. Therefore, the sustainability criteria can be applied worldwide.

The above sustainability criteria match the statutory requirements of the "Government Procurement Act" of the World Trade Organisation (WTO). In exceptional cases we recommend checking the procurement guidelines that apply to the contracting organisation/public institution in the partner country for transferability, although essentially it can be assumed that the criteria and required verification are legally compliant if the basic principles of competition are respected.

Sustainability+

Plastic components weighing over 25g must be identified in accordance with ISO 11469. Plastic parts weighing more than 25g and with a flat surface of at least 200 mm2 must be identified permanently according to ISO 11469, taking ISO 1043 Parts 1 to 4 into consideration. Metal coating of plastic casing parts is not permitted.

Verification: Blue Angel label or manufacturer's declaration/technical dossier.
An ECO DECLARATION (ECMA-370) submitted to the corresponding authorities or the EPEAT label (normally Gold Standard) can also be used as verification of compliance with requirements.

Weighting: 1-5%

Sustainability+

The energy consumption of the devices is less than stipulated in the ENERGY STAR criteria. As reference the latest version of the ENERGY STAR criteria for the product category (e.g. PCs, thin clients) is used (available at www.energystar.gov). Weighting is applied using the formula "(points of the pertinent bid/highest score possible for this category) * 100".

Verification: Technical dossier of the manufacturer or official test report from ENERGY STAR certification or equivalent.

Weighting: 10-15%

Example: Award criterion energy consumption

Two bids are received following a procurement procedure for thin clients. Both satisfy the basic criteria on energy consumption with a reference to the values of ENERGY STAR based on the following table:

Operating mode	Power consumption (W)
Idle mode	≤ 12,0 W

The procurement procedure includes an award criterion for improved energy consumption which is evaluated with10% in the weighting process. The bid price accounts for 90%. The bid prices are identical. Tender A gives 8W in idle mode via a technical dossier of the manufacturer. Tender B gives 6W in idle mode via the test certificate for ENERGY STAR certification. Hence both tenders satisfy the requirements for lower energy consumption.

Tender A is given (12 / 9) * 100 = 150 points (7.5%). Tender B is given (12 / 6) * 100 = 200 points (10%). The contract is awarded to Tender B based on the higher overall number of points (tender: 90% price+ 10% improved energy consumption = 100 %).

The legal possibilities of including environmental aspects in the pre-qualification are limited for supply contracts since the specific relation to the object of the contract is difficult to make. However, in view of the massive socio-economic and environmental impact of production processes for computers, we recommend in the market exploration phase to analyse socially-responsible approaches in depth in order to create a better understanding of the challenges faced along the supply chain for suppliers and manufacturers (see Chapter 3.4).

Application of the above sustainability criteria leads to lower overall costs in the medium term (higher acquisition costs with lower running costs) and has a positive influence on the quality of the environment (eco-system quality, biodiversity and lower CO_2 emissions) in partner countries (also through appropriate recycling and re-use).

Weighting: 1-5%

4.4. Structural engineering (buildings)

The building sector is the most important sector worldwide where sustainable and resource-efficient material flows can be achieved. Around 50% of raw materials extracted and consumed worldwide (mineral raw materials: 80%) are used in construction. A major part of global primary energy consumption is used for the construction and utilisation of buildings (e.g. 40% in the EU). Demolition of buildings creates around 50% of waste worldwide.

In view of the differences between national legislation and other facts (e.g. different climatic regions, requirements for protection against natural disasters, design culture) it is not possible to establish uniform global standards for procurement in the construction field for Financial Cooperation. Instead this Toolbox contains a series of specific recommendations that are explained with different variations and enhanced with examples from practical application. The focus here is on residential and office buildings (new and refurbished).

In addition to a systematic approach to the formulation of sustainability criteria and verification procedures, this section of the Toolbox contains recommendations for the procurement of building works and HVAC systems connected with building works, as well as the supply of electricity. It applies to the planning, construction, utilisation and demolition phase for public and office buildings. Ecological and social criteria are proposed for

each of these phases. The focus is on energy consumption, the use of renewable energy sources, building materials and products, waste and water management, and other aspects relevant to the environmental impact of building work: experience of architects, monitoring and user aspects.

4.4.1. Planning

Three sustainability aspects are of particular importance when planning construction projects in the Financial Cooperation field:

- Choice of location (in the sense of flood protection, etc.)
- low maintenance requirements
- Global cost planning – actual construction only accounts for 10-15% of costs. Therefore, life cycle costing (see Chapter 3.5) is important in order to set an early course for buildings that are energy efficient, save water and are easy to re-use.
- A design based on local knowledge of sustainable construction, often using many passive components, i.e. ones that use little energy (e.g. natural ventilation and cooling).

The following examples illustrate these aspects.

Sustainability+

The life cycle costs were calculated during the design phase for the Centre for Icelandic Studies (Reykjavik, Iceland). The calculation referred to three aspects:

- increased insulation of outside cladding (outside walls, roof, doors and windows)
- Natural light control with skylights (reading room)
- Glazing for the inner courtyard

The "Statsbygg's LC profit tool" (www.lcprofit.com/default_en.asp, 02.08.2013) was applied and the analysis was based on the criteria architecture, construction costs, energy consumption, interior climate and acoustics. The results showed that with the planned measures 9% of energy costs, 1% of maintenance costs and 3% of replacement costs could be saved. After this pilot test in 2010 the national building authority decided to use the tool for all large construction tenders.
Source: Statsbygg

Example: Natural heating and cooling using termite architecture,Harare, Zimbabwe

The Eastgate Shopping Centre stores heat during the day and releases it at night via chimney systems; cool air is sucked up via floor segments and the inside of the building cools down. This is a cost-effective and eco-friendly alternative to air-conditioning systems and can be used reliably throughout the year due to the stable climatic conditions.

The designers copied the system from African termite colonies and were able to reduce the total energy consumption of the building by 10%; furthermore there was a saving of US $3.5 million in acquisition costs for HVAC. These measures also had a positive social component: rents are 20% lower than in comparable buildings in the vicinity due to the low costs of utilisation.

For more information: www.inhabitat.com/2007/12/10/building-modelled-ontermites-eastgate-centre-inzimbabwe (13.03.2013)

Required certifications

The planning phase also decides the required certifications for the whole building according to a recognised certification system, based on important sustainability criteria. The following overview presents selected systems.

Table 14: Certification systems (building construction)

Certification systems (building construction)
The German Society for Sustainable Building (Deutsche Gesellschaft für Nachhaltiges Bauen e.V. - DGNB) certifies environmentally-friendly buildings and building complexes. The certification system developed in Germany is increasingly gaining recognition in an international context. For further information: www.dgnb.de (13.03.2013)
The BREEAM (BRE Environmental Assessment) method is a certification system for environmentally-friendly buildings that is applied worldwide. BREEAM offers: • recognition and verification of a building with a low environmental impact • ensuring the best possible environmental standards are applied in the building • the inspiration to find innovative solutions with a low environmental impact • a benchmark that goes beyond national standards and hence matches the aims of sustainable public procurement • a tool that helps to lower running costs and to upgrade the neighbourhood • certification that harmonises the building with the environmental and sustainability aims and strategies of the contracting entity. **For further information:** www.breeam.org (13.03.2013)
Passive house certification is intended for highly energy-efficient buildings and is offered by the PassivHaus Institut in Germany and certification entities worldwide. A passive house is very well insulated and airtight and optimised with regard to passive measures for heat recovery (humans, installations, solar irradiance) and cooling (orientation, shading, active and passive ventilation components). This results in savings of energy for heating of up to 90% with improved indoor air quality. **For further information:** www.passiv.de (13.03.2013)
The LEED certification system of the US Green Building Council (USGBC) is becoming available in an increasing number of countries. One example is India, where the India Green Business Center (IGBC) offers LEED certification for existing buildings, new construction projects, shell construction and the Green Homes programme of the IGBC. Silver, Gold and Platinum certification is awarded on the basis of weighted criteria that pay particular attention to the climatic factors in India. **For further information:** www.unep.org/sbci/pdfs/State_of_play_India.pdf (13.03.2013)
ENERGY STAR certification is familiar with ICT systems but also provides aid in energy efficient building design. **For further information:** www.energystar.gov/index.cfm?c=business.bus_index (13.03.2013)

Object of the contract

New construction projects: New construction of energy- and resource-efficient [insert type of building] using eco-friendly building materials with due consideration for socially responsible construction

Renovation/refurbishment: Energy and resource-optimised renovation / refurbishment of existing [insert type of building] with eco-friendly building materials with due consideration for socially-responsible construction

Sustainable formulation of technical specifications

In this section technical specifications with the focus on sustainability are presented. They are supplemented with suitable verification.

Energy consumption

All the energy needs of a building [useful / final / primary] (including heating, cooling, hot water, ventilation, electricity) are [X] %[23] lower than the maximum value determined in [insert relevant national regulation].

Verification: Overall energy planning (technical dossier) especially with regard to energy calculations according to ISO 13790 (Energy efficiency of buildings - calculation of the energy requirement for heating and cooling)[24].

Energy efficiency training

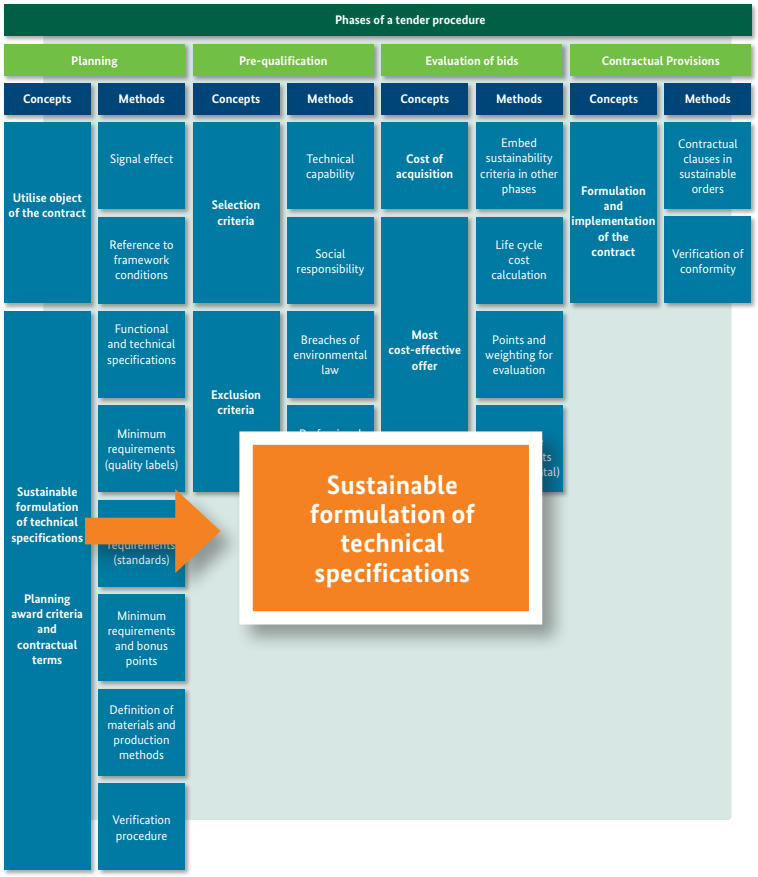
The building manager must be trained in the energy efficient use of the building when the building / renovation work is completed. The bidder must describe the concept and content of training in his tender.

Verification: Adequate training concept on energy efficiency. Qualitative evaluation.

Building materials

The following **materials/ substances** may not be used in buildings:

- products containing sulphur hexafluoride (SF6)
- interior paints and varnishes with a solvent content (volatile organic compounds (VOC) with a boiling point of 250 °C max.) over:



- 30 g/ l (minus water) for wall paint (according to ISO 13300)
- 250 g/ l (minus water) for other paints with a spread rate of at least 15 m²/ l and excellent covering qualities of 98%
- 180 g/ l (minus water) for all other products (paints other than wall paints with a spread rate of less than 15m²/ l, varnishes, wood stains, floor sealants, floor paints and similar products)

Verification: The bidder must submit a declaration that these products/substances will not be used in the building.

23 The percentage for basic criteria should lie between 5 and 10%. The pertinent national standard is decisive as well as its orientation to an energy efficient building. If there is no national standard available, a reference analysis of the building standards reached nationally (or regionally) must be used.

24 Interesting developments for calculating the overall energy requirements can be derived from DIN V 18599 “Energy evaluation of buildings - calculation of useful, final and primary energy requirements for heating, cooling, hot drinking water and lighting” (EU pre-standard). However, the transferability of country specific Financial Cooperation must be double checked and verified.

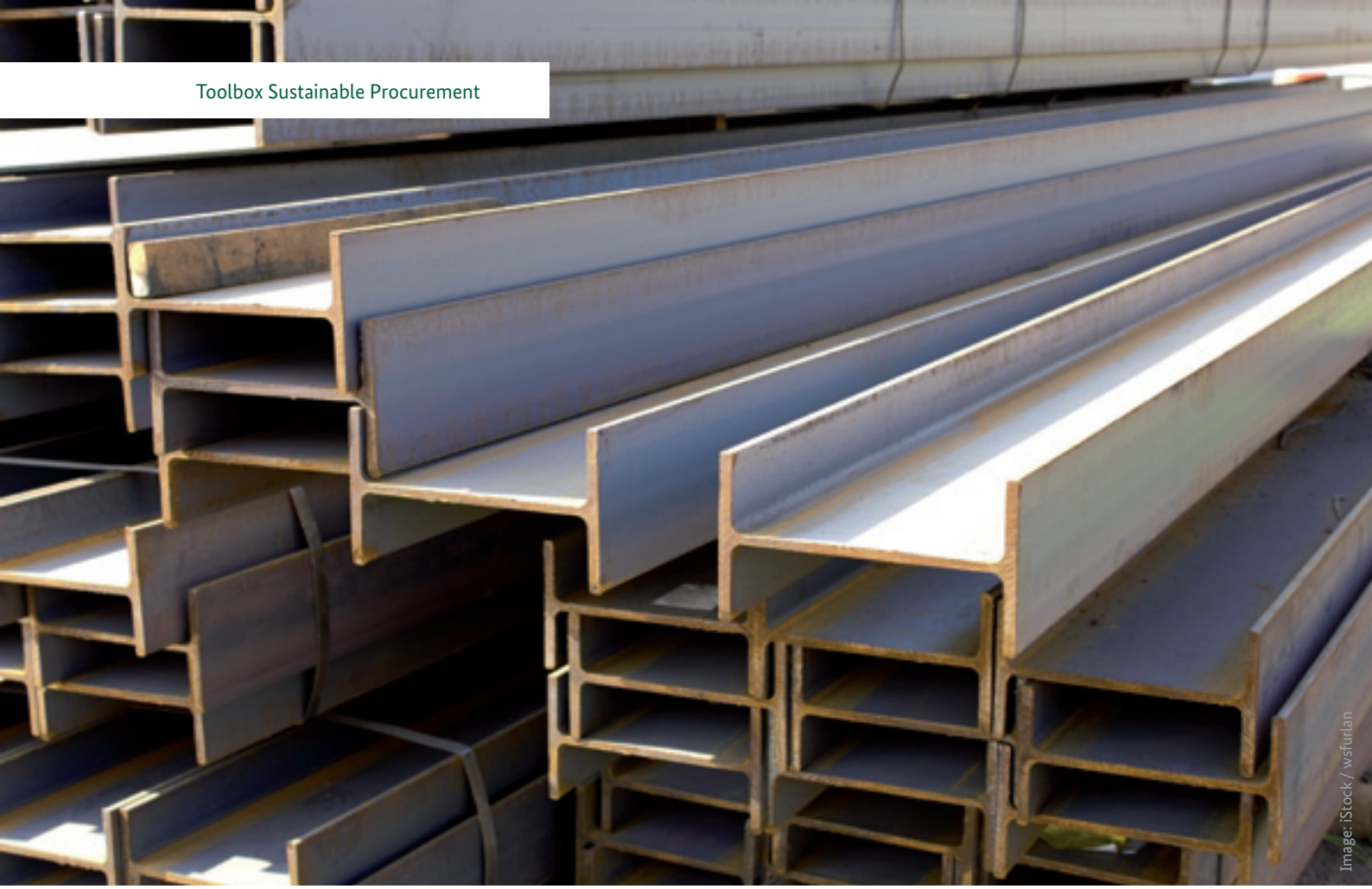


Image: iStock / wsfurlan

Sustainability+ **Cooling and coolants**

15% of electricity generated worldwide today is used for cooling and cold production. In many developing and newly industrialised countries the energy requirements specifically for cooling office buildings, shops and residential buildings are increasing disproportionately in connection with rising demands. There are various approaches to reducing the energy needed for air-conditioning systems, for example. One factor is, of course, the efficiency of the air-con equipment itself. In some countries air-conditioning equipment is already divided into efficiency classes (e.g. India). However, an air-conditioning appliance can only work efficiently if it is designed optimally for its application and is serviced periodically. More important than the efficiency of air-conditioning appliances, however, is the minimisation of the occurrence of heat inside buildings through corresponding building measures. Appropriate measures are shading windows against direct sunlight using outside blinds, for example, or horizontal porches, insulating roofs and façades, heat-reflecting surfaces, heat absorbing glass, etc.

In addition to energy efficiency, HVAC systems have another environmental and climatic impact: a smaller or greater part of the coolant escapes as a result of leaks or inappropriate disposal. Ozone-depleting coolants will hopefully have disappeared worldwide within a few years due to the Montreal Protocol. However, some of the coolants introduced as a replacement demonstrate a significant climatic impact (GWP > 1500). The climatic impact from leaks is greater in many cases than the energy used for production. An alternative are natural coolants that are non-hazardous to ozone and only have a minimum climatic impact. In many applications they are more energy efficient than synthetic coolants. In developing countries especially there are still obstacles to fast-track their introduction. When considering the sustainability of cooled buildings as well as cooling and cold production installations, the effect from the use of coolants should always be included. Where feasible and appropriate, applications with natural coolants should be used.

Construction timber must be taken from legally managed forests

Verification: Certificates from FSC (Forest Stewardship Council: www.fsc.org) for traceability of the product chain and other equivalent verification are accepted as evidence for compliance with the requirements.

Emissions from volatile organic compounds (VOC) in the building products used may not exceed the values of the standard to determine emissions ISO 16000-9 to-11 (see www.iso.org) or another equivalent standard.

Verification: Test report in accordance with ISO 16000-9 to -11 or a method described in an equivalent standard.

Water saving devices

All points of use in sanitary facilities and kitchens must be fitted with water saving technologies. This comprises:

- Dual flush cistern for WCs should use a maximum of 6 litres for a full flush and 3 litres for a small flush.
- Waterless urinals must function with a biologically degradable fluid or without any fluid.
- Water saving devices in the cistern must ensure water savings of at least 30% when flushing the toilet.
- Flow controllers must save at least 50% of water compared with normal use.

Verification: The bidder must submit technical documentation for the products to be installed that indicates that the technical specifications have been complied with.

4.4.2. Pre-qualification

The general requirements and possibilities described in Chapter 3 apply. The following concepts and methods in particular should be prioritised.

Architect's experience with eco-friendly building

The architect must prove that s/he has sufficient experience in eco-friendly building. This can include references for specialists such as HVAC engineers associated with the architect. Each applicant must document his/her experience (from completed and ongoing projects) in the following fields (proposed list):

- Design of energy-efficient buildings incl. utilisation of renewable energy sources used locally in domotics, possibly with details on the specific energy requirement per m^2 in a building already completed, including heating, cooling, lighting and ventilation
- Conclusion of energy saving contracting agreements with energy providers
- Bioclimatic architecture in order to achieve energy efficiency, thermal and optical comfort and good interior air quality standards while avoiding mechanical-electrical systems, e.g. lighting with daylight
- Use of eco-friendly building materials and products
- Low water consumption
- Reduction of waste during the construction phase

Technical capability

The bidder must prove his/her technical competence and capability (through experts in the company or through cooperation with external specialists):

- Effective protection of flora and fauna in the construction area and vicinity (if building is done in an ecologically sensitive area)
- Measures to secure hazardous waste and substances that can have a negative impact on the area
- Environmental management measures to minimise the occurrence of waste on the construction site, compliance with noise regulations and avoidance of traffic disruption
- Measures to ensure energy efficiency and low water consumption
- Verification: Certification according to ISO 14001 or equivalent certificates are accepted.

4.4.3. Tender evaluation

Especially for construction tenders a comprehensive use of award criteria is essential in order to identify a sustainable solution (see Chapter 3.5).

Sustainability criteria

Sustainability+ **Use of building materials made of renewable raw materials**

Additional points are awarded for:

Utilisation of process water

The bidder must submit a proposal on how the use of rainwater and process water can be optimised in the system for water supply and recirculation in the building.

Additional points are awarded based on the proposals submitted.

The proposals are classified and evaluated according to the following criteria:

- Planning and quality of technology and adaptation to the building
- Estimated percentage of process water in the whole water supply
- Impact of the solution on hygiene and health
- Maintenance costs and durability of the product (installation and maintenance costs)

Image: dreamstime / Polepoletochan

Example: Use of building materials made of renewable raw materials in Burkina Faso

A secondary school in Gando used traditional building materials (clay) and technologies, and involved the local population closely in the building process. In 2012 the Burkinian architect for the school, Diébédo Francis Kéré, accepted the Global Holcim Award Goldon behalf of all involved in this project.

For further information: www.holcimfoundation.org/T1590/A12GLgoBFho-deu.htm (02.08.2013)

Sustainability+ **Use of building materials made of renewable raw materials**

The bidder must state the value-based percentage of the [insert product types such as walls, windows, paint or insulation material] intended for building work that are made of renewable raw materials.

Weighting: 5%

Image: flickr / indysurfer

Sustainability+

Additional points were awarded for [wood products] produced in accordance with the criteria in the resolution of the European Parliament on Fair Trade and Development (2005/2245(INI)).

Verification: The contractor [bidder, participant in the tender procedure] must submit one of the following types of verification:

- products with a Fairtrade label (Fairtrade Labelling Organizations International)
- products imported and marketed by Fairtrade organisations (recognised by the World Fair Trade Organisation).

Note: Currently there are only a few products in the market that are labelled for sustainable agriculture as well as fair trade, although some initiatives already exist (see also www.fairtrade-deutschland.de, www.copade.org, www.forcert.org.pg, www.kahrs.com).

The application of this criterion is a clear signal to bidders that there is a market for these products. These signals to the market are especially important since wood businesses can better evaluate the cost-effectiveness of investments in such programmes. In combination with the demand for FSC-certified wood (see above) this results in a strong orientation to sustainability.

4.4.4. Contractual provisions

The contractual provisions described in Chapter 3 and notes on contract management apply (see Chapter 3). Furthermore, the following aspects should be incorporated.

Training on social matters

The bidder must guarantee that employees are trained with regard to the social effect of their work and the social (or ecological or sustainability-related) policy / strategy of the contracting authority (e.g. questions of health & safety, accessibility, non-discrimination) in buildings (or on building sites). Training must be carried out by a professional trainer who is qualified for all relevant topics and can respond to linguistic requirements.

Sustainability+ **Labour market integration**

Sample clause: The contractual partner undertakes to hire at least X% (depending on the country: 5-25%) of employees from a social economy enterprise (e.g. sheltered workshops where people with physical disabilities work).

The contractual partner must present the corresponding certification of the pertinent enterprise or of the relevant authority in order to prove these employment prerequisites are met.

Bookkeeping

The contractor must keep an energy bookkeeping system in the first three years. This bookkeeping system will provide building management with monthly figures on energy consumption for heating, air-conditioning, ventilation, hot water and electricity.

4.4.5. Evaluation of feasibility

Integrating sustainability criteria in construction projects has become a tradition around the globe. However, which measures lead to success depends very much on the relevant socio-economic as well as social and climatic context. The decisive factor here is that all aspects of sustainable building are included from the start, i.e. at the planning stage, and assessed according to their usefulness.

4.5. Transport (road construction)

The building sector is the most important sector worldwide where sustainable and resource-efficient material flows can be achieved. Around 50% of raw materials extracted and consumed worldwide (mineral raw materials: 80%) are used in construction (The German building industry 2013, see Chapter 4.4).

In view of the differences between national legislation and other facts (e.g. different climatic regions, requirements for protection against natural disasters, design culture) it is not possible to establish uniform global standards for procurement in the field of construction. Instead this Toolbox offers a series of specific recommendations, using road construction as an example, both for new building projects as well as refurbishment of transport infrastructure measures.

In addition to a systematic approach in the formulation of sustainability criteria and verification procedures, this part of the Toolbox contains recommendations for the procurement of construction work. It applies to the planning, construction, utilisation and disposal phase for public transport routes. Ecological and social criteria are proposed for each of these phases. This involves energy consumption, use of building materials, waste management and other aspects that are relevant to the environmental impact of building work.

4.5.1. Planning

The following sustainability aspects are especially important when planning road construction projects:

- Choice of route (with consideration for environmental aspects)
- Low maintenance requirements
- Total cost planning (investment and operating costs)
- A design based on local conditions and with the greatest possible use of local resources (material and human)
- Building material and products used for the project: Emissions occur when raw materials are transported and processed and must accordingly be considered in environmental terms
- Transport in connection with construction and operation of the project: Transport is required in all phases of the transportation route construction project. The fuels used pollute the air and increase greenhouse gas emissions. In the construction phase materials are transported to the construction site; in the operating phase public transport will, of course, pollute the environment. Therefore, the planning phase should ensure that the transport volume is kept to a minimum.

Object of the contract

- New construction projects: Road construction using energy and resource- efficient and environmentally-friendly building materials with due consideration of socially-responsible construction
- Renovation/refurbishment: Energy and resource-optimised renovation / refurbishment of existing transport routes using eco-friendly building materials with due consideration for socially-responsible construction: it is sensible to re-use existing road surfaces as far as possible after reprocessing.

Technical specifications - building materials

The following materials / substances may not be used:

- Polycyclic aromatic hydrocarbons (PAHs)
- Asbestos

Verification: The bidder must submit a technical dossier that shows that these materials / substances will not be used.

Image: iStock / mediaphotos

Note: The selection of materials / substances is an example of such a list (see Chapter 4.4).

When planning new road construction projects, and therefore also in the technical specifications, the results and input from the environmental and social compatibility study should be comprehensively included.

4.5.2. Pre-qualification

The general requirements and possibilities described in Chapters 3.4 and 4.4.2 apply. Since road construction is associated with significant effects on the immediate environment, the bidders invited to tender must prove they have sufficient experience in handling sensitive environmental projects. As part of the pre-qualification process the following aspects can be required for references and verification of experience:

- Effective protection of flora and fauna in construction and in the surrounding area (if this is done in an ecologically sensitive area)
- Measures to secure hazardous waste and substances that can have a negative impact on the area
- Environmental management measures to minimise the occurrence of waste on the construction site, compliance with noise regulations and avoidance of obstruction to traffic
- Contact with the residents affected, inclusion of local know-how.

Verification: In addition to certification according to ISO 14001, OHSAS 18001 and/or an equivalent certificate, the bidder can illustrate his qualification via corresponding references and project dossiers.

4.5.3. Evaluation of bids

Especially for construction tenders a comprehensive use of award criteria is essential in order to identify a sustainable solution (see Chapter 3.5).

Sustainability criteria

Invitations to tender for simple road construction projects are frequently issued as technical procurement procedures, i.e. on the basis of detailed specifications. In this case the planner must consider the main sustainability criteria in the planning phase. However, roads can also be put out for tender in functional calls, e.g. for concession models or other public-private partnership approaches. In any case the following aspects are important for sustainability:

Image: iStock / Imagebybarbara

- High, guaranteed life span of the road
- Renovation: Re-utilisation of reprocessed building materials recovered from the current roadway
- Surface quality of the road (level surfaces reduce repairs to vehicles and hence the need for new spare parts. Example: shock absorbers)
- Low noise emissions: reduction of noise pollution on very level road surfaces
- Training of local personnel: The bidder must guarantee that employees are trained with regard to the social effect of their work and the social (or ecological or sustainability-related) policy / strategy of the contracting authority (e.g. questions of health & safety, accessibility, non-discrimination) on building sites. Training must be carried out by a professional trainer who is qualified for all relevant topics and can respond to linguistic requirements. Furthermore, the contractor assumes the obligation to provide specialist training for local employees.

Note: The criteria must be adapted to the relevant climatic and regional situation and specified in more detail so that they can be included in tender evaluation. Where necessary criteria should be adopted in the technical specifications or contractual regulations (see also Chapter 3.5 Award criteria and/or minimum requirements).

4.5.4 Contractual provisions

Labour market integration

The contractor undertakes to employ at least X% of local personnel for the duration of the project (see also Chapter 3.3 Local Content).

4.5.5. Evaluation of feasibility

Integrating sustainability criteria in construction projects (here: road construction) has become a tradition around the globe. However, which measures lead to success depends very much on the relevant socio-economic as well as social and climatic context. The decisive factor here is that all aspects of sustainable building are included from the start, i.e. at the planning stage, and assessed according to their usefulness. To what extent sustainability criteria can be implemented depends on the volume of the project and hence on the capacity of the bidders. Much more can be required of internationally active construction firms than from small local construction companies. However, the latter only participate in smaller projects where the environmental impact is generally smaller than in large-scale infrastructure measures.

Example: Exposure to construction projects with environmental classification

The French Development Agency Agence Française de Développement (AfD) has developed a concept for construction projects put out for tender internationally with environmental classification A (high environmental impact) that comprises different methods that are explained below.

Pre-qualification in high risk projects

Bidders must prove that they

- have specialists to ensure adherence to environmental and social standards and who moreover have the necessary expertise and authority to monitor the planned measures
- can prove adherence to the criteria of international minimum standards (including ISO 14001, OHSAS 18001, see above) based on a model.

The pre-qualification process advises potential bidders comprehensively on the requirements regarding implementation of an environmental and social monitoring plan for the implementation phase.

Evaluation of tenders

Bidders must demonstrate a committed approach to environmental protection and to the maintenance of social standards on the building site, based on a model. Measures in the different phases such as execution, monitoring and supervision of the method, as well as the scope and quality of the personnel deployed for monitoring activities, must be described in detail. It is important that bidders can list the costs for implementation and maintenance of environmental and social standards separately according to the concept presented. Normally such costs are considered to be included in other prices. However, the evaluation does not only examine the proposed concept but also whether the estimated costs are reasonable. Tenders that do not satisfy the requirements substantially and/or that display a large discrepancy between concept and costs may be rejected.

Contractual provisions

Contracts contain financial penalty mechanisms in relation to non-adherence to the agreed plan to reduce the impact on the environment and social aspects. The plan presented is a binding and important part of the contract which facilitates adherence to the pertinent international sustainability standards in the building industry.

A checklist for monitoring is agreed contractually for implementation of the environmental and social criteria and measures which derive from the specifications of the procurement procedures and the proposed concept of the contractor. During execution a checklist is attached to each invoice submitted to document implementation of the measure. This means that payments can be reduced, suspended or fully rejected if verification on adherence to the social and environmental standards, e.g. in the form of this checklist, is not available in an acceptable form, or if the checklist is not signed.

Source: AFD

5. Outlook

The Toolbox for sustainable contract placement in Financial Cooperation projects shows clearly: economic, ecological and social criteria can be used effectively in order to increase the sustainability of projects and programmes. Sustainable procurement should be seen as a process that is changing and developing continuously. Product development is advancing and in future the market availability of products with declared lower ecological and social footprints will continue to expand.

With the continued development of internationally-recognised standards, concepts such as a life cycle assessment during the production process (e.g. construction materials) will be embedded even further in the evaluation for award of a contract for the economically most advantageous tender. Life cycle costing is already common practice in large infrastructure projects such as in the water and energy sectors. However, these calculations are being extended to other fields such as ICT and services in order to show the real costs.

The monetary assessment of external costs, e.g. in the health sector, is an interesting occurrence. On the basis of the Clean Vehicles Directive (2009/33/EC) of the European Union the relevant requirements are becoming more stringent worldwide and in time an increasing number of suitable tools for use in sustainable public procurement will become available.

The latest approaches include emissions via the life cycle in cost calculations. A monetary value for CO_2 emissions, SO_x emissions and dust emissions is assigned and the emissions calculated based on the so-called emission factors. These are calculated for specific regions. The European LCC calculation tool gives an insight into the possibilities offered by this comprehensive life cycle costing: www.lcc-tool.eu (02.08.2013).

The following example shows how the carbon footprint can be included during the contract award phase.

Sustainability+ **Re-utilisation of wastewater and residues in combination with renewable energies**

Example: Assessment of the simplified CO_2 evaluation during a procurement procedure for the construction and operation of electricity generation plants using solar energy with output above 250 kWp in France

In the application the applicant presents a simplified CO_2 footprint analysis for the photovoltaic modules or sheets, which is executed according to the model and methodology in the Annex. This CO_2 footprint analysis can be carried out by the applicant if the various elements are assessed based on the values given; if not, it must be carried out by a specialist entity independent of the applicant.

Assessment of the simplified CO_2 evaluation

The undernote is calculated according to the following formulas:

$$f(G_1, G_2) = \frac{g(G_1)\ x\ P_1 + h(G_2)\ x\ P_2}{P_1 + P_2}$$

whereby in this formula...

- P_1 is the output in MW of the part of the plant that uses photovoltaic technology
- P_2 is the output in MW of the part of the plant that uses concentrated photovoltaic technology
- G_1 is the value submitted by the applicant for the simplified CO_2 footprint analysis of the photovoltaic module in the plant
- G_2 is the value submitted by the applicant for the simplified CO_2 footprint analysis of the concentrated photovoltaic module in the plant
- $g(G_1)$ and $h(G_2)$ are determined as a function of G_1 and G_2 and with application of the following formulas:

$$g(G_1) = max\ [0;\ \min\ (5;5 - (G_1 - 295000)\ x\ \frac{5}{1823000})]$$

$$h(G_2) = max\ [0;\ \min\ (5;5 - (G_2 - 30000)\ x\ \frac{1}{24000})]$$

whereby in this formula G is the value given by the applicant in the simplified CO_2 footprint analysis. The resulting mark is rounded to the nearest tenth (1/10).

Source: Bundesverband Solarwirtschaft e.V. (BSW) 2013

6. Sources

Bundesministerium für Wirtschaft und Energie (Federal Ministry for Economic Affairs and Energy) 2008:
Energy Efficiency – Made in Germany. Energy Efficiency in Industry and Building Services Technology.
www.efficiency-from-germany.info/EIE/Navigation/die-initiative,did=351274.html (10.12.2012)

Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (Federal Ministry for Economic Cooperation and Development) 2011: Märkte entwickeln, Wohlstand schaffen, Verantwortung übernehmen – Die Wirtschaft als Partner der Entwicklungspolitik. Politisches Eckpunkte-Papier zur Kooperation mit der Wirtschaft. (Develop markets, create wealth, assume responsibility - The economy as partner of development policy. Political paper on cooperation with the economy.) http://www.bmz.de/de/publikationen/reihen/strategiepapiere/Strategiepapier302_03_2011.pdf (21.08.2013)

Dutch Ministry of Infrastructure and the Environment 2011:
Sustainability criteria for Sustainable Public Procurement of Water Purification and Sludge Treatment Plants Version 1.5

European Commission (DG Regional and Urban Policy) 2012: GPP Criteria – Wastewater Infrastructure. July 2013
http://ec.europa.eu/environment/gpp/pdf/waste_water_criteria.pdf (21.08.2013)

European Commission (Environment Directorate General) 2008: GPP training toolkit.
http://ec.europa.eu/environment/gpp/toolkit_en.htm (14.12.2012)

European Commission (Environment Directorate General) 2010: GPP criteria for 8 product groups.
http://ec.europa.eu/environment/gpp/second_set_en.htm (14.12.2012)

European Commission (Environment Directorate General) 2012: Buying Green!
A handbook on green public procurement. 2nd edition

FIDIC MDB 2010 Edition: Conditions of Contract for CONSTRUCTION.
FOR BUILDING AND ENGINEERING WORKS DESIGNED BY THE EMPLOYER.
Multilateral KfW Development Bank Harmonised Edition. June 2010. General Conditions. http://fidic.org (05.02.2013)

Fiege, Karin et al. 2006: Armutsminderung durch ländlichen Straßenbau? Eine Wirkungsanalyse in der Provinz Sofala, Mosambik. (Poverty alleviation through rural road construction? An impact analysis in the province of Sofala, Mozambique. Berlin. ISBN 3-936602-25-5. http://edoc.hu-berlin.de/series/sle/221/PDF/221.pdf (22.07.2013)

Flanagan, R., Norman, G., and Robinson, G. 1989, Life Cycle Costing – Theory and Practice, BSP Professional Books

Fujitsu 2005: Environmental Considerations in the PC Lifecycle

Hunkeler, D. et al. 2008: Andreas Ciroth, David Hunkeler, Gjalt Huppes, Kerstin Lichtenvort, Gerald Rebitzer, Ina Rüdenauer, Bengt Stehen (Lead authors): Environmental Life Cycle Costing. SETAC Publications

IHA 2011: Hydropower Sustainability Assessment Protocol. www.hydrosustainability.org/IHAHydro4Life/media/PDFs/Protocol/hydropower-sustainability-assessment-protocol_web.pdf (10.12.2012)

KfW 2012: FIDIC. Zusammenfassung und Vergleich der wichtigsten Verträge.
(Summary and comparison of the most important contracts). Compiled by Albrecht Wald / Thilo Heiberger / Yannick Ratke.
06.06.2012

Kirk, S. J., and Dell'Isola, A. J. 1995: Life Cycle Costing for Design Professionals, McGrew-Hill Book Company, New York

Lundin, M. & Morrison, G. 2002: A life cycle assessment based procedure for development of environmental sustainability indicators for urban water systems. Urban Water 4 (2002), PP. 145–152

Majumdar, M. 2008: TERI Indoor Environmental Quality Materials & Resources

Martinez et al. 2009: Life cycle assessment of a multi-megawatt wind turbine (on- & off-shore).
Renewable Energy 34, no. 3 (March 2009), PP. 667-673

Ofgem 2011: Benchmarking of Voluntary Schemes and the Renewables Obligation Order, www.ofgem.gov.uk 07.12.2012

Ofgem 2011: Renewables Obligation. Sustainability Criteria for Solid and Gaseous Biomass for Generators.
www.ofgem.gov.uk (07.12.2012)

RNE 2012: Rat für Nachhaltige Entwicklung. (Council for Sustainable Development)
www.nachhaltigkeitsrat.de/nachhaltigkeit (10.12.2012)

SEAI 2005: Renewable Energy Procurement Guidelines for Solar Thermal Systems Sustainable Energy Ireland.
Renewable Energy Information office: www.seai.ie/Solar_Procurement_Guidelines.pdf (10.12.2012)

Tepper, P. et al. 2012: Überprüfung sozialer Verantwortung entlang der Lieferkette.
Ein rechtlicher Praxis-Leitfaden für öffentliche Einkäufer. (An examination of social responsibility along the supply chain. A legal practical handbook for public buyers.)www.landmark-project.eu/de/leitfaeden-instrumente (13.12.2012)

UNEP 2008: Procurement guidelines of the United Nations Environment Programme.
www.unep.fr/scp/procurement (13.12.2012)

US EPA 2005: Life-Cycle Assessment of Desktop Computer Displays

REGULATION (EC) No. 640/2009 OF THE EUROPEAN COMMISSION dated 22 July 2009 implementing Directive 2005/32/EG of the European Parliament and of the Council with regard to ecodesign requirements for electric motors:
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:191:0026:0034:DE:PDF (17.07.2013)

World Bank 2009: Procurement in Infrastructure. What Does Theory Tell Us?
https://openknowledge.worldbank.org/handle/10986/4185 (14.12.2012)

World Wind Energy Association/ Welt-Windenergie-Verband - Sustainability and Due Diligence Guidelines 2005:
www.wwindea.org/technology/ch02/de/2_6_1.html(14.12.2012)

Williams, E. 2005: LCA in the information and communication industry (UN University of Tokyo)

7. Annex

Aids, tools and guidelines for the implementation of sustainable procurement

This survey tool is intended for programme managers who need a quick insight into the possibilities of reducing greenhouse gas emissions in the building industry: www.unep.org/SBCI/QuickScanTool/index.html (05.08.2013)

The programme LED City® helps cities around the globe to switch to LED lighting systems in order to save significant amounts of greenhouse gases: www.ledcity.org/about_led_city.htm (05.08.2013)

The guidelines and tools for the SMART SPP project offer help for procurement of innovative and sustainable solutions: www.smart-spp.eu/guidance (05.08.2013)

The Ecolabel Index gives background information on ecolabels and certification systems recognised worldwide– a real help when searching for quality labels used regionally or locally: www.ecolabelindex.com/ecolabels/?st=category,building_products 05.08.2013)

The KC Urban Development at KfW has compiled a comprehensive checklist for sustainability in public construction projects. It comprises the aspects: location quality, design & buildings, socio-cultural and functional quality, technical, ecological, economic and process quality. Possible certification systems (CoC) for biomass for power generation:

- www.sustainable-palmoil.org (05.08.2013)
- www.responsiblesoy.org (05.08.2013)
- www.rainforest-alliance.org/programs/agriculture/san (05.08.2013)
- ISO Standard 13065 Sustainability criteria for bioenergy (in preparation, target date: 30.4.2014): www.iso.org/iso/home/store/catalogue_ics/catalogue_detail_ics.htm?ics1=13&ics2=020&ics3=99&csnumber=52528 (05.08.2013)

Greenhouse gas (GHG). Calculation tool for biomass: www.ofgem.gov.uk/Sustainability/Environment/RenewablObl/FuelledStations/bbcc/Pages/bbcc.aspx (05.08.2013)

LCC checklist from PROSA (Product Sustainability Assessment), a method developed by the Öko-Institut to evaluate the sustainability of products; cf. www.prosa.org (05.08.2013).

Certification systems OHSAS 18001, EMAS, ISO 14001, BSCI/ SA8000, ISO 50001

Health & safety management system according to OHSAS 18001:2007

This standard has established itself as the certification standard for health & safety management systems. Companies from all sectors can be certified according to this standard. OHSAS 18001 stands for Occupational Health and Safety Assessment Series and was developed by the British Standards Institution. OHSAS 18001 is an internationally recognised standard (formerly specification) for the evaluation and certification of health & safety management systems. This standard is compatible with the management standards ISO 9001 and ISO 14001 and can be integrated in an existing management system.

OHSAS 18001 defines the following minimum requirements for operational health & safety management systems:

Orientation when establishing a management system in the field of health & safety at work

- Basis for a self-evaluation
- Basis for certification

For further information:
http://www.ohsas-18001-occupationalhealth-and-safety.com (15.07.2013)

Environmental Management and Audit Scheme (EMAS)

EMAS stands for Environmental Management and Audit Scheme. It is the EU eco-audit system. EMAS is essentially characterised by the fact that organisations voluntarily:

- organise environmental protection professionally, i.e. set up an environmental management system that helps to optimise the environmental impact of their activities, products or services

- use evaluation as a means to development, i.e. evaluate the performance of this environmental management system regularly, systematically and objectively
- work in a transparent and dialogue-orientated manner, i.e. inform the public and all interested parties about their environmental performance
- promote participation, i.e. include employees actively and in particular ensure they are qualified.

Organisations that implement these requirements in accordance with the EMAS Regulation can acquire a seal of approval after an external assessment and may use this to advertise their environmental performance.

For further information:
http://ec.europa.eu/environment/emas/index_en.htm (15.07.2013)

ISO 14001

ISO 14001 focuses on a continuous process of improvement as a means to reach the defined objective in relation to the environmental performance of an organisation (company, service provider, authority, etc.). The continuous improvement process is based on the method Plan-Do-Check-Act, PDCA:

- Plan: Determination of objectives and processes in order to implement the environmental policy of the organisation.
- Do: implementation of processes.
- Check: Monitoring processes with regard to legal and other requirements as well as aims of the environmental policy of the organisation; possibly publication of environmental performance (the success of the organisation in relation to its environmental protection measures)
- Act: If necessary the processes must be revised (adapted).

To this end a company should determine its operational environmental policy, environmental objectives and environmental programme and create an appropriate management system to achieve these objectives. A great deal of potential can often be found in the field of substance flow analyses. On the basis of substance and energy flows, opportunities and objectives are elaborated to reduce waste, wastewater and emissions.

For further information:
http://www.iso.org/iso/home/standards/management-standards/iso14000.htm (15.07.2013)

BSCI and SA8000

BSCI is a code of conduct developed by leading companies and the Foreign Trade Association (FTA) in order to create uniform social standards. BSCI members must have two-thirds of their suppliers audited according to the code.

SA 8000 is an internationally-recognised standard which offers voluntary certification on maintaining workers' rights. It contains the same requirements as BSCI but supplements it with a management system identical to the standard DIN EN ISO 9001.

The aim of both standards is to improve working conditions around the globe. Therefore, they address the same topics such as child and forced labour, health and safety at work, freedom of association, discrimination, living wages and working conditions. BSCI and SA 8000 support the efforts of companies to improve their Corporate Social Responsibility in relation to basic human and employee rights, and to provide verification of this.

For further information:
www.sa-intl.org/sa8000 and www.bsci-intl.org (15.07.2013)

Energy management systems ISO 50001

Can be viewed at www.iso.org/iso/iso50001_energy.pdf (16.09.2013).

The following standards and regulations are intended as examples for some of the product groups presented above. Their application is appropriate to raising sustainability in the sense of quality and safety.

Table 15: Standards and regulations for gas-insulated switchgear

Description	Standards and regulations
General instructions for HV installations and switchgear	IEC 60694
Gas-insulated installations and rated voltages from 72.5 kV and higher	IEC 62271-203 (IEC 60517)
SF6 Gas	IEC60376

Table 16: Standards for switchgear and switching devices

Standard	Title
DIN EN 50110; VDE 0105	Betrieb von elektrischen Anlagen (Operation of electrical installations)
DIN EN 60071; VDE 0111	Insulation coordination
DIN EN 60376; VDE 0373-1	Specification for sulphur hexafluoride (SF6) from a technical purity grade to utilisation in electrical equipment
DIN EN 60480; VDE 0373-2	Guidelines for testing and treatment of sulphur hexafluoride (SF6) following extraction from electrical equipment and specifications for its reuse

Table 17: Product standards for switchgear and accessories

Standard	Title
DIN EN 50187; VDE 0670-811	Gas-filled compartments for AC switchgear and switching devices with rated voltages from 1 kV to 52 kV inclusive
DIN EN 61219; VDE 0683-200	Working with live wires – earth or earth and short-circuiting device with rods as the short-circuiting device - earthing rods
DIN EN 61230; VDE 0683-100	Working with live wires – Mobile devices for earthing or earthing and short-circuiting

Table 18: Product standards for transformers

Standard	Title
DIN EN 60076; VDE 0532-76	Power transformers
DIN EN 50541; VDE 0532-241	Three-phase dry-type distribution transformers, 50 Hz, 100 kVA to 3,150 kVA, with the highest voltage for operating equipment less than or equal to 36 kV
DIN EN 50464; VDE 0532-221	Oil-filled three-phase distribution transformers, 50 Hz, 50 kVA to 2,500 kVA, with the highest voltage for operating equipment up to 36 kV

Table 19: Product standards for photovoltaic systems

Photovoltaics	International and European standards	Field of application/explanation
System components		
Modules	IEC 61730	Security
Wechselrichter	IEC 61683	Efficiency
	IEC 62109 Part 1 and 2	Security
	EN 50530	Efficiency
	EN 61000	Electromagnetic compatibility (EMC)-Safety
Junction Boxes	EN 5054	Design Qualification, Safety
Connectors (Plugs)	EN 50521	Security
Batteries	EN 50727	Safety requirements for batteries and battery systems
	UN Manual "Test and Criteria" III, 38.3 Rev.5 (Transport)	UN regulation on transport, contains a safety test for lithium and lithium-ion batteries: altitude, thermal, vibration, shock, external short circuit, overload and forced discharge test, impact test.
Installation of PV systems		
Electricity generation systems	IEC 60364	Security, general
	IEC 62124	PV stand-alone systems
Operation of electricity generation systems	EN 50110	Operation of electrical installations, including safety rules when working on electrical installations
Lightning protection	EN 62305 esp. EN 62305-3 supplement 5	Planning and installation of lightning and overvoltage protection, EN62305-3 supplement 5 deals with PV installations
Safety	IEC 61173 (Overvoltage protection)	Overvoltage protection for PV installations
	DIN EN 61008-1 (Circuit-breaker)	Fault current/residual current circuit breaker without incorporated overvoltage protection (RCCBs) for domestic installations and for similar applications.
Standards relating to building codes		
Fire safety	EN 13501	Flammability (German) building material class
	EN ISO 1182	Test for non-flammability
	EN ISO 11925	Test procedure for application of flame to edges and surfaces in order to determine the building material class (applies to modules)
	EN 15725	Extended fire test construction method and building material for roofs
	EN 1363	Fire resistance test

Table 20: Relevant standards and guidelines for solar heating

Solar heating	International and European standards	Field of application/explanation
Customised installations	DIN EN 12977	Thermal solar installations and components - customised installations
	DIN EN 12977-1:2012-06	Part 1 - General requirements for solar installations for heating drinking water and combined solar installations; standard
	DIN EN 12977-2:2012-06	Part 2 - Test procedure for solar-powered hot water boilers and combined systems
	DIN EN 12977-3:2012-06	Part 3 - Performance test for hot water storage tanks for solar installations; standard
	DIN EN 12977-4:2012-06	Part 4 - Performance test for hot water storage tanks for solar installations for heating drinking water and heating (combined storage tank); standard
	DIN EN 12977-5:2012-06	Part 5 - Test procedure for control devices Planning VDI 6002 Solar heating for drinking water - General principles
Planning	VDI 6002	Solar heating for drinking water - Fundamentals
	VDI 6002 Blatt 1:2004-09	Systems engineering and application in residential construction, Technical Rule
	VDI 6002 Blatt 1:2012-05	Systems engineering and application in residential construction, Technical Rule, draft
Monitoring	VDI 2169:2012-10	Function control and output evaluation for solar thermal installations

The International Renewable Energy Agency (IRENA) has published an analysis of current standardisation in the field of renewable energies in the publication “International Standardisation in the Field of Renewable Energy”. http://www.irena.org/menu/index.aspx?mnu=Subcat&PriMenuID=36&CatID=141&SubcatID=318 (17.07.2013)

Image: KWB Archiv/ Fotograf: Rüdiger Nehmzow

The following model for evaluating procurement procedures from MWIP has been taken from the draft of GPP criteria of the European Union dated September 2012. Highlighted fields are filled out or adapted by the contracting authority.

Table 21: Example of an evaluation model for MWIP projects

Financial evaluation	Weighting	Points	Value reached (= weighting x points x 10)
Building costs	40%		
Operating and maintenance costs			
Net present value (NPV)			
Life cycle costs (LCC)		0,0 – 10,0	
Points for the evaluated tender are calculated as follows: Point = 10-((Lx-L1)/(Lh-L1)*10)			
L1 = lowest LCC	3.000.000	10	
Lx =LCC of the current option	3.500.000	6,67	
Lh =highest accepted LCC = 1.5*L1	4.500.000	0	

Technical evaluation	Weighting	Points	Value reached (= weighting x points x 10)
Wastewater treatment process and technology	15 %		0-15
Proven technology	8 %	0,0 – 10,0	0-8
Reliability	5 %	0,0 – 10,0	0-5
Flexibility to respond to inflow and quantity and quality changes	4 %	0,0 – 10,0	0-4
Scope and quality of process and performance guarantees	3 %	0,0 – 10,0	0-3
Facility and equipment	10 %		0-15
Quantity and performance of equipment	7 %	0,0 – 10,0	0-7
Design and layout of facility	3 %	0,0 – 10,0	0-3
Uncomplicated operation and maintenance	3 %	0,0 – 10,0	0-3
Control and automation of processes	2 %	0,0 – 10,0	0-2
Other environmental impact	5 %		0-15
Architectural form and visual impression	2 %	0,0 – 10,0	0-2
Air purification measures	2 %	0,0 – 10,0	0-2
Noise abatement measures	1 %	0,0 – 10,0	0-1

Financial evaluation	Weighting	Points	Value reached (= weighting x points x 10)
Efficiency of wastewater treatment	20 %		
Efficiency of handling chemical oxygen demand (COD)		0,0 – 10,0	
Efficiency of handling biological oxygen demand (BOD)		0,0 – 10,0	
Efficiency of treating total nitrogen content		0,0 – 10,0	
Efficiency of treating total phosphorus content		0,0 – 10,0	
Efficiency of treating lead and its compounds		0,0 – 10,0	
Efficiency of treating mercury and its compounds		0,0 – 10,0	
Efficiency of treating nickel and its compounds		0,0 – 10,0	
Efficiency of treating Di(2-ethylhexyl)phthalat (DEHP)		0,0 – 10,0	
Efficiency of treating naphthalene		0,0 – 10,0	
Efficiency of treating nonylphenol und octylphenol		0,0 – 10,0	
Efficiency of treating benzo(a)pyrene		0,0 – 10,0	
Efficiency of treating tramadol and primidone		0,0 – 10,0	
Efficiency of treating pathogens		0,0 – 10,0	
Evaluation of energy use	6 %		
Energy consumption per m^3 of wastewater		0,0 – 10,0	
Energy consumption of ventilation systems (kg oxygen released into the water per kWh)		0,0 – 10,0	
Sewage sludge dehydration equipment (kWh per tonne of dehydrated sludge)			
Efficiency of exhaust gas treatment	3 %		
Efficiency of treatment (energy consumption per tonne of sludge)		0,0 – 10,0	
Efficiency of treating nitrogen oxide		0,0 – 10,0	
Other	1 %		
Total water consumption		0,0 – 10,0	
Use of precipitation chemicals		0,0 – 10,0	

Image: KfW-Bildarchiv / Fotograf: Bernhard Schurian

8. Glossary

Sustainable Procurement – designates the application of economic, ecological and social aspects and criteria in procurement procedures

Green Public Procurement (GPP) – refers primarily to ecological aspects and procedures in public sector procurement

Life Cycle Costs (LCC) – means the inclusion of acquisition costs, operating costs, maintenance costs and disposal costs for a product, service or performance. LCC evaluations are applied in the contract award phase for sustainable award procedures.

Life Cycle Assessment (LCA) – refers to the inherent environmental impact of products and services, from the extraction of raw materials to manufacture, transport, utilisation and recycling.

Sustainability criteria - in the context of this Toolbox designates criteria, including verification procedures that can bring about a reduction in a negative environmental impact and/or promote social aspects.

Environmental labels - also sustainability labels, ecolabels, are quality labels which evaluate and characterise products and services that are more eco-friendly than others within a product group with regard to individual characteristics. ISO standards 14021 (Type II – Manufacturer's declaration), 14024 (Type I – verified by third parties) and 14025 (Type III – quantitative information based on information of the manufacturer) describe the different certification systems on which ecolabels are based. The criteria of Type I labels are frequently used in sustainable procurement.

Social responsibility along the production and supply chain – this is a requirement for a product or service in order to ensure socially-responsible working conditions. This generally comprises the core labour standards of the International Labour Organisation (ILO). These are defined in the following conventions:

- Convention 87 - Freedom of Association and Protection of the Right to Organise, 1948
- Convention 98 - Right to Organise and Collective Bargaining, 1949
- Convention 29 - Forced Labour, 1930
- Convention 105 - Abolition of forced labour, 1957
- Convention 100 - Equal remuneration, 1951
- Convention 111 - Discrimination (Employment and Occupation), 1958
- Convention 138 - Minimum age convention, 1973
- Convention 182 - Prohibition and immediate measures to eliminate the worst forms of child-labour, 1999

„The BMZ promotes initiatives for the elaboration, implementation and dissemination of standard initiatives, for example in the coffee and textile sector. The BMZ also advocates sustainable procurement in Germany and the European Union in order to increase demand for sustainably produced goods, also from developing countries.“

Statement of Principles on collaboration with the business sector, BMZ 3/2011

„In the opinion of the KfW banking group, adherence to the basic values of human rights, employment standards, environmental protection and the fight against corruption, are of particular importance for responsible and sustainable procurement.“

Excerpt from the sustainability principles of KfW

Legal details

Toolbox
Sustainable Procurement
A guide on how to include aspects of sustainability in public procurement procedures for Financial Cooperation projects

This guide was compiled using the study and consultancy funds of the German Federal Ministry for Economic Cooperation and Development (BMZ)

Published by
KfW Group

Edited by
KfW Development Bank,
Quality Assurance and Processes department

Text & Design
ICLEI European Secretariat, Freiburg

Printed by
Citydruck Freiburg

Cover image
KfW photo archive / Photographer: Bärbel Högner

As at
January 2014

This guide was compiled on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). As publisher KfW is responsible for the contents.