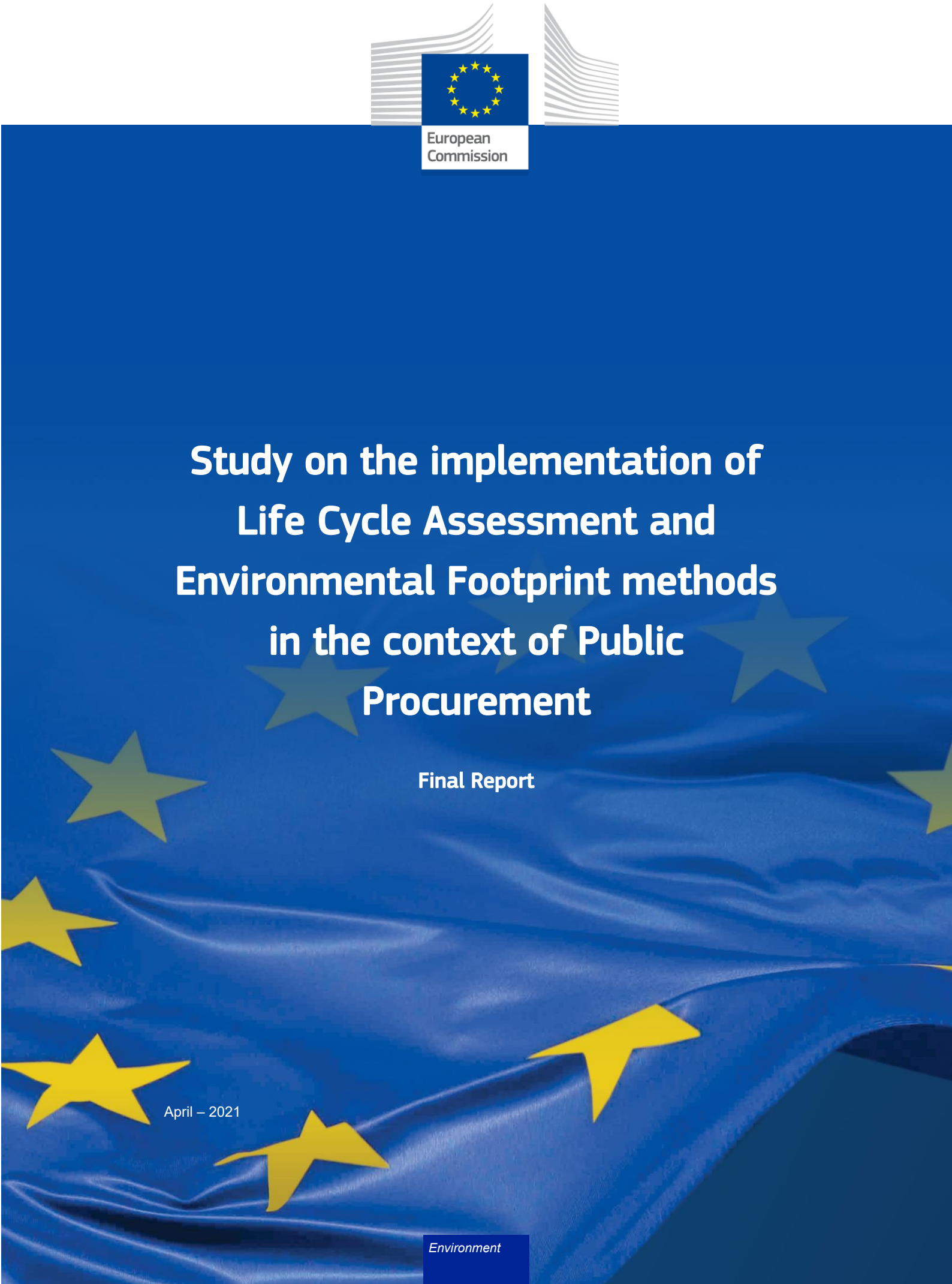

Study on the implementation of Life Cycle Assessment and Environmental Footprint methods in the context of Public Procurement

Final Report

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Final Report:

Study on the implementation of Life Cycle Assessment and Environmental Footprint methods in the context of Public Procurement

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Content

LIST OF ABBREVIATIONS

AC	Award Criterion
AP	Acidification Potential
BNB	Assessment System for Sustainable Building
CAM	Criteri Ambientali Minimi (Italy)
CED	Cummulative Energy Demand
CF	Carbon Footprint
CO_2	Carbon dioxide
CPC	Contract Performance Clause
CVD	Clean Vehicle Directive
DGNB	German Sustainable Building Council
EC	European Commission
ECI	Environmental Cost Indicator
ECJ	European Court of Justice
EEA	European Economic Area
EF	Environmental Footprint
EMAS	Eco-Management and Audit Scheme
EoL	End-of-Life
EPD	Environmental Product Declaration
EU	European Union
GHG	Greenhouse Gas
GDP	Gross Domestic Product
GPP	Green Public Procurement
GWP	Global Warming Potential
HBP	Holistic Building Programme
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
LCC	Life Cycle Costing
MCDA	multiple-criteria decision analysis
MGI	Made Green in Italy

ÖBB	Austrian Federal Railways
OEF	Organisation Environmental Footprint
OI3	Oekoindex
PCR	Product Category Rule
PEF	Product Environmental Footprint
PENRT	Total use of non-renewable primary energy
PP	Public Procurement
SC	Selection Criterion
TCO	Total Cost of Ownership
TOTEM	Tool to Optimise the Total Environmental impact of Materials
TS	Technical Specification
UBP	Umweltbelastungspunkte (German - Environmental Impact Score)

Country Codes

AT	Austria
BE	Belgium
CH	Switzerland
DE	Germany
DK	Denmark
FI	Finland
FR	France
GR	Greece
HU	Hungary
IT	Italy
NL	Netherlands
SE	Sweden

ABSTRACT

Directives (EU) 2014/24/EU and 2014/25/EU define the European regulatory framework on public procurement. They enable public procurers to use green criteria in their tenders, e. g. those that the European Commission develops and publishes (EU GPP criteria). Life cycle assessment (LCA) plays a role in some of these criteria. The respective laws of the EEA Member States encourage the use of environmental criteria and allow instruments that are build upon LCA methods. The European Commission launched its Environmental Footprint Initiative in 2013 to support methodological harmonisation in the field of LCA as a potential suitable basis for supporting environmentally driven policies.

This study aims at supporting the Commission in assessing how to best address LCA-based information in public procurement procedures by evaluating existing practices in nine EEA countries and assessing how LCA-based instruments may serve contracting authorities and tenderers.

An analysis of relevant regulations, literature and an empirical approach that integrated interviews with experts on Green Public Procurement identified various instruments of interest. All of these entail benefits and limits and none can be seen as applicable in all EEA countries without adaptation. Nevertheless, this study shows existing requirements and identifies possible best practice approaches and future options.

RÉSUMÉ

Les directives 2014/24 et 2014/25 définissent le cadre réglementaire européen en matière des marchés publics. Elles permettent aux acheteurs publics d'utiliser des critères « verts » dans leurs appels d'offres, par exemple ceux que la Commission européenne élabore et publie (critères du PPM de l'UE). L'évaluation du cycle de vie (ECV) joue un rôle dans certains de ces critères. Les législations respectives des États membres de l'EEE encouragent l'utilisation de critères environnementaux et autorisent les instruments qui s'appuient sur les méthodes ECV. La Commission européenne a lancé en 2013 son initiative d'empreinte écologique afin d'appuyer l'harmonisation méthodologique dans le domaine de l'ECV pour constituer une référence appropriée qui permettrait de soutenir les politiques axées sur l'environnement.

La présente étude vise à aider la Commission à évaluer comment traiter au mieux les informations fondées sur l'ECV dans les procédures de passation des marchés publics en évaluant les pratiques existantes dans neuf pays de l'EEE et la manière dont les instruments fondés sur l'ECV peuvent servir les pouvoirs adjudicateurs et les soumissionnaires.

Une analyse des textes légaux pertinents, de la bibliographie et d'une approche empirique intégrant des entrevues avec des experts des marchés publics écologiques a permis d'identifier divers instruments intéressants. Tous comportent des avantages et des limites et aucun ne pourraient être applicable dans tous les pays de l'EEE sans des ajustements préalables. Néanmoins, cette étude reflète les exigences existantes et a permis d'identifier des approches issus des meilleures pratiques ainsi que des options pour l'avenir.

EXECUTIVE SUMMARY

In 2003, a European Commission's communication on Integrated Product Policy encouraged Member States "to draw up publicly available action plans for greening their public procurement". Meanwhile, specific environmental policies like Circular Economy or policies from other fields, such as economic development, have emphasised the importance of strategic public procurement. The regulatory framework on public procurement in Europe is defined by Directives (EU) 2014/24/EU[1] and 2014/25/EU[2]. This framework enables public procurers to use environmental requirements in their tenders for products, services or works. To directly support public procurers in their Member States, the European Commission (EC) publishes green criteria for the procurement of different product groups (EU GPP criteria). Life cycle assessment (LCA) plays a role in some of these criteria, but is not harmonized across product groups. Like the EU Directives on public procurement, the respective laws of the EEA Member States mainly encourage the use of environmental criteria and allow the use of instruments that are built upon life cycle assessment methods.

In order to reach methodological harmonisation in the field of LCA, the EC officially started its initiative on Product Environmental Footprint and Organisation Environmental Footprint methods in 2013.

The goal of this study is to identify and assess measures that regions and contracting authorities in nine selected EEA countries (Austria, Belgium, Denmark, France, Germany, Italy, The Netherlands, Sweden and Switzerland) have put in place to use Life Cycle Assessment (LCA) and/or Environmental Footprint (EF) criteria in their Public Procurement approaches. It also aimed at identifying possible best practice examples for integrating LCA and EF in public procurement. To reach this goal, the project behind this study was divided into three tasks:

- Task 1: Conducting a research of national/regional/local rules and guidelines on the integration of EF/LCA-based criteria in nine selected EEA countries, a literature research on the use of EF/LCA-based criteria in public procurement, and a research of relevant court cases across EEA countries linked to the inclusion of EF/LCA-based criteria and other environmental information in public procurement procedures.

- Task 2: Based on the results of task 1, conducting a screening of public tenders in nine EEA countries and identifying tenders that included LCA-based criteria. Additionally, consulting with GPP experts from the regional and national level to obtain information about the use of EF/LCA-based criteria in public tenders. Task 2 also contained also contacts with contracting authorities that included EF/LCA-based criteria in their tenders as well as bidders in these procurement procedures to understand their experiences with the inclusion of EF/LCA-based criteria as well as benefits and limits of this approach. The results show EF/LCA-based criteria and tools, as well as information on how they were included in public procurement procedures.

- Task 3: Developing a system of criteria for the assessment of EF/LCA-based criteria and tools identified in task 2, and assessing the different criteria and tools for identifying potential best practice approaches.

[1] Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC. Official Journal of the European Union L 94 of 28.03.2014, p. 65-242. https://eur-lex.europa.eu/legal-content/de/TXT/?uri=CELEX:32014L0024

[2] Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC. Official Journal of the European Union L 94 of 28.03.2014, p. 243-374. https://eur-lex.europa.eu/legal-content/DE/ALL/?uri=CELEX:32014L0025

Task 1- Results of the mapping of national rules on the integration of LCA-based criteria

The **research identified rules with a link to EF/LCA-based criteria in each of the nine EEA countries**. The study classified these rules[3] into the following five groups:

- Secondary legislation
- Sectoral agreements/guidelines
- Political action plans/road maps
- Guidance
- Others

The analysis of the secondary legislation clarified that EEA Member States covered by this study tend to be cautious when it comes to the use of LCA-based criteria in public procurement procedures. Like in the Directives (EU) 2014/24/EU and 2014/25/EU, the public procurement laws of the EEA Member States allow the use of instruments that are built on LCA methods, ecolabels and Life Cycle Costing (LCC), but do not include strong requirements in that direction. However, the Italian regulation on GPP shows a stronger link to EF/LCA-based instruments.

Based on the results of the document research, the study distinguished two different kinds of links to EF/LCA-based criteria:

- Direct links to EF/LCA-based criteria
- Indirect links to EF/LCA-based criteria. Documents with an indirect link to these criteria related either to LCC, ecolabels Type I, ecolabels Type III (EPD) or Building Certification Schemes.

As a **result of this research**, the study describes specific tools with a direct link to EF/LCA criteria, as well as specific instruments with an indirect link to these criteria, e.g. the newly adopted EU-Ecolabel for hard covering products.

According to the study's authors, the links to EF/LCA-criteria identified in the different groups of documents can be further broken down according to the following characteristics:

- Stage in the procurement process during which the criteria of interest are applied (pre-procurement stage, tendering stage and post-procurement stage)
- Mandatory or voluntary use of the criteria
- Inclusion of the EF/LCA-based criteria in the tender (within selection criteria, technical specifications or award criteria)
- Product group for which the EF/LCA-based criteria is designed.

A **review of scientific literature** was conducted. It summarised the following benefits and barriers for the use of LCA-based criteria in public procurement :

- While the inclusion of environmental information not necessarily linked to LCA, (e.g. the use of ecolabels, information regarding the recycled content of products) in GPP procedures is common practice, LCA-based approaches seem to be quite new.

- The paper of Jenssen et al. (2019) indicated that LCA was a suitable source of information on the environmental impacts and could be applied to identify where to focus efforts in the procurement process. At the same time, they stated that LCA is more suitable for experts than for public procurers. They concluded that, while identifying criteria with LCA (or using them in the planning stage of the tender) is

[3] The list of rules is part of the Annex.

reasonable, evaluating LCA-based criteria and their implementation in tenders is complex.

- Suikkanen et al. (2020) conclude that "*On a general level, it can be stated that the PEF can be used for producing environmental information as a part of procurements. The supplier can be asked to provide the data specified in the PEF for the calculation of the environmental footprint or the carbon footprint. (…) The calculation of the carbon footprint based on the PEF method can be included in the contract.*"

- According to Jelse et al. (2018), « *LCA is a complex topic that requires a certain skillset to be able to interpret information generated by the study. So even if LCA and EPD data were to be available for all products participating (sic) in a public tender, there would need to be quite some knowledge required from the procurement departments in order to identify the best possible product for a certain application* ».

- Next to the knowledge and expertise needed, time and cost constraints also play a major role, according to De Klein (2018). "*(…) time to check all relevant information before awarding the contract (…) the time it takes to obtain a verified LCA is longer than the time contractors have to submit their bid. Therefore, the results of innovative products are more or less educated guesses that have to be verified after awarding the tender (…). The process of getting an LCA verified by an approved examiner takes a lot of time. Mostly you do not have the time necessary for that in a tender.*"

17 court cases were described in the study. Three of them had a direct reference to LCA information/criteria, four had a possible indirect reference to LCA-criteria and 10 tackled environmental criteria and environmental management systems in a broader sense. The three court cases with a direct reference to LCA are summarized below :

- On 25 January 2019, a Dutch court delivered its judgement in the case (C/16/470268/KG ZA 18-706[4]) concerncing the use of an LCA-based criteria. The contracting authority intended to enter into a construction contract for the renewal of railway infrastructure. One of the award criteria was the « Quality value of the sustainable use of materials ». The bidders had to calculate the environmental impact of their civil engineering project proposal throughout its life cycle, based on material selection and working methods, using the tool DuboCalc. The environmental impact was expressed in terms of an Environmental Cost Indicator (ECI). The bidder received a fictious discount on the amount offered on his bid if the ECI was lower than the reference ECI. The court rejected the application that the ECI of the successful tenderer was unrealistically low and ruled that the contracting authority is allowed to assume the accuracy of information contained in the tender.

- Another Dutch court delivered a judgement on 30 July 2014 in the case (C/16/370903/KG ZA 14-417[5]) on the LCA-based tool « CO2-performance ladder ». The CO2-performance ladder is a company certification that confirms that the organisation has achieved one of five levels in terms of reducing its CO_2 emissions. The contracting authority grants a ficticious discount on the bid, which depends on the level the company has reached on the CO2-performance ladder. The court rules that the applicant, who relied in his bid on nominated sub-contractors, should have submitted not only his CO_2 certificate but also the CO_2 certificates for all of his sub-contractors to get the ficticious discount.

[4] Rechtbank Midden-Nederland, 25.01.2019, C/16/470268 / KG ZA 18-706. http://deeplink.rechtspraak.nl/uitspraak?id=ECLI:NL:RBMNE:2019:245

[5] Rechtsbank Midden-Nederland, 30.07.2014, C/16/370903 / KG ZA 14-417. http://deeplink.rechtspraak.nl/uitspraak?id=ECLI:NL:RBMNE:2014:3251

- A French court delivered a judgement on 15 February 2013 in a case (N°363921[6]) on the assessment of the carbon footprint within the award criteria of a tender on environmentally friendly collection of household and similar waste. The contracting authority included an award criterion requiring bidders to provide information concerning carbon accounting as a « carbon footprint ». Neither the mandatory content of the carbon footprint, nor detailed rules for the assessment were provided by the authority. The court ruled that the contracting authority did not fulfill its obligations to ensure a fair competitive award procedure by not providing sufficient information in the tender documents concerning the environmental award criterion.

Task 2 - Results of the analysis on the use of public procurement procedures that include EF/LCA-based criteria

207 public tenders were assessed for relevant keywords such as "Life Cycle Assessment (LCA)", "Carbon Footprint (CF)", "Environmental Footprint (EF)", "GHG", etc. in the respective language of the country under assessment. The public tenders were screened using:

- the database Tenders Electronic Daily (TED). It offers contract notices for EU-wide tenders for each of the EU Member States. The contract notices include a link to the national, regional or organisation-wide electronic platform that offers the procurement documents for unrestricted and full direct access, free of charge. There are a number of electronic platforms in each of the EU Member States. Next to the EU-wide tenders, tenders below the threshold for EU-wide announcement were selected directly from national, regional or organisation-wide electronic platforms and also screened for the keywords mentioned above.

- GPP experts from the regional and national level (starting with experts from DG ENV's GPP Advisory Group)[7]. They were asked for information about the use of EF/LCA-based criteria in public tenders. In most of the nine EEA-countries, these experts offered tender documents, contact details of potential pioneer contracting authorities or contacts to further experts in the field.

Next to the information gained directly from the tender documents, the study aimed for information on benefits and limits regarding the application of LCA-based criteria.

For each country, a country fiche was prepared, containing the main findings for the respective country. These fact sheets specify details on the following content:

- Specific framework in the country addressing environmental criteria and LCA-based information
- "In a nutshell": Description of LCA-based instruments identified in public procurement procedures in this country
- "In a nutshell": Integration of those instruments within the procurement process
- Benefits and limits of LCA-based criteria – perspective of contracting authorities
- Benefits and limits of LCA-based criteria – perspective of tenderers.

Among the **207 tenders** assessed, **61 tenders** included LCA-based criteria. No tenders were identified that included the Environmental Footprint method. In the 61 tenders and during the interviews with GPP experts, **32 LCA-based instruments** were identified.

14 of the 32 instruments were applied in construction tenders (building and civil engineering), three in tenders for (tissue) paper, two in tenders for textiles, two in tenders for

[6] Conseil d'État, 7ème et 2ème sous-sections réunies, 15.02.2913, N° 363921. https://www.legifrance.gouv.fr/ceta/id/CETATEXT000027069259/

[7] Https://ec.europa.eu/environment/gpp/expert_meeting_en.htm

laundry services, one in a tender for coffee cups, one in a tender for catering, one in a tender for sanitary waste and five in tenders for miscellaneous products. Further two applied to the corporate level of the bidder. The LCA-based instruments that were used in the tendering stage were mostly used as award criteria.

Benefits and limits highlighted by the contracting authorities and the tenderers

Several **benefits** were identified in the interviews with contracting authorities and tenderers. According to contracting authorities, the use of LCA-based instruments in the pre-tendering stage is helpful for the development of suitable green criteria to be included in tenders.

Furthermore, LCA-based instruments enabled contracting authorities to base their decision on physical metrics, provide scope for innovation within the whole product value chain and offer the possibility to compare the environmental impact of innovative solutions contained in the different bids. These statements suggest that LCA-based instruments are especially useful for the tendering of innovative solutions.

The tenderers who found the inclusion of LCA-based instruments in public procurement beneficial were mostly companies that were already pro-active in the reduction of their environmental impacts.

In the interviews with contracting authorities, it became apparent that the use of LCA-based instruments requires a certain level of expertise. If this expertise does not exist within the organisation, external LCA-expertise has to be procured. According to the interviewees, the direct application of LCA-based instruments increases the workload. Further limits that became apparent in the interviews are increased costs for contracting authorities, issues due to time constraints and deadlines in the public procurement procedures, an increased risk of litigation and burdens mainly for SMEs.

In the interviews with tenderers, the increased workload also became apparent, e.g. for the provision of the necessary data, as well as increased costs, e.g. for consulting external LCA-experts.

There are certain stages or cases of public procurement procedures where the inclusion of LCA based criteria has a higher benefit:

- Planning stage: The use of LCA-based criteria in the planning stage reduces the risk of litigation considerably and makes it easier for procurers to meet the time requirements for the award procedure. Additionally, it offers the possibility for the contracting authority to estimate the environmental relief potential in advance of a tender. This is important because the use of LCA-based criteria in the tendering stage is only advisable if there is a noteworthy potential for reducing the environmental impact of the tendered solution.

- Public procurement of innovation: To ensure that the purchased innovation offers environmental benefits and that a benefit in one impact category (e.g. climate change) does not lead to a burden in others, the use of LCA-based criteria appears to be particularly suitable for the procurement of innovative solutions. That is why many of the LCA-based criteria presented in this study, are used in civil engineering and building construction. Most of these construction projects have at least the potential of being innovative.

The following aspects will likely increase the success of any LCA-based criteria in public procurement procedures:

- The additional burden that LCA-based criteria create for the contracting authority and the tenderer is manageable. Thus, the criteria and the attached LCA-based instruments have to be simple to use. They have to provide a fast way to assess environmental criteria without requiring detailed LCA knowledge.

- LCA-based instruments that create an additional burden for the tenderer, should come with a remedy, such as one of the following:
    - Good results in the LCA-based criteria offer significant cost advantages to the bidder.
    - The terms of the contract are beneficial – e.g. a longer-duration of the contract, e.g. ten instead of two years.
- The LCA-based criteria could be part of a larger certification scheme, for example a building certification scheme or an ecolabel. They offer the advantages of well-known criteria, fixed time intervals for their revision, widespread application and a third party (that develops and reviews the criteria) with LCA skilled staff.
  Contracting authorities that procure products meeting requirements with regard to ecolabels might at first increase their burden (e.g. if tenderers claim that their non-certified products meet the requirements), the burden of tenderers (that apply for the ecolabel certification) and the burden of the third party that has to verify the information of the applicants. Once contracting authorities continue to use ecolabel requirements, the more tenderers will get their products certified, the burden for public authorities will be diminished.

- Contracting authorities should be extra careful with any amendments of the methodology. As an example, the use of impact categories like "circularity" or "bio-diversity" do not (yet) belong to widely tested and generalized methods of current LCA impact assessment practices. Assumptions made by contracting authorities for their LCA-based instruments in their tenders have to be well explained and the requirements and any consequence for tenderers has to be made transparent. An example are underlying assumptions for a required benchmark scenario.

Task 3 - Results of the identification of best practice examples

All of these instruments entail several benefits and limits and none of them can be seen as applicable in all EEA countries without adaptation. Nevertheless, the authors consider that the following characteristics would have to be met by an instrument in order to be considered "Best Practice":

- Comprehensiveness of the instrument: An instrument dealing with environmental aspects in a comprehensive manner ("beyond GHG") and addressing the possible «shifting of burdens» between different environmental areas.

- **Practicability within the procurement procedures:** An easy process for comparing the instruments' results is crucial. Instruments should be built upon clear methods and (product category) rules, accompanied by transparent documentation and publish suitable default data (e.g. emission factors for climate impact assessment). Additionally, free accessible and validated tools for the actual quanti-fication would be welcome.
  The effort (personnel and financial resources) for procurers, tenderers and data providers (producers) is a limiting factor. A lower effort results in a higher practicability for a specific instrument.

- **Responsibility and influence of procurers:** It is important for procurers to comprehend the requirements and the criteria they apply in their tenders. They have a personal responsibility for the evaluation of offers. Therefore, the overall comprehensibility of the instruments' methods is important for any instrument's success in being implemented in public procurement. A key point is also the assessment of a potential legal risk when applying LCA-based criteria to procurement procedures. There is a low potential risk, if the instrument is used within the planning stage of procurement. When the instrument is applied to the actual tendering, the risk is lower if the requirements based on LCA-results are phrased in the technical specifications. By comparison, a higher legal risk is given if the LCA-based criteria results are used within the selection or award criteria. Matters of dispute around environmental criteria in case law examples mostly

contain issues on proper justification or phrasing of selection or awarding approaches. The experience made by the project team's legal expert on public procurement was underpinned by the findings from chapter 2.5. (Description of court cases related to the inclusion of environmental or LCA-based criteria in public contracts). Potentially, there is a lower legal risk, when the LCA-based information is applied only to the control mechanism during the contracting stage, normally phrased as contract performance clause. Generally, the legal risk is lowered if the LCA-based instrument is simple, and the results are verifiable, comprehensible and comparable.

- **Transferability within EU:** Certain factors hinder how easy an instrument can be used in various countries, negatively impacting its transferability among countries. Many instruments are in full possession of specific contracting authorities without public accessibility, are built on specific national LCA-databases and/or for certain instruments. Sometimes the documentation is not available in English. As this hinders the transferability to other countries and contracting authorities, the optimal instrument should address all these issues.

SYNTHESE

En 2003, une communication de la Commission européenne sur la politique intégrée des produits a encouragé les États membres à « élaborer des plans d'action accessibles au public pour l'écologisation de leurs marchés publics ». Entre-temps, des politiques environnementales spécifiques comme l'économie circulaire ou des politiques dans d'autres domaines, comme le développement économique, ont souligné l'importance des marchés publics stratégiques. Le cadre réglementaire des marchés publics en Europe est défini par la directive (EU) 2014/24/EU[8] et la directive 2014/25/EU[9]. Ce cadre permet aux acheteurs publics d'utiliser les exigences environnementales dans leurs appels d'offres pour des produits, des services ou des travaux. Afin de soutenir directement les acheteurs publics dans ses États membres, la Commission européenne (CE) publie des critères « verts » pour la passation des marchés de différents groupes de produits (critères de l'UE relatifs aux marchés publics). L'évaluation du cycle de vie (ECV) joue un rôle dans certains de ces critères, mais n'est pas harmonisée entre les groupes de produits. À l'instar des directives de l'UE sur les marchés publics, les législations respectives des États membres de l'EEE encouragent principalement l'utilisation de critères environnementaux et autorisent l'utilisation d'instruments basés sur des méthodes d'évaluation du cycle de vie.

Afin de parvenir à une harmonisation méthodologique dans le domaine de l'ECV, la Commission européenne a officiellement lancé en 2013 son initiative sur l'empreinte écologique des produits et les méthodes d'empreinte écologique de l'organisation.

L'objectif de l'étude est d'identifier et d'évaluer les mesures que les régions et les pouvoirs adjudicateurs de neuf pays de l'EEE sélectionnés (Allemagne, Autriche, Belgique, Danemark, France, Italie, Pays-Bas, Suède et Suisse) ont mises en place pour utiliser les critères d'évaluation du cycle de vie (ECV) et/ou d'empreinte écologique (EE) dans leurs approches des marchés publics. Elle visait également à identifier d'éventuels exemples de meilleures pratiques pour l'intégration de l'ECV et de l'EE dans les marchés publics. Pour atteindre cet objectif, le projet à l'origine de cette étude a été divisé en trois tâches:

- Tâche 1 : la réalisation d'une recherche de règlements et de lignes directrices à l'échelle nationale/régionale/locale sur l'intégration EE/ECV dans neuf pays

[8] Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC. Official Journal of the European Union L 94 of 28.03.2014, p. 65-242. https://eur-lex.europa.eu/legal-content/de/TXT/?uri=CELEX:32014L0024

[9] Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC. Official Journal of the European Union L 94 of 28.03.2014, p. 243-374. https://eur-lex.europa.eu/legal-content/DE/ALL/?uri=CELEX:32014L0025

sélectionnés dans l'EEE, d'une recherche documentaire sur l'utilisation des critères fondés sur l'EE/ECV dans les marchés publics et d'une recherche documentaire sur des affaires judiciaires pertinentes dans les pays de l'EEE liées à l'inclusion de critères EE/ECV et d'autres informations environnementales dans les procédures de passation des marchés publics.

- Tâche 2 : sur la base des résultats de la tâche 1, procéder à un examen des appels d'offres publics dans neuf pays de l'EEE et identifier les appels d'offres comportant des critères ECV. En outre, consulter des experts du GPP aux niveaux régionaux et nationaux pour obtenir des informations sur l'utilisation de critères EE/ECV dans les appels d'offres publics. La tâche 2 implique aussi des prises de contacts avec les pouvoirs adjudicateurs qui ont incorporés des critères EE/ECV dans leurs appels d'offres ainsi qu'aux soumissionnaires dans ces procédures de passation des marchés afin de se renseigner sur leur expérience en matière d'intégration de critères EE/ECV ainsi que sur les avantages et les limites de cette approche. Les résultats présentent des critères et des outils EE/ECV, ainsi que des informations sur la manière dont ils ont été inclus dans les procédures de passation des marchés publics.
- Tâche 3: élaborer un système de critères pour l'évaluation des critères et outils EE/ECV identifiés dans la tâche 2, et évaluer les différents critères et outils permettant d'identifier les meilleures pratiques possibles.

Tâche 1 - Résultats de la cartographie des règles nationaux relatives à l'intégration des critères ECV

Dans **chacun des neuf pays de l'EEE, la recherche a permis d'identifier des textes de loi ayant un lien avec les critères fondés sur l'EE/ECV**. L'étude a classé ces textes de loi[10] en cinq groupes:

- La législation dérivée
- Des accords/lignes directrices sectoriels
- Des plans d'action/feuilles de route politiques
- Des orientations et
- Autres éléments

L'analyse de la législation dérivée a permis de préciser que les États membres de l'EEE couverts par la présente étude ont tendance à faire preuve de prudence en ce qui concerne l'utilisation de critères fondés sur l'ECV dans les procédures de passation des marchés publics. À l'instar des directives (UE) 2014/24/UE et 2014/25/UE, les lois des États membres de l'EEE sur les marchés publics autorisent l'utilisation d'instruments fondés sur les méthodes ECV, les labels écologiques et le coût du cycle de vie (LCC), mais ne comportent pas d'exigences strictes dans ce sens. Toutefois, le règlement italien sur les marchés publics montre un lien plus étroit avec les instruments fondés sur l'EE/ECV.

Sur la base des résultats de cette recherche documentaire, l'étude a distingué deux types différents de liens avec des critères fondés sur l'EE/ECV :

- Liens directs avec les critères fondés sur l'EE/ECV
- Liens indirects avec les critères fondés sur l'EE/ECV. Les documents ayant un lien indirect avec ces critères se rapportaient soit aux CCL, aux labels écologiques de type I, aux labels écologiques de type III (EPD) ou aux systèmes de certification des bâtiments.

[10] La liste des textes de loi figure en annexe.

Cette recherche a permis de décrire des outils spécifiques ayant un lien direct avec les critères de l'EE/ECV, ainsi que des instruments spécifiques ayant un lien indirect avec ces critères, par exemple le label européen récemment adopté pour les produits à revêtement dur.

Selon les auteurs de l'étude, les liens avec les critères EE/ECV identifiés dans les différents groupes de documents peuvent être ventilés en fonction des caractéristiques suivantes :

- Étape de la procédure de passation des marchés au cours de laquelle les critères d'intérêt sont appliqués (étape préalable à la passation des marchés, phase d'appel d'offres et phase postérieure à la passation des marchés)
- Utilisation obligatoire ou volontaire des critères
- Inclusion des critères fondés sur l'EE/ECV dans l'appel d'offres (dans le cadre des critères de sélection, des spécifications techniques ou des critères d'attribution)
- Groupe de produits pour lequel les critères fondés sur l'EE/ECV sont conçus.

Une **revue de littérature scientifique** a été menée. Elle a identifié les avantages et obstacles à l'utilisation des critères ECV dans les marchés publics comme suit :

- La pratique courante des marchés publics verts est d´inclure les informations environnementales pas nécessairement liées à l´ECV, comme p.ex. l´utilisation d´écolabels, des informations sur le contenu recyclé des produits. Les approches basées sur et incluant l'ECV semblent être assez nouveaux.

- L'article de Jenssen et coll. (2019) indique que l'ECV est une source convenable d'information sur les impacts environnementaux et elle pourrait être employée pour identifier où les efforts devraient être portés dans le processus d'appel d'offres. Simultanément, ils ont mentionné que et que l'ECV convient mieux aux experts qu'aux acheteurs publics. Ils ont conclu que, bien que l'identification de critères avec ECV (ou leur utilisation au stade de la planification de l'appel d'offres) soit raisonnable, l'évaluation de critères fondés sur ECV et leur mise en oeuvre dans les appels d'offres sont complexes.

- Suikkanen et al. (2020) concluent que la conclusion est la suivante : « *D'un point de vue général, on peut affirmer que le PEF peut être utilisé pour produire des informations environnementales dans le cadre des achats. Il peut être demandé au fournisseur de livrer les données spécifiques dans le PEF pour calculer l'empreinte environnementale ou l'empreinte carbone. (…) Le calcul de l'empreinte carbone selon la méthode PEF peut être inclus dans le contrat*. »

- D'après Jelse et coll. (2018), « l'*ECV est un sujet complexe qui exige une certaine compétence pour interpréter l'information générée par l'étude. Ainsi, même si les données ECV et EPD devaient être disponibles pour tous les produits participant à un appel d'offres public, il faudrait que les services d'approvisionnement disposent de suffisamment de connaissances pour identifier le meilleur produit possible pour chaque application* ».

- Outre les connaissances et l'expertise nécessaires, les contraintes de temps et de coûts jouent également un rôle majeur, selon De Klein (2018). *"(...) le temps nécessaire pour vérifier toutes les informations pertinentes avant d'attribuer le marché (...) le temps nécessaire pour obtenir une ECV vérifiée est plus long que le temps imparti aux contractants pour soumettre leur offre. Par conséquent, les résultats des produits innovants sont ni plus ni moins des estimations éclairées qui doivent être vérifiées après l'attribution de l'offre (...). Le processus d'obtention d'une ECV vérifiée par un examinateur agréé prend beaucoup de temps. La plupart du temps, vous n'avez pas le temps nécessaire pour cela dans un appel d'offres. »*

17 affaires judiciaires ont été décrites dans l'étude. Trois d'entre elles faisaient directement référence à l'information et aux critères relatifs à l'évaluation de l'impact sur l'environnement, quatre pouvaient se référer indirectement aux critères relatifs à l'évaluation de l'impact sur l'environnement et 10 s'intéressaient aux critères

environnementaux et aux systèmes de gestion de l'environnement au sens large. On trouvera ci-après un résumé des trois affaires portées devant les tribunaux qui se réfèrent directement à l'ECV :

- Le 25 janvier 2019, un tribunal néerlandais a rendu son jugement dans l'affaire (C/16/470268/KG ZA 18-706[11]) concernant l'utilisation d'un critère fondé sur l'ECV. Le pouvoir adjudicateur avait l'intention de conclure un contrat de construction pour le renouvellement de l'infrastructure ferroviaire. L'un des critères d'attribution était la « valeur qualitative de l'utilisation durable des matériaux ». Les soumissionnaires ont dû calculer l'impact environnemental de leur proposition de projet de génie civil tout au long de leur cycle de vie, en se fondant sur la sélection des matériaux et les méthodes de travail, à l'aide de l'outil DuboCalc. L'impact sur l'environnement a été exprimé en termes d'indicateur de condition environnementale (ICE). Le soumissionnaire se voyait attribuer une réduction fictive du montant de sa soumission si l'ICE était inférieur à l'ICE de référence. Dans cette affaire, le requérant a déposé une demande de révision de la décision d'attribution. Le tribunal a rejeté la requête faisant valoir que l'ICE de l'adjudicataire était invraisemblablement trop basse et il a décidé que le pouvoir adjudicateur était autorisé à assumer l'exactitude des informations contenues dans l'offre.

- Un autre tribunal néerlandais a rendu un jugement le 30 juillet 2014 dans l'affaire (C/16/370903/KG ZA 14-417) sur l'outil basé sur l'ECV « échelle de performance CO_2 ». L'échelle de performance en CO_2 est une certification de l'entreprise qui confirme que l'organisation a atteint l'un des cinq niveaux en termes de réduction de ses émissions. L'autorité contractante accorde une remise fictive sur l'offre, qui dépend du niveau atteint par l'entreprise sur l'échelle de performance en CO_2. Le tribunal a jugé que le requérant, qui s'est appuyé dans son offre sur des sous-traitants désignés, aurait dû présenter non seulement son certificat CO_2, mais aussi les certificats CO_2 de l'ensemble de ses sous-traitants pour obtenir la remise fictive.

- Un tribunal français a rendu un arrêt le 15 février 2013 dans l'affaire (N°363921[12]) sur l'évaluation de l'empreinte carbone dans le cadre des critères d'attribution d'une offre de collecte respectueuse de l'environnement de déchets ménagers et déchets similaires le 15 février 2013. L'autorité contractante a inclus un critère d'attribution exigeant des soumissionnaires qu'ils fournissent des informations concernant la comptabilisation du carbone en tant que « l'empreinte carbone ». Ni le contenu obligatoire de l'empreinte carbone, ni les règles détaillées pour l'évaluation n'ont été fournis par l'autorité. Le tribunal a jugé que l'autorité contractante ne s'était pas acquittée de son obligation d'assurer une procédure d'adjudication équitable en ne fournissant pas suffisamment d'informations dans les documents d'appel d'offres concernant le critère d'attribution environnementale.

Tâche 2 - Résultats de l'analyse sur l'utilisation des procédures de passation des marchés publics qui comprennent des critères fondés sur l'EE/ECV

207 appels d'offres publics ont été évalués pour des mots clefs pertinents (tel que « l'évaluation du cycle de vie (ECV) », « l'empreinte en gaz à effet de serre (empreinte carbone) », « l'empreinte écologique (EF, pour son acronyme en anglais) », « GES », etc.) dans la langue respective du pays évalué. Les appels d'offres publics ont été présélectionnés en utilisant:

- La base de données Tenders Electronic Daily (TED). Elle propose des avis de marché pour les appels d'offres à l'échelle de l'UE pour chacun des États membres de l'UE.

[11] Rechtbank Midden-Nederland, 25.01.2019, C/16/470268 / KG ZA 18-706. http://deeplink.rechtspraak.nl/uitspraak?id=ECLI:NL:RBMNE:2019:245

[12] Conseil d'État, 7ème et 2ème sous-sections réunies, 15.02.2913, N° 363921. https://www.legifrance.gouv.fr/ceta/id/CETATEXT000027069259/

Les avis de marché comportent un lien vers la plate-forme électronique nationale, régionale ou à l'échelle de l'organisation qui offre les documents de passation de marchés pour un accès libre et direct, gratuit. Il existe un certain nombre de plateformes électroniques dans chacun des États membres de l'UE. À côté des appels d'offres à l'échelle de l'UE, les appels d'offres inférieurs au seuil d'appel d'offres à l'échelle de l'UE ont été sélectionnés directement sur des plateformes électroniques nationales, régionales ou à l'échelle de l'organisation, ainsi que sur les mots clés mentionnés ci-dessus.

- Des experts dans le domaine des marchés publics écologiques aux niveaux à la fois régional et national (à commencer par le groupe d'experts dans le domaine des marchés publics écologiques de la DG ENV)[13]. Des informations leur ont été demandées sur l'utilisation des critères fondés sur l'EE/ECV dans les appels d'offres publics. Dans la plupart des neuf pays de l'EEE, ces experts ont fourni des documents d'appel d'offres, des coordonnées de pouvoirs adjudicateurs pionniers potentiels d'autres experts du domaine.

À côté des informations obtenues directement dans les documents d'appel d'offres, l'étude visait à obtenir des informations sur les avantages et les limites concernant l'application des critères fondés sur l'ECV.

Pour chaque pays, une fiche pays contenant les principales conclusions a été établie. Ces fiches contiennent les informations suivantes :

- Le cadre spécifique du pays concernant les critères environnementaux et l'information fondée sur l'évaluation de l'impact sur l'environnement
- « En bref » : Description des instruments fondés sur l'ECV identifiés dans les procédures de passation des marchés publics dans ce pays
- « En bref » : Intégration de ces instruments dans le processus de passation des marchés
- Les avantages et limites des critères ECV – point de vue des pouvoirs adjudicateurs
- Les avantages et limites des critères ECV – point de vue des soumissionnaires.

Sur les **207 offres** évaluées, **61 portaient** sur des critères fondés sur l'ECV. Aucun appel d'offres n'a été identifié qui tenait compte de la méthode de l'empreinte écologique. Parmi les 61 appels d'offres et au cours des entretiens avec des experts dans le domaine des marchés publics écologiques, **32 instruments basés sur l'ECV** ont été identifiés.

Quatorze des 32 instruments ont été mis en œuvre dans le cadre d'appels d'offres pour la construction (bâtiment et génie civil), trois dans le cadre d'appels d'offres pour le papier (tissus), deux dans le cadre d'appels d'offres pour le textile, deux dans le cadre de services de blanchisserie, un dans le cadre d'un appel d'offres pour la restauration, un dans le cadre d'un appel d'offres pour les déchets sanitaires et cinq dans le cadre de produits divers. Deux autres s'appliquaient au niveau ministériel du soumissionnaire. Les instruments basés sur l'ECV utilisés au stade de l'appel d'offres ont été le plus souvent utilisés comme critères d'attribution.

Avantages et limites mis en évidence par les pouvoirs adjudicateurs et les soumissionnaires

Plusieurs **avantages** ont été identifiés lors des entretiens avec les pouvoirs adjudicateurs et les soumissionnaires. Selon les pouvoirs adjudicateurs, l'utilisation d'instruments ECV au stade préparatoire de l'appel d'offres est utile pour l'élaboration de critères « verts » appropriés et à inclure dans les appels d'offres.

[13] https://ec.europa.eu/environment/gpp/expert_meeting_en.htm

En outre, les instruments ECV ont permis aux pouvoirs adjudicateurs de fonder leur décision sur des paramètres physiques, de fournir des possibilités d'innovation dans l'ensemble de la chaîne de valeur des produits et d'offrir la possibilité de comparer l'impact environnemental des solutions innovantes contenues dans les différentes offres. Ces affirmations donnent à penser que les instruments ECV sont particulièrement utiles dans le cadre d'appels d'offres de solutions innovantes.

Les soumissionnaires qui ont estimé que l'utilisation d'instruments ECV dans la passation des marchés publics était bénéfique pour la plupart étaient des entreprises déjà actives dans la réduction de leurs incidences sur l'environnement.

La discussion avec les pouvoirs adjudicateurs, a montré que l'utilisation d'instruments basés sur l'ECV nécessite une certaine expertise. Si cette expertise n'existe pas dans l'organisation, une expertise ECV externe doit être acquise. Selon les personnes interrogées, l'application directe d'instruments basés sur l'ECV augmente la charge de travail. D'autres limites apparues au cours des entretiens sont l'augmentation des coûts pour les pouvoirs adjudicateurs, les problèmes dus aux contraintes de temps et aux délais dans les procédures de passation des marchés publics ainsi qu´ un risque accru de litige et des charges supplémentaires surtout pour les PME.

L'entretien avec les soumissionnaires montre également une augmentation de la charge de travail pour ce groupe, par ex. pour fournir les données nécessaires, et aussi une augmentation des coûts, notamment pour consulter des experts ECV externes.

L'utilisation de critères ECV à certaines étapes en particulier ou dans certains cas de procédures de passation des marchés publics pourraient avoir des bénéfices plus élevés que dans d'autres cas :

- A l'étape de planification : L'utilisation de critères ECV à l'étape de la planification réduit considérablement le risque de litiges et permet aux acheteurs de respecter plus facilement les délais requis pour la procédure d'attribution. De plus, cela offre la possibilité pour l'autorité contractante d'estimer le potentiel environnemental à l'avance. C'est important car l'utilisation de critères ECV à l'étape de l'appel d'offre n'est souhaitable que s'il y a un potentiel avéré de réduire l'impact environnemental de l'objet de l'appel d'offre.
- Dans le cadre des marchés publics innovants : Pour s'assurer que l'innovation achetée présente des avantages environnementaux et qu'un avantage vis-à-vis d'une certaine catégorie d'impact (par exemple, le changement climatique) n'entraîne pas de problèmes dans d'autres, l'utilisation de critères ECV semble particulièrement appropriée pour l'acquisition de solutions novatrices. C'est pourquoi bon nombre des critères ECV présentés dans cette étude sont d'ejà utilisés dans le génie civil et la construction de bâtiments. La plupart de ces projets de construction ont au moins le potentiel d'être innovateurs.

Les aspects suivants amélioreront probablement le succès des critères ECV dans les procédures de passation des marchés publics :

- La charge supplémentaire que les critères ECV imposent à l'autorité contractante et au soumissionnaire est gérable. Ainsi, les critères et les instruments à base ECV qui y sont joints doivent être simples à utiliser. Ils doivent fournir un moyen rapide d'évaluer les critères environnementaux sans exiger des connaissances détaillées sur l'ECV.
- Les instruments ECV, qui créent une charge supplémentaire pour le soumissionnaire, devraient être assortis d'au moins une mesure corrective, telle l'une des mesures suivantes :
    - Les bons résultats obtenus dans le cadre des critères ECV offrent d'importants avantages en termes de coûts au soumissionnaire.

    - Les clauses du contrat sont avantageuses – par exemple, une durée plus longue du contrat avec dix ans au lieu de deux ans.
- Les critères ECV pourraient faire partie d'un système de certification plus large, par exemple un système de certification des bâtiments ou un label écologique. Ils offrent les avantages de critères bien connus, de délais fixés pour leur révision, d'une application généralisée et d'une tierce partie (qui élabore et révise les critères) avec du personnel qualifié en ECV.
- Les pouvoirs adjudicateurs qui achètent des produits répondant aux exigences en matière de label écologique pourraient d'abord alourdir leur charge (par exemple, si les soumissionnaires affirment que leurs produits non certifiés satisfont aux exigences), la charge des soumissionnaires (qui demandent la certification du label écologique) et la charge du tiers qui doit vérifier les informations des demandeurs. Plus les pouvoirs adjudicateurs continueront d'appliquer les exigences du label écologique, plus les soumissionnaires obtiendront la certification de leurs produits et plus la charge pesant sur les pouvoirs publics sera réduite.
- Les pouvoirs adjudicateurs devraient faire preuve d'une plus grande prudence dans toute modification de la méthodologie. À titre d'exemple, l'utilisation de catégories d'impact comme la « circularité » ou la « biodiversité » ne fait pas (encore) partie de méthodes largement éprouvées et généralisées des pratiques actuelles d'évaluation de l'impact de l'ECV. Les hypothèses formulées par les pouvoirs adjudicateurs pour leurs instruments ECV dans leurs offres doivent être bien expliquées et les exigences et toute conséquence pour les soumissionnaires doivent être rendues transparentes. À titre d'exemple, on peut citer les hypothèses sous-jacentes d'un scénario de référence requis.

Tâche 3 - Résultats de l'identification d'exemples parmi les meilleures pratiques

Tous ces instruments comportent plusieurs avantages et limites et aucun d'entre eux ne peut être considéré comme applicable dans tous les pays de l'EEE sans adaptation. Néanmoins, les auteurs estiment qu'un instrument doit satisfaire aux caractéristiques suivantes pour être considéré comme « meilleure pratique »:

L'exhaustivité de l'instrument : Un instrument traitant des aspects environnementaux d'une manière globale (« au-delà des GES ») et traitant de l'éventuelle « modification des charges » entre les différents secteurs de l'environnement.

La praticabilité dans le cadre des procédures de passation des marchés : Un processus de comparaison des résultats des instruments faciles à utiliser est essentiel. Les instruments devraient s'appuyer sur des méthodes et des règles claires (catégorie de produits), être accompagnés d'une documentation transparente et publier des données par défaut appropriées (par exemple, les coefficients d'émission pour l'évaluation de l'impact sur le climat). En outre, des outils gratuits et validés pour la quantification proprement dite seraient souhaitables.

L'effort (ressources humaines et financières) requis de la part des acheteurs, des soumissionnaires et fournisseurs de données (producteurs) est un facteur limitant. Un effort moindre se traduit par une plus grande praticabilité pour un instrument spécifique.

La responsabilité et l'influence des acheteurs : Il est important que les acheteurs comprennent les exigences et les critères qu'ils appliquent dans leurs appel d'offres. Ils sont personnellement responsables de l'évaluation des offres. Par conséquent, la compréhension globale des méthodes des instruments est importante pour le succès de la mise en œuvre de tout instrument dans les marchés publics. Un point clé est également l'évaluation d'un risque juridique potentiel lors de l'application de critères ECV aux procédures de passation des marchés. Le risque potentiel est faible si l'instrument est utilisé au stade de la planification de la passation des marchés. Lorsque l'instrument est appliqué à l'appel d'offres réel, le risque est moindre si les exigences fondées sur les résultats ECV sont formulées dans les spécifications techniques. À titre de comparaison, le

risque juridique est plus élevé si les résultats des critères ECV sont utilisés dans les critères de sélection ou d'attribution. Les questions litigieuses concernant les critères environnementaux dans les exemples de jurisprudence portent principalement sur la justification ou la formulation correcte des méthodes de sélection ou d'attribution. L'expérience acquise par l'expert juridique en matière des marchés publics de l'équipe de projet s'est appuyée sur les conclusions du chapitre 2.5. (Description des affaires judiciaires liées à l'inclusion de critères environnementaux ou fondés sur l'évaluation de l'impact sur l'environnement dans les marchés publics). Il y a peut-être un risque juridique moindre lorsque l'information fondée sur l'ECV n'est appliquée qu'au mécanisme de contrôle au cours de l'étape de la passation des marchés, habituellement formulée comme clause d'exécution du contrat. En général, le risque juridique est réduit si l'instrument fondé sur l'ECV est simple et que les résultats sont vérifiables, compréhensibles et comparables.

La transférabilité au sein de l'UE : Certains facteurs entravent une utilisation facile d'un instrument dans certains pays, ce qui nuit à la transférabilité de l'instrument d'un pays à l'autre. De nombreux instruments sont en pleine possession de pouvoirs adjudicateurs spécifiques sans accessibilité publique. Certains instruments sont construits sur des bases de données nationales spécifiques à l'ECV. Parfois, la documentation n'est pas disponible en anglais. Étant donné que cela entrave la transférabilité à d'autres pays et aux pouvoirs adjudicateurs, l'instrument optimal devrait traiter de toutes ces questions.

1 INTRODUCTION

1.1. Background

Environmental policy makers in the EU were among the first to recognise the potential of strategic public procurement as a policy instrument. In 2003, the European Commission's communication on Integrated Product Policy (COM(2003) 302)[14] encouraged Member States "to draw up publicly available action plans for greening their public procurement" (p. 12). Meanwhile, specific environmental policies like Circular Economy or policies from other fields, such as economic development, have emphasised the importance of strategic public procurement.

Green public procurement (GPP) provides a powerful mechanism for enabling economies to become more circular and environmentally conscious. Public sector procurement plays a key role in encouraging shifts in the supply of goods and services, providing momentum to developing more circular and green business models. Encouraging more circular and environmentally conscious procurement therefore becomes an important goal for policymakers and practitioners who are looking to develop sustainable economies and to realise the resulting economic, environmental and societal benefits. The enforcement of GPP is, among others, addressed in the new Circular Economy Action Plan (COM(2020) 98 final)[15] within the description of a sustainable product policy framework.

Furthermore, public authorities are major consumers in Europe. They spent approximately 13% of the EU´s Gross Domestic Product (GDP) in 2017[16], accounting for roughly EUR 2 trillion annually. This makes evident that the public sector can make an important contribution to a more resource-efficient Europe and play a key role in terms of sustainable consumption and production.

A majority of EU Member States has responded to the request of the European Commission (EC) with the development of national action plans on GPP (see COM(2008) 400 final)[17]. Nevertheless, the overall results of monitoring studies show that while the amount of public procurers that include green criteria in their tenders is rising, there are differences in the uptake of GPP between Member States, as well as between public authorities in each Member State.

Directives (EU) 2014/24/EU[18] and 2014/25/EU[19] define the regulatory framework on public procurement. This framework enables public procurers to use environmental requirements in their tenders for products, services or works. To support public procurers and those ministries in the Member States that are responsible for the development of national action

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[14] Communication from the Commission to the Council and the European Parliament. Integrated Product Policy. 18.06.2003, COM(2003) 302 final. https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2003:0302:FIN:en:PDF

[15] Communication from the Commission to the European Parliament, the Council, the European Economic and social committee and the committee of the regions. A new Circular Economy Action Plan for a cleaner and more competitive Europe. 11.03.2020, COM(2020) 98 final. https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0400:FIN:EN:PDF

[16] European Commission (2019) Public Procurement Indicators 2017: https://ec.europa.eu/docsroom/documents/38003

[17] Communication from the Commission to the European Parliament, the Council, the European Economic and social committee and the committee of the regions. procurement for a better environment; COM(2008) 397 final. https://eur-lex.europa.eu/legal-content/DE/ALL/?uri=CELEX:52020DC0098

[18] Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC. Official Journal of the European Union L 94 of 28.03.2014, p. 65-242. https://eur-lex.europa.eu/legal-content/de/TXT/?uri=CELEX:32014L0024

[19] Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC. Official Journal of the European Union L 94 of 28.03.2014, p. 243-374. https://eur-lex.europa.eu/legal-content/DE/ALL/?uri=CELEX:32014L0025

plans, the EC publishes green criteria for different product groups. Life cycle assessment (LCA) is considered to play a direct role in these criteria based on the following factors: (i) The development of criteria is based on LCA-study results; (ii) Some of the criteria require the carrying out of a LCA-study (e.g. the award criterion "performance of the main building elements"). The latter can currently only be found in the criteria sets for construction (a) Office Building Design, Construction and Maintenance; b) Road Design, Construction and Maintenance and c) Waste Water Infrastructure).

To foster methodological harmonisation in the field of LCA, the EC officially started its initiative on Product Environmental Footprint (PEF) and Organisation Environmental Footprint (OEF) methods in 2013. PEF/OEF are at the core of the Commission Recommendation 2013/179/EU[20] "on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations". They are also closely linked to the Communication "Building the Single Market for Green Products" (COM(2013) 169 final)[21]. The initiative is now in the so-called "Transition Phase", in which possible links to existing policy instruments are being examined, so that their practicability for Public Procurement can be further discussed with relevant stakeholders.

1.2. Objectives of the present study

The main objective of this study, which was developed between March 2020 and April 2021, was to identify and assess measures that selected EEA countries, their regions and contracting authorities have put in place to use Life Cycle Assessment (LCA) and/or Environmental Footprint (EF) criteria in their Public Procurement (PP) approaches. Additionally, the objectives of this study were as follows:

- The preparation of a well-structured overview on the integration of LCA and EF into PP for 9 EEA countries;
- The description of at least 10 relevant court cases across the EEA linked to the inclusion of LCA and EF criteria and other environmental information in public procurement procedures;
- The identification of possible best-practice approaches for integrating LCA and EF in public procurement approaches.

The project was organised into three tasks, which built on each other and were organised sequentially.

Content
Task 1) Mapping of national rules on integration of LCA/EF-based criteria
Task 2) Use of public procurement procedures that include LCA/EF-based criteria
Task 3) Best practice

All tasks relied, among other sources, on information from an EEA-wide network of external procurement experts, multipliers and public procurers. The authors of this study had access to this EU-wide network, mainly through their work in national and international projects, as well as through their participation in GPP Expert Groups, conferences and workshops. This network was (re-)activated and expanded with further public authorities and other

[20] Commission Recommendation of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations (2013/179/EU). Official Journal of the European Union L 124 of 4.5.2013, p. 1-210. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013H0179&from=EN

[21] Communication from the Commission to the European Parliament and the Council. Building the Single Market for Green Products. Facilitating better information on the environmental performance of products and organisations. COM(2013) 196 final, 9.4.2013 https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0196:FIN:EN:PDF

experts in the EEA countries under the focus of this study, especially in preparation for the work being done under Task 2.

2 MAPPING OF NATIONAL RULES ON THE INTEGRATION OF LIFE CYCLE ASSESSMENT CRITERIA, INCLUDING THE EF METHOD

2.1 Overview

The authors of this study analysed existing regulatory approaches (legal frameworks) and public procurement approaches used in the EEA countries and shown in the table below. The national level was fully covered in each of the selected EAA countries. The regional level was assessed only in those regions ('federal states' or provinces) in which differences in the approaches between different levels of government were expected (e.g. Austria, Belgium, Germany, Switzerland), and in Italy and its autonomous regions. The regional level was not addressed in unitary states such as Denmark, France, Sweden and the Netherlands, where only minor differences between the regions were expected. As for the 'federal states', economically important or relevant regions in terms of GPP were covered. In Italy, autonomous regions were also considered.

EEA country (and responsible organisation)	Federal level	Economically important regions/ federal states, provinces and autonomous regions
Austria	Yes	Vienna, Upper Austria, Lower Austria
Belgium		Brussels, Antwerp, Hainaut, Ghent
Denmark		-
France		-
Germany		North Rhine-Westphalia, Bavaria, Baden-Württemberg
Italy		Lombardy, Trento Alto Adige (incl. Trentino, South Tyrol)
Sweden		-
Switzerland		Zurich, Bern, Vaud
The Netherlands		-

Chapter 2 shows the results of the existing regulatory approaches (legal frameworks) and public procurement approaches in nine EEA countries. The structure of the chapter is as follows:

- the research approach is described (2.2)
- existing legislation in the EEA countries included in the research is characterized (2.3)
- the main results of the qualitative assessment are described (2.4):
    - results of the literature research on the use of LCA-based criteria in public procurement (2.4.1)
    - research approach for the qualitative assessment (2.4.2)
    - information about the main legislation and LCA-based instruments in the different EEA countries and main contracting authorities (2.4.3)
    - categorisation of the findings according to document types, e. g. secondary legislation, action plans, guidance documents (2.4.4)

    - a list of direct links to LCA-based instruments designed for public procurement (2.4.5)
    - a list of instruments that are indirectly linked to LCA via life-cycle costing, ecolabels Type I and ecolabels Type III (2.4.6)
    - further possibilities to characterise the identified LCA-based criteria, e. g. the stage in the procurement process they are designed for (2.4.7)
    - products groups for which LCA-based criteria were identified (2.4.8)
- Court cases related to the inclusion of environmental or LCA-based criteria in public contracts are described (2.5)

2.2 Research approach for relevant documents and data entries

The authors of this study undertook a screening exercise of leading sources related to public procurement within their assigned countries and regions. They aimed at identifying relevant legal acts and resolutions, action plans and sustainability programmes enacted by the government and other relevant documents with a **link to EF/LCA-based criteria**. Additionally, requirements/programmes enacted by the main contracting authorities (if available) in the specific countries that participated in the study were analysed for links to EF/LCA-based criteria.

All documents identified by the authors of the study with a direct or indirect link to LCA-based instruments and public procurement were taken into account. All relevant sources addressed in the screening can be found grouped by country in Chapter 4. Annex I of this report.

As the authors of this study were qualified to assess the documents for their assigned countries in the original versions (being able to understand the respective language), translation took place after the first evaluation step, in preparation for the legal review and overall interpretation. Relevant provisions of national documents and legal acts were translated into English using eTranslation[22] - an online machine translation service provided by the European Commission (EC). Translations were carried out using the translation modes/filters "General Text", "EU formal language" and/or "IP Case law", depending on the type of document and the quality of the resulting translation. In some cases, more than one translation mode was used and the option delivering the best and most comprehensible English version was chosen. A quality check of the translated text was carried out selectively for the most relevant findings related to the content.

The interpretation of translated content within the identified segments in the documents was carried out to deliver content to enable conducting the legal review (see 2.3) and the qualitative assessment (see 2.4).

2.3 Legal Review – Description of existing legislation

2.3.1 General remarks on the implementation of LCA in a public procurement procedure

Environmental criteria in public procurement principles are a quite new principle. They are equal to other essential public procurement principles, such as non-discrimination, equal treatment of tenderers and transparency. The importance of environmental criteria in public procurement procedures is increasing. However, their implementation is not easy, as the main focus of public procurement is on meeting public procurement needs in an economically efficient and effective way. Environmental criteria serve secondary purposes: they are not directly related to the satisfaction of procurement needs, but deliver indirect benefits. Because of this, the European Court of Justice has defined the following

[22] https://ec.europa.eu/info/resources-partners/machine-translation-public-administrations-etranslation_en

mandatory requirements relating to the secondary purposes of (for instance) environmental criteria in public procurement processes[23]:

- environmental criteria have to be related to the subject matter of the contract,
- they are not allowed to confer an unrestricted freedom of choice on the contracting authority,
- they have to be mentioned in the contract documents or in the invitation to tender and
- they have to be compatible with the fundamental principles of Union law.

The Directives (EU) 2014/24/EU and 2014/25/EU strengthen the integration of environmental criteria in the public procurement process in line with the European climate action targets. Therefore, GPP is gaining importance in the public procurement procedures of the European Member States. However, the implementation of environmental criteria in these processes is proving difficult. There is a risk that an environmental criterion might be regarded as unacceptable (for instance, using "transportation kilometres" as an award criterion, which places non-local bidders at a disadvantage). Therefore, e.g. carbon emissions should only be taken into account if they are related to the subject matter of the contract, and not to assess "abstract" environmental compatibility.

In order to avoid the risk that national public procurement laws might contradict the specifications laid down in the EU directives, most EEA Member States have simply adopted these EU specifications. As a consequence, there is only an indirect link to LCA criteria in most public procurement laws, for example, by offering specifications for the use of Life Cycle Costing and ecolabels.

2.3.2 Use of LCA aspects

The implementation of the Public Procurement Directives (Directives (EU) 2014/24/EU and 2014/25/EU) in the national laws of EEA Member States covered by this study demonstrates that they tend to be cautious when it comes to a mandatory use of environmental criteria in public procurement procedures. Like the Directives (EU) 2014/24/EU and 2014/25/EU, public procurement laws of EEA Member States mainly encourage the use of environmental criteria and allow the use of instruments that are built upon life cycle assessment methods:

- Labels (Art. 43 of Directive (EU) 2014/24/EU). The directive defines the requirements a label must meet in public procurement procedures. These requirements can be met by ecolabels Type I (EN ISO 14024) and Type III (EN ISO 14025) that either are built on life cycle assessment methods or offer the results of life cycle assessment methods (see also "2.2.5 Use of ecolabels").

- Life-cycle costing (Art. 68 of Directive (EU) 2014/24/EU). Life-cycle costing can cover a) costs borne by the contracting authority or other users an b) costs imputed to environmental externalities linked to the product, service or works during its life cycle. The latter cost category can be build upon LCA results (see also "2.2.6 Use of Life-cycle costing").

However, some public procurement laws of European Member States allow for, or demand the direct use of LCA approaches from any party involved in the procurement process. In this context, several EEA Member States have transposed the legal specifications laid down in the EU directives into their national public procurement laws.

[23] See for example the case in 2.5.16 - a ruling issued by the European Court of Justice, case C-513/99 of 17 September 2002, Concordia Bus Finland Oy Ab versus Helsinggin kaupunki, for criteria relating to the protection of the environment to determine the economically most advantageous tender.

The public procurement laws of **all European** Member States (for instance Austria, [Bundesvergabegesetz 2018[24]], Belgium-Wallonia [Loi relative aux marchés publics, 2016[25]] and Germany [Verordnung über die Vergabe öffentlicher Aufräge, 2016[26]]) provide several links by which environmental criteria can be included in public procurement (for instance included in life cycle costing instruments or ecolabels).

One example where an EU regulation has been transposed quite directly is France. The **French public procurement law** (Code de la commande publique, 2019[27]; ordonnance n° 2018-1074[28] and décret n° 2018-1075[29]) allows the contracting authority to define contract performance conditions. When contracting authorities intend to purchase works, supplies or services that fulfil specific environmental criteria, they can require that these specific conditions be fulfilled (e.g. LCA and the cost model for calculation). Furthermore, this law allows the contracting authority to define the use of life cycle costing in technical specifications. They lay down the characteristics required of a work, service or supply. Those characteristics may also refer to a specific process or method of production, the provision of the requested works, supplies or services, or to a specific process at another stage of the life cycle. In this case, a link to LCA exists if the application of LCC also requires the collection and disclosure of external environmental costs.

Compared to that, the **Italian regulations on GPP** show a stronger link to LCA-based methods and require that GPP/environmental criteria are mandatory in the public procurement process (Legislative Decree No 56/2017– Article 23)[30]. LCA-based methods must therefore be employed as a fixed criterion in public procurement tendering processes. The Ministry of the Environment recognises the scheme "Made Green in Italy" as an instrument for checking compliance with the technical specifications for old and newly adopted environmental minimum criteria – if relevant for the life cycle of the product or service. This is also in line with Article 34 of Legislative Decree No 50/2016[31], regulating GPP and the mandatory inclusion of environmental minimum criteria in the tendering process.

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[24] Bundesgesetz über die Vergabe von Aufträgen (Bundesvergabegesetz 2018 – BVergG 2018), StF: BGBl. I Nr. 65/2018, https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20010295

[25] Loi relative aux marchés publics, Moniteur Belge, 17 June 2016, p. 44219-44500, http://www.ejustice.just.fgov.be/mopdf/2016/07/14_1.pdf#Page53

[26] Verordnung über die Vergabe öffentlicher Aufträge vom 12. April 2016, BGBl I vom 14.04.2016, S. 624, https://www.gesetze-im-internet.de/vgv_2016/index.html

[27] Code de la commande publique, 1. Avril 2019, https://www.legifrance.gouv.fr/codes/id/LEGITEXT000037701019/

[28] Ordonnance n° 2018-1074 du 26 novembre 2018 portant partie législative du code de la commande publique, Journal Officiel de la République Francaise, 5.12.2018, Texte 20 sur 255, https://www.legifrance.gouv.fr/download/pdf?id=y-ufaQFR7WEBhU9LwLd_a3QThGDlKNNq4H-vAba4fMw=

[29] Décret no 2018-1075 du 3 décembre 2018 portant partie réglementaire du code de la commande publique, Journal Officiel de la République Francaise, 5.12.2018, Texte 21 sur 255, https://www.legifrance.gouv.fr/download/pdf?id=y-ufaQFR7WEBhU9LwLd_a_xc8Q4iGnu6jiCIeEKo3-A=

[30] DECRETO LEGISLATIVO 19 aprile 2017, n.56 : Disposizioni integrative e correttive al decreto legislativo 18 aprile 2016, n. 50.; Gazzetta Ufficiale Della Repubblica Italiana ; Entrata in vigore del provvedimento: 20/05/2017 https://www.gazzettaufficiale.it/eli/id/2017/05/5/17G00078/sg

[31] DECRETO LEGISLATIVO 18 aprile 2016, n.50 : Attuazione delle direttive 2014/23/UE, 2014/24/UE e 2014/25/UE sull'aggiudicazione dei contratti di concessione, sugli appalti pubblici e sulle procedure d'appalto degli enti erogatori nei settori dell'acqua, dell'energia, dei trasporti e dei servizi postali, nonche' per il riordino della disciplina vigente in materia di contratti pubblici relativi a lavori, servizi e forniture ; Gazzetta Ufficiale Della Repubblica Italiana ; Entrata in vigore del provvedimento: 19/04/2016 https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2016-04-19&atto.codiceRedazionale=16G00062

2.3.3 Link to the subject matter of the contract

Environmental criteria have to be related to the subject matter of the contract. Contracting authorities may use environmental criteria such as life cycle costs or the carbon footprint if the criterion is related to the subject matter of the contract. At the same time, the essential public procurement principles of non-discrimination, equal treatment of tenderers and transparency have to be respected in the procurement process.

For instance, requiring a specific transport distance for material, products or installations to the location of use can limit transportation kilometres. This can also limit the respective energy demand and resulting GHG emissions with regard to an enhancement of environmental aspects in the tender. However, this might be regarded as an unacceptable award criterion that discriminates against bidders from outside the region. Only if it can be associated with the subject matter of the contract in a way that leads to quality enhancement (e.g. cement transport, animal transport) it can be regarded as acceptable (depending on the requirements for the fulfilment of the environmental criterion (see for instance the cases in section 2.5.14 or 2.5.17).

2.3.4 Use of environmental criteria as selection and award criteria

As environmental criteria have to be related to the subject matter of the contract, award criteria are not permissible if they relate to the general purchasing policy or the general environmental performance of a particular company, independent of its products or services (see case in 2.5.6). For example, if the subject matter of a contract is the construction of a building, not using disposable tableware in the works canteen or the use of recycled paper in the offices of the bidding company would not be regarded as a permissible selection criterion, because it is not directly related to the subject matter of the contract. Nevertheless, it is generally permissible to consider the origin of a product from organic farming or fair trade as an award criterion (see case in 2.5.6). It is not only the method that is used to produce the delivered end product itself (e.g. environmentally friendly production of electricity - green electricity) that may be taken into account in the evaluation process, but also the environmental aspects of the entire supply chain, including the preliminary products of a tendered product. In one identified court case (see 2.5.15), the European Court of Justice (ECJ) declared an award criterion inadmissible as the performance of the bidding company had not been assessed in connection with the public procurement body, but with third parties. An evaluation of the extent to which the bidding company supplied green electricity to third parties - in addition to the offered green electricity supply to the public procurement agency - had been carried out. In this case, the ECJ no longer saw any connection to the electricity supply tendered for the procurement agency.

Concerning environmental criteria, it is also important that only proof that is linked to the technical capability to provide the specific service described in the tender is required. In particular, the term "quality" is to be understood in a narrow and specific sense in connection with the individual contract. It is not permissible, for example, to consider the general environmental or social activities undertaken by companies as eligibility criteria under the keyword "quality". In this specific case (see 2.5.6), the Dutch province of North Holland had asked bidding companies to provide information on how they comply with "the criteria of sustainability of purchases and socially responsible behaviour" and, in particular, on how they contribute "to improving the sustainability of the coffee market and to environmentally, socially and economically responsible coffee production". The Province of North Holland required the Max Havelaar and EKO labels for coffee and tea consumption as means of proof. ECJ considered that by requiring in the contract documents, that certain products to be supplied were to bear a specific eco-label, rather than using the detailed specifications defined by that eco-label, the province of North Holland established a

technical specification, which was incompatible with Article 23 (6) of Directive (EU) 2004/18[32].

In accordance with Directives (EU) 2014/24/EU and 2014/25/EU the existence of an environmental management system or certain environmental management measures is required, the link to the subject of the contract is generally given if the environmental management measures are in place at the time of the execution of the contract. This means that the conditions under which the contract is to be executed need to specify the requirements of the environmental management system or the required environmental measures. This is of particular importance, and should be made clear in the selection criteria and/or the award notice, in the case of activities whose environmental relevance is obvious from the nature of the subject matter or from the service description.

In **Austria**, for instance, the contracting authorities can refer to EMAS, an EU voluntary environmental management and audit scheme (Commission Decision EU 2019/62)[33]. An EMAS certification obliges the bidder, among other things, to publish annual statements on the environmental impact of its own operational activities and can be used as proof of the company's environmental/technical performance. In this regard, the Austrian Public Procurement law 2018 (Bundesvergabegesetz 2018)[34] is consistent with the legal specifications laid down in the EU directives.

Environmental management measures can also be used as an award criterion. It is true however that it is difficult to use the existence of an environmental management system as such as an award criterion (e.g. "environmental management system"), since it does not usually describe a "measurable" performance-related target. There is a legal risk if contracting authorities want to consider EMAS certification or equivalent evidence as an award criterion. However, environmental management measures that affect the way in which a contract is executed can be described as award criteria. The design of environmental management measures with the aim of using them as award criteria can be an interesting alternative to an environmental management system as a necessary criterion of technical and professional performance.

In **The Netherlands**, an award criterion has been used for a hypothetical discount granted on the basis of a CO_2 sensitisation certificate. During contracting, the actual price of the contract has to be payed as offered. During the awarding procedure, the price ratio gets adapted only theoretically. In order to fulfil this criterion, the bidder has to enclose its own CO_2 sensitisation certificate and provide that of its subcontractor (if any) with the bid. The bidder will not receive a notional discount if it does not do so. The CO_2 certificate is considered an objective document and the certificate has to have been issued by a certified company before registration (see case in 2.5.2).

On the other hand, contracting authorities also are given the possibility to exclude bidders which have proved unreliable, for instance because of violations of environmental or social obligations. Since environmental management systems also have requirements that have to be fulfilled in order to comply with legal regulations under environmental law, it is conceivable that the existence of an environmental management system can be required

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[32] Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts, Official Journal of the European Union, N° L 134, 30.04.2004 p. 114-240 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0018&from=en

[33] Commission Decision (EU) 2019/62 of 19 December 2018 on the sectoral reference document on best environmental management practices, sector environmental performance indicators and benchmarks of excellence for the car manufacturing sector under Regulation (EC) No 1221/2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS), Official Journal of the European Union, N° L 17, 18.1.2019, p. 58-93, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D0062&from=DE

[34] Bundesgesetz über die Vergabe von Aufträgen (Bundesvergabegesetz 2018 – BVergG 2018), StF: BGBl. I Nr. 65/2018, https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20010295

as proof that there is no reason for exclusion. In this case, the environmental management system does not have to be related to the subject matter of the contract. However, the requirements of environmental management systems vary when it comes to compliance with legal provisions. For this reason, the existence of an environmental management system in general cannot be used as evidence for the exclusion of optional grounds. While EMAS registration requires proof of compliance with environmental legislation (cf. Art. 13 (2) (c) EMAS III Regulation, Commission Decision (EU) 2019/62), ISO 14001 certification only requires proof of the existence of a procedure to verify compliance with legal requirements. An ISO 14001 certification does not provide proof of compliance with legal requirements (see case in 2.5.4).

2.3.5 Use of ecolabels

The use of ecolabels (mainly Type I but also Type III) as environmental criteria in the public procurement process is more likely to be accepted in the EEA Member States because compliance with the essential public procurement principles of non-discrimination, equal treatment of tenderers and transparency is achieved more easily when certifiable information via comparable labels is available.

The EEA countries covered by this study therefore allow the use of ecolabels as a 'seal of approval' affixed to a product to certify that a building, product or service meets certain quality criteria or requirements (e.g. EU Ecolabel, Nordic Swan, Blue Angel or the Austrian Ecolabel).

An Austrian court case ruled that if the tender documents require certain certifications "or equivalent", the contracting authority must recognise different certifications only if the requirements for the quality labels are equivalent. The evaluation of equivalence has to be based on the object and scope of certification (production process, product, operation and so on) (see case in 2.5.4). Another Austrian court considered an award criterion "environment" as discriminatory given that a tenderer was awarded the maximum points for a restricted ecolabel. The tenderers had to ensure the fulfilment of the requirements via a paper profile which was not generally accessible, as it was reserved only to members of the relevant association and not to all tenderers (see case in 2.5.5).

In Italy, Article 16 of the regulation on GPP[35] foresees a reduction of the provisional deposit for contractors who are in possession of an EMAS or EU Ecolabel certification or are conducting Corporate or Product Carbon Footprinting (following ISO 14064-1 or ISO 14067)..

In Belgium according to the Loi relative aux marchés publics, 2016[36], contracting authorities may require a particular label in the technical specifications, award criteria or contract execution conditions, as proof that the works, services or supplies correspond to their required characteristics.

2.3.6 Use of Life-Cycle Costing

Life cycle costing (LCC) is a criterion that can be used to include the evaluation of the life cycle of a product, a building or a service in the total cost. According to the Directive (EU) 2014/24/EU, LCC can consist of Total Cost of Ownership (TCO), costs for externalities or of a combination of both. The purchase price and associated costs (installation, etc.),

[35] LEGGE 28 dicembre 2015, n. 221. Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali. ; 18 gennaio 2016 ; Gazzetta Ufficiale Della Repubblica Italiana Anno 157° - Numero 13 ; p. 6 https://www.minambiente.it/sites/default/files/archivio/allegati/GPP/legge_28_12_2015_221.pdf

[36] Loi relative aux marchés publics, Moniteur Belge, 17 June 2016, p. 44219-44500, http://www.ejustice.just.fgov.be/mopdf/2016/07/14_1.pdf#Page53

operating costs, end-of-life costs and the costs of externalities can be evaluated in the tendering process.

Where contracting authorities assess the costs using a life-cycle costing (LCC) approach, they should indicate in the procurement documents the data to be provided by the tenderers and the method which the contracting authority will use to determine the life-cycle costs based on this data (Art 68 Directive (EU) 2014/24/EU).

According to the Directive (EU) 2014/24/EU, cost models for calculating external environmental costs have to meet the following requirements: the calculation must be based on objectively verifiable and non-discriminatory criteria (e.g. no unacceptable "regional perspectives"). The cost model must be accessible and free of charge for the bidder. It must be possible for bidders to provide the required data with reasonable effort (e.g. manufacturing data, data available to the bidders or subcontractors themselves). In this case, external data (e.g. the way materials are obtained) on which the bidder does not have any influence may be used if the above-mentioned requirements are met.

LCC can be addressed, by looking for example at the procurement of public (street) lighting. Given that the environmental impact of public (street) lighting (lamps, luminaires and fixtures) is very high throughout their life cycle, it is appropriate that environmental criteria are awarded a significant share of the total marks to be scored in the procurement process. In any case, the aspect related to technologies with lower management and maintenance costs in the medium/long term needs to be further assessed. For this purpose, there are tools such as TCO analysis — Total Cost of Ownership — that consider the main cost items of a product (cost of purchase, ordinary maintenance cost, extraordinary maintenance cost and costs related to electricity consumption). Another option is an LCC analysis, which allows for the determination of the global product cost not only as defined above, but also including the external environmental costs (e.g. external costs for contributions to global warming, i.e. life cycle emissions of greenhouse gases) of goods/services/works.

The EAA countries covered by this study all allow the use of LCC in the tendering process as prescribed by Directive (EU) 2014/24/EU. The findings showed that for instance in Belgian legislation, LCC may cover part of the cost or all costs throughout the life cycle of a product, service or work. In the Netherlands, examples have shown that LCC, including the costs of environmental externalities of a product or service, may be used voluntarily as an award criterion. Using LCC as an award criterion is a procedure that is possible across EEA countries. Life cycle costing can be used as a cost model. The following costs can be considered in a life cycle cost model:

- the costs borne by the contracting authority or other users of the service
- costs arising from external effects of environmental pollution, provided their value in money can be determined and verified. Therefore, only monetarised environmental costs may be considered in the life cycle cost model.

This is the reason why, at the moment, environmental costs are rarely considered, as it is still rather difficult to monetarize environmental costs in a comprehensible manner.

In Italy, specific examples have been identified where LCC must be used as a criterion in public procurement tendering processes for new public buildings and construction projects. LCC that includes the costs of environmental externalities can be used voluntarily as a criterion in public sector tenders for street lighting.

However, all specifications for LCC only state that the contracting authorities are allowed to use them, but do not give any specific advice on how to evaluate the costs. An exception

is the Directive (EU) 2009/33/EC[37], also called Clean Vehicles Directive (CVD) before its amendment. The CVD 2009 offered an LCC calculation method for vehicles, which included the costs of environmental externalities. The revised CVD, the Directive (EU) 2019/1161[38] includes no information on this calculation method.

In France, the Act on agriculture and food (2018), known as law EGAlim[39], provides a set of measures concerning public and private collective restoration. It imposes a minimum threshold of quality and/or sustainable products for public entities contracting catering services after January 1, 2022. Products acquired have to take into account the external environmental costs associated with the product during its life cycle.

It needs to be clarified how costs charged to environmental externalities can include the cost of greenhouse gas emissions and polluting emissions, as well as other climate change mitigation costs. To date, contracting authorities do not have access to an official benchmark or methodology on which they could perform a selection of food products based on these costs. It is the responsibility of the buyer using this method to comply with the relevant provisions in the Code de la commande publique[40] (Articles R. 2152-9 and R. 2152-10). In particular, Article 2152-10 states that the method used to assess the costs attributed to environmental externalities 1. has to be based on non-discriminatory and objectively verifiable criteria; 2. is accessible to all interested parties; 3. implies that the required data can be provided with a reasonable effort made by normally diligent economic operators.

2.3.7 Concluding Statement

GPP and environmental criteria in the public procurement process are gaining importance in the EEA Member States. However, the implementation of environmental criteria in the public procurement process in European Member States is proving difficult. There is a risk that an environmental criterion might be regarded as unacceptable (for instance, using "transportation kilometres" as an award criterion, which places non-local bidders at a disadvantage). Nevertheless, criteria associated with the subject matter of the leading to quality enhancement (e.g. cement transport, animal transport) can be regarded as acceptable (depending on the requirements for the fulfilment of the environmental criterion). Art. 68 paragraph 3 of Directive (EU) 2014/24/EU states that a common method shall be applied for the assessment of life-cycle costs whenever it has been made mandatory by a legislative act of the Union. As there are no common methods applied for the assessment of life-cycle costs neither on EU nor on national level yet (except the information given in the outdated Directive (EU) 2009/33/EC[41]), contracting authorities have to develop their own method if they want to apply Life-cycle costing in their tenders or use LCC-calculators developed by the EC or others.

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[37] Directive 2009/33/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of clean and energy-efficient road transport vehicles, Official Journal of the European Union, N° L 120, 15.5.2009, p. 5-12, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0033&from=DE

[38] Directive (EU) 2019/1161 of the European Parliament and of the Council of 20 June 2019 amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles, Official Journal of the European Union, N° L 188, 12.7.2019, p. 116-130. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L1161&from=DE

[39] LOI n° 2018-938 du 30 octobre 2018 pour l'équilibre des relations commerciales dans le secteur agricole et alimentaire et une alimentation saine, durable et accessible à tous, Journal Officielle de la République Francaise, 1 novembre 2018, Texte 1 sur 175 https://www.legifrance.gouv.fr/download/pdf?id=m7COyAtqezmpl8yN9AuaRk1tUE4pff_NWtPY0T-2KIM=

[40] Code de la commande publique, 1. Avril 2019, https://www.legifrance.gouv.fr/codes/id/LEGITEXT000037701019/

[41] Directive 2009/33/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of clean and energy-efficient road transport vehicles, Official Journal of the European Union, N° L 120, 15.5.2009, p. 5-12, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0033&from=DE

A Table collating the findings on the legal documents that provide the basis for the legal review can be found in Annex II.

2.4 Qualitative Assessment of relevant documents to identify and describe the link to EF/LCA

2.4.1 Literature Review

All sources from the literature review are presented in Annex I.1.

General background on LCA-based environmental information in public procurement procedures

Mélon (2020) states that "*despite a relatively clear definition of GPP as a concept, the insertion of environmental concerns in public purchasing procedures ranges from a simple demand for a greener product to a holistic approach of integrating 'green' criteria into all steps of the procurement process*. *While any effort, however small, adds to the final goal of sustainable production and consumption, the climate emergency calls for clear commitment to do at least as much as the existing legal frameworks allow.*

The current EU legal framework allows for the use of all variations: (…)

- *from the sourcing of a product formulated with the use of green criteria,*
- *requiring in the call for tenders the use of green technology by the suppliers,*
- *seeking greener functionality - as in, sourcing a greener product, service, or works for meeting the identified needs, while achieving the best value –*
- *or as a holistic approach, greening the whole procurement process, integrating green criteria into all steps of the procurement process, including the contract performance stage, inserting requirements as to the products' energy or water use."*

According to Mélon (2020) "*the door to environmentally friendly public procurement opened in 2004 with the Public Procurement Directives to the exclusion of the utilities sector. These EU directives on public procurement were further amended in 2014 to stimulate the demand for innovative and green products and tackle the issue of legal uncertainty for public procurers. (…) Even the new legislation on the matter did not significantly influence the uptake of GPP across the EU. Reasons for this are multi-fold and can be divided into two groups: the de jure group, or the risk of the illegality of a particular use of GPP, and the de facto group, or the expertise deficit of public procurers on the matter. While both of these can be tackled by similar public and private tools, the applicable legal framework needs to provide legal certainty as to the use of environmental concerns in public purchasing. (…)*

Although the existing EU GPP criteria offer guidance for particular types of products and services, such guidance has not been sufficient to spur a high uptake of GPP processes across the EU, suggesting that further incentivising engagement in such strategic use of public procurement is needed. (…) As these guidelines provide general guidance and no assurance as to legal compliance when these criteria are inserted into actual procurement processes, the practitioners seem reluctant to use them. While these guidelines represent a great starting point to learn more about life-cycle thinking, their general nature and the form in which the information is provided impede their use in practice.

Following Wiesbrock et al. (2015) "*the design of the public procurement directives limit the possibilities to integrate environmental and social concerns, including, notably, the link to the subject matter requirement. (…)*

In the area of EU public procurement law, the imbalance between economic, social and environmental aspects is particularly pronounced due to the categorization of public

procurement as part of the EU's provisions on the free movement of goods and the free provision of services. By approaching public procurement from an internal market perspective centered on the free competition principle, other policy objectives are in practice degraded to "secondary" objectives that have to be justified and defended. Environmental and social policy objectives could just as well (and should) be placed on equal footing with internal market objectives in a public procurement context."

While the inclusion of environmental information not necessarily linked to LCA, (e.g. the use of ecolabels, information regarding the recycled content of products) in GPP procedures is common practice, LCA-based approaches seem to be quite new.

According to Butt et al. (2015), LCA has generally been used for knowledge generating studies in the field of procurement, rather than as a standalone quantification instrument or for comparisons of different alternatives.

Cheng et al. (2018) conducted an analysis of peer-reviewed papers and identified a research gap searching for information on the application of LCA in Public Procurement Procedures. Among their findings was the insight that LCA was mentioned in connection with the procurement process. "*However, the empirical experience of using LCA based award criteria in a real purchase is surprisingly identified as limited (Parikka-Alhola and Nissinen 2012)*" (Cheng et al., 2018, p. 781).

Hochschorner et al. (2006) stated as well that empirical descriptions of LCA used in purchasing and procurement are limited, and Parikka-Alhola et al. (2012) described the topic as being sparsely discussed in the existing literature.

Takacs et al. (2020) conducted a systematic review "*to examine the use and effectiveness of life-cycle based interventions in improving the sustainability of food services. This review found that life-cycle based approaches are not only useful for identifying hotspots for impact reduction, but also for comparing the performance of different sustainability interventions. (…) Lifecycle-based approaches are recommended to be used as a reference method for environmental impact assessment of food products, food systems and supply chains. Nevertheless, its application in the catering sector is still relatively scarce. (…) Without the quantification of environmental impacts, it is difficult to make informed decisions on how best to promote environmental sustainability across catering supply chains.*" The authors state that to their knowledge, no systematic reviews have been carried out to date on the application of lifecycle thinking in the food service sector, despite such information being crucial for making informed decisions on how best to improve the sustainability of this sector.

Decision-making in GPP requires understandable and practicable environmental assessment methods. Life cycle assessments (LCA) have gained importance. It would be advisable to extend the LCA approach to other instruments and resources (Vidal et al. 2018).

Literature that presents and discusses the use of existing approaches and LCA-based or carbon accounting tools

Kadefors et al. (2020) discussed approaches using tools based on carbon accounting in the Netherlands (Dubocalc), Sweden (Klimatkalkyl), the UK and Australia for infrastructure projects. The study states that "*the Swedish Transport Administration launched their carbon reduction requirements in 2016. Reduction targets apply to all projects with a contract sum over 5 Million Euro. Inspired by a model used by the EU Commission to reduce CO2 emissions from light passenger and commercial vehicles, target levels depend on the year when the constructed facility will be taken into operation and are raised over time matching the pace of national carbon emission goals (15% 2020-2024 and 30% 2025-2030). A baseline is developed using the calculation tool Klimatkalkyl. If targets are met or exceeded the contractor is awarded a bonus of a maximum of approximately 1% of the contract sum. Important objectives have been to be technology neutral and stimulate the implementation of the most cost-effective measures first.*"

Alvarez et al. (2015) conducted "*a pilot study of the conservation and maintenance service of an urban waterfront and riverside. These services are outsourced in most municipalities and have a significant cultural, economic and ecological benefit. The aim of the work is to calculate the Carbon Footprint (CF) including scope 3 emissions of a specific conservation and maintenance service over two consecutive years in order to provide recommendations for the implementation of CF requirements in public procurement. (…) This experience could pave the way for European policymakers to include specific requirements in GPP. The first steps may involve future legislation which could eventually regulate tenders by requiring reports and verification of CF assessment.*"

Other sources describe approaches, mainly from Finland and driven by Ari Nissinen, that address possibilities to include carbon footprint information more directly in GPP via specific tools. Together with colleagues, Nissinen developed the JUHILAS Carbon Footprint Calculator[42] for 5 product groups (IT, office chairs, incontinence products, paper and outdoor lighting) to be used in the procurement process between 2009 and 2012. The tool is "*based on simplified life cycle calculation ("Streamlined LCA"), and the approach was based on the suitability for assessment in conjunction with competitive bidding processes. The calculators have not been updated since. The final report of the tool development stated that the carbon footprint calculators to be developed to support public procurements shall provide comparable and reliable estimates of the greenhouse gas emissions of products since comparability and fairness are key issues affecting the public procurement processes*" (Suikkanen et al., 2020). The city of Helsinki had been directly involved in the development, but did not include the calculator in any of its tenders. The tool description (Mattinen et al., 2011) and a quick check on the tool itself disclosed a quite complex procedure. For example, for the product group office chairs, the weight of the different materials (steel sheet, copper sheet, HDPE, etc.) had to be inserted in the calculator. Public procurers can ask the bidders to insert this information but the procurers should verify if the numbers are correct.

Currently Nissinen is taking part in the Canemure Project[43] where his focus lies on looking for possibilities to use carbon footprint information coming from the Environmental Footprint Initiative and its method. In one of his most recent publications, Suikkanen et al. (2020) conclude that "*On a general level, it can be stated that the PEF can be used for producing environmental information as a part of procurements. The supplier can be asked to provide the data specified in the PEF for the calculation of the environmental footprint or the carbon footprint. (…) The calculation of the carbon footprint based on the PEF method can be included in the contract. In such a case, the supplier is either requested to provide a carbon footprint calculation in accordance with the PEF(CR) or the data required in the PEFCR, allowing the client to use the data for the calculation of the carbon footprint. If the work is not performed fully according to the PEFCR, such as when only focusing on the carbon footprint, the use of the databases is subject to a charge, and this should be considered when requesting data from the supplier.*" (Suikkanen et al., 2020)

The authors do not go into detail as to whether they favour using the PEF method as a basis for including Carbon Footprint information in public procurement procedures. They remain quite objective– ending with the rather vague remark that "*requesting data would prepare suppliers for the more comprehensive calculation of the carbon or environmental footprint that may be required in the future.*" (Suikkanen et al., 2020)

The city of Helsinki is also taking part in the Canemure Project with the goal to find ways to use carbon footprint criteria in public procurement[44]. The city has selected nine pilot procurements in the time frame 2019-2024. In some of them LCA-based criteria were

[42] https://www.syke.fi/en-US/Research__Development/Consumption_and_production/Calculators/Juhilas

[43] https://carbonneutralfinland.fi/en-US/Canemure

[44] https://www.hiilineutraalisuomi.fi/en-US/Canemure/Subprojects/Helsinki

included in the planning stage. In others, as described below, LCA-based criteria were applied in the tendering stage or the contract period:

- The objectives of the **procurement of a Design and Build project for new apartment buildings**, were to find a low carbon design solution for the construction project and to pilot the suitability of carbon footprint calculations in the process.

  "*Operators interested in tendering were given access to a commercial carbon footprint calculation tool for the duration of the tendering process. In addition to providing instructions for using the calculation tool, the client provided operators interested in tendering with training for using the tool. The carbon footprint estimation was carried out in accordance with the standard EN 15978 and the simplified procedure of the Ministry of the Environment's carbon footprint estimation method.*" A company, which served as a consultant, verified the carbon footprint calculations of the offers. "*The achievement of a carbon footprint corresponding with the offer will be monitored during the construction project. The carbon footprint estimation of the construction project will be repeated in the planning phase before the construction phase begins, and again after the construction phase has ended. The carbon footprint in the planning phase must be equal to or smaller than the carbon footprint estimated in the tendering phase. If the result of the carbon footprint estimation carried out after the construction phase has ended is equal to or better than in the tendering phase, the client will grant the supplier a bonus. If the carbon footprint calculated in the tendering phase is not achieved, the client will have the right to impose a sanction on the supplier.*"[45]

  The following challenges were described for the pilot project: "*Due to the urgent procurement schedule, no market dialogue could be arranged in connection with the preparatory work. Ordinarily, it would have been important to listen to the market at least in the form of an information request, as environmental and climate criteria that were new to the procurement unit were included in the procurement, such as the tendering phase carbon footprint calculation and the criteria for a fossil-free worksite. Thus, utilising market dialogue is seen as essential in the future, especially when introducing new criteria.*"

  "*The preparatory work for the procurement progressed quickly, and the decision to include carbon footprint estimation as a comparison criterion was made rather late in the process. Having dialogue with the market would have been ideal when adding new criteria to the procurement. Arranging dialogue with the market could have also increased the attractiveness of the project to tenderers, as well as the amount of offers. Furthermore, the information available on the carbon footprints of construction projects is still limited, making it difficult to set threshold scores for the carbon footprint of the project. As there was no minimum level for the carbon footprint, the carbon footprint scoring process utilised interpolation, which was not a very viable method in a competition resulting in only two offers.*

- In another pilot, the City of Helsinki collects data from contractors (for asphalting) during the contract period to assess the climate impact of the contract. The city currently also takes part in the development of a common carbon footprint tool for the asphalting industry.

[45] https://www.hel.fi/static/liitteet/kaupunkiymparisto/ilmastoteot/hankkeet/canemure/case-Asetelmakatu-DB-project.pdf

- In a procurement of dairy products and in another of meat products, the market's readiness for carbon footprint calculation was surveyed. The suppliers were required to develop an action plan to reduce the Carbon Footprint during the contract.

A positive formulation regarding implementation was found in Cheng et al. (2018): "*When GPP is applied, incorporating LCA-based information in and applying a life cycle perspective to management processes is likely to help the green strategy based on a procedure of environmental assessment approach that aligns its overall green strategy and contributes to a shift towards more sustainable and green paradigms.*"

Jelse et al. (2018) stated that "*Even though LCA and EPD data is commonly used to quantify the potential environmental impact of construction elements or construction works, reality shows that in GPP, despite environmental considerations being implemented in a variety of European Member States, this data is not used in order to come to conclusions and make decisions related to product or supplier selection*."

According to Vidal et al. (2018), a new method for multiple criteria decision-making based on life cycle assessment and TOPSIS[46] is proposed as a method to obtain single scores using normalisation and weighting methods to valuate award criteria for GPP. (…) "*The score for each product, comprised between 0 and 100, is calculated using the Euclidean distance of the ratio between the distance from the worst ideal alternative and the distance from the best ideal and the worst ideal alternatives. (…) The simplified data entry of the methodology presented in this paper provides the usability required in a standardized public procurement process. (…) In this paper, TOPSIS is applied to the endpoints obtained with the method ReCiPe, although the methodology is equally applicable with midpoint impact categories or with other LCA methods.*"

While those kinds of new approaches seem promising from the perspective of providing results based on a single-score value for the evaluation of bids, the amount of expertise needed and the overall effort for conducting this method from the perspective of bidders seems to be quite high.

Jenssen et al. (2019) described that Parikka-Alhola et al. (2012) discourage purchasers from using LCA, reserving the method for expert practitioners. They examined a procurement of transportation services for goods in a Swedish municipality. This also indicated that LCA was a suitable source of information on the environmental impacts and could be applied to identify where to focus efforts in the procurement process. "*However, small variances in the LCA results can skew or disturb weighting of award criteria, making LCA more suitable for experts than purchasers.*"

According to Jelse et al. (2018), tools and platforms to assist in interpreting LCA and EPD information are currently being developed. "*A number of industry sectors, depending on their maturity in the area of sustainability, have built tool sets that help in assessing the overall sustainability impact of their sector's products, technologies and solutions. (…) Similarly, regional and federal governments (e.g. Germany) as well as building certification schemes are developing databases and software packages that allow for generic and product-specific data to be made available to different stakeholders to allow them to assess the impact of new construction developments or maintenance. Not only have these tools reduced the cost of an LCA, but they ensure that LCA is considered during the construction design and planning.*"

[46] TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) is a multi-criteria decision analysis method. It is based on the concept that the chosen alternative should have the shortest geometric distance from the positive ideal solution and the longest geometric distance from the negative ideal solution.

Discussing further efforts to integrate LCA and EPD-based information into GPP criteria setting consistently within any sector, Jelse et al. (2018) mention harmonisation as the key element.

- *"It is a must that schemes operated in different European countries work in the same way and avoid setting national special features in addition to the standards to allow companies to consistently report LCA and EPD data;*
- *Benchmarks must be made available in order to ensure that products that are regarded as true differentiators are considered as such regardless of the country they are sold into;*
- *GPP award criteria must be harmonised, in order to ensure there is a consistent message from the public sector on what the focus areas are supposed to be, and these should be driven by the European Commission;*
- *For those organisations that are not in a position to generate LCA data themselves, financial support or publicly available data repositories should be made available, driven by the public sector;*

Truly implementing science-based product or service selection criteria for purchasing materials or services is the single most important element that will drive a true reduction of the environmental impact of the European construction sector. Based on today's assessment methodologies and data availability, LCAs and EPDs are a critical element in this approach, and should therefore be much more visible in public and private efforts to drive down the environmental impact." (Jelse et al., 2018)

When assessing the Life Cycle approach in the Procurement Process of Defence Material in Sweden, Hochschorner et al. (2006) identified four areas for the practical use of LCA in the acquisition process: learning about environmental aspects of the product; fulfilling requirements from customers; setting environmental requirements; and choosing between alternatives. They stated that "*for choosing between alternatives, a quantitative LCA should be used, since a quantitative dimension is needed in order to compare alternatives.*" (Hochschorner et al., 2006)

Identified limits and barriers to the use of LCA based information and costs of environmental externalities in public procurement

For all described approaches, it is necessary that the supplier/bidder has access and expertise in using LCA software compatible with the LCA/EF databases. Additionally, the procurers need to have expertise in processing and interpreting the information accordingly. "*No matter how it is approached, LCA is a complex topic that requires a certain skillset to be able to interpret information generated by the study. So even if LCA and EPD data was to be available for all products participating in a public tender, there would need to be quite some knowledge required from the procurement departments in order to identify the best possible product for a certain application*." (Jelse et al., 2018, p. 500-501)

Many factors influence the development of GPP practices among public authorities. However, "**awareness and knowledge on GPP techniques and procedures**", as Testa et al. (2016) conclude, are the most relevant factors, drastically more influencing than the conventionally considered availability of economic resources and budget flexibility.

Next to the knowledge and expertise needed, also time constraints play a major role according to De Klein (2018). **Time and costs constraints for contractors and public authorities** are related to the limited *"time to check all relevant information before awarding the contract (…) the time it takes to obtain a verified LCA is longer than the time contractors have to submit their bid. Therefore, the results of innovative products are more or less educated guesses that have to be verified after awarding the tender (…). The process of getting an LCA verified by an approved examiner takes a lot of time. Mostly you do not have the time necessary for that in a tender. Therefore, we usually ask for a substantiation that needs to be verified within a year after the contract has been awarded."*

Iraldo et al. (2016) describes barriers to the full implementation of LCC (including also environmental externalities in addition to TCO), which are also valid for the application of LCA-based environmental information to be implemented in the public procurement procedure. A sample of 119 public authorities from different countries shows: "*The most relevant barriers public administrations must tackle, consist in* ***a poor availability of supporting tools*** *and* ***of incentives that could stimulate and support public organizations in the application of LCC****." (…) Moreover, the* ***lack of human resources*** *within the public authorities today represents a constraint to the full adoption of LCC. (…) The comprehension and application of LCC in the public sector is thus still at a very early stage and a greater effort is needed to support the development and spreading of this instrument in the European Union.*"

Hill (2016) clarifies that externalities may only be taken into account where the external costs are due to the execution of the contract and where, at the same time, the costs are borne directly by the purchaser of the product or the service.

"*Externalities may include the emission of greenhouse gases and pollution caused by the extraction of raw materials used in the product or caused by the product itself or its manufacturing. Costs related to environmental externalities can only be taken into account if their monetary value can be determined and verified. If no common EU method exists for the calculation of life-cycle costs, methods can be established at national, regional or local level. However, they have to be general (in the sense that they should not be exclusively designed for a single specific public procurement procedure), be objective and the data required can be provided with reasonable effort by enterprises.*" (LIFE FUTURE, 2015, p.10)

Most authors, such as Andhov et al. (2019) argue quite critically that "***developing LCC methodologies is effort-intensive****, because such methodologies must be tailored on a specific product/service group or category. Challenges include long supply chains spanning four continents and the difficulty in assessing – not to say measuring – non-monetary values like the respect for human dignity or the protection of biodiversity.*"

"Economics departments and business schools have taught lifecycle cost (LCC), total cost of ownership (TCO), and even lifecycle accounting or assessment (both LCA) for decades, and these tools are beginning to gain traction in European Union (EU) procurement circles. We too need to think seriously and strategically about more aggressively employing LCC to integrate sustainability into our vernacular, policies, procedures, and practices. Lifecycle cost analysis and increased focus on externalities can bring transparency to real - and often hidden - costs of unnaturally inexpensive solutions that we too frequently take for granted." (Schooner et al., 2020, p. 38)

According to Jenssen et al. (2019) several LCA experts had outlined the **inability of the (LCA) method to provide decision makers with a clear environmental preference**. Accordingly, several authors suggested using various multiple-criteria decision analysis (MCDA) methods to handle trade offs and weigh indicators derived from LCA.

Jenssen et al. (2019) highlighted issues on effort and the complexity of using LCA directly in tendering processes by stating that "*purchasers should not exclusively base their decisions on current LCA methods, because of various methodological faults. Furthermore, the information is far too complex to be used as a basis for tender documents. Thus, with the limited time and resources a procurer has, information regarding the environmental aspects of a purchase must be condensed. Moreover, while identifying criteria with LCA is one thing, evaluating them is another. Data, time, and cost constraints limit the efficiency of LCA-based tools in the procurement context.*"

De Klein, J. (2018) conducted research on the possible extension of the LCA-tool DuboCalc (currently used mostly at the federal level) for infrastructure tenders in municipalities. He discussed issues related to the background data that has to be taken from databases and quoted an interviewee: "*A point of attention when using DuboCalc is that it contains a lot of outdated and unreliable data. (…) I have seen LCAs from the market to compare it with the data in DuboCalc. Often that data doesn't match with the data in DuboCalc. There is*

often criticism on the database, which contains mistakes, is not adequately filled and contains (old) data that has not been verified." Dubocalc uses the Milieu Kosten Indicator (MKI) – single score. According to another interviewee, "*MKI weighs eleven environmental aspects, of which CO_2 is very dominant. Depletion of natural resources is underrated in this indicator. The depletion of natural resources should be accounted for more heavily in the calculation system.*"

Suikkanen et al. (2020) stated that, for comparisons and competitive bidding, the availability of the specific Product Category Rule (regarding the subject matter of tendering) was essential. "*If PEF category rules exist for the product category being procured and the work is performed according to the rules, the information obtained can be used as grounds for comparison in the context of competitive bidding. When the PEFCRs are observed fully and the PEF study is performed for all the environmental impact categories required by the PEFCR in addition to the carbon footprint, the databases made available by the EC are provided for use free of charge*". (Suikkanen et al., 2020, p. 25) If there is no PEFCR in place for the product group of interest and if only specific environmental impacts are calculated (e.g. the Carbon Footprint), the access to data for calculation is not free of charge. From the perspective of non-exclusion this issue has to be solved accordingly before the method could even theoretically be recommended.

Hochschorner et al. (2006) stated that LCA currently cannot be used for supplier selection, because suppliers are not able to deliver the necessary data.

Conclusion from the Literature Review

There are several studies and peer reviewed papers available on the topic of LCA in public procurement. Many cross-references exist between these papers and most of the studies are interlinked or even build on each other.

The research gap for information on the application of LCA in Public Procurement Procedures first identified by Parikka-Alhola et al. (2012) and validated by Cheng et al. (2018) still seems to exist. It appears that not much ground-breaking research has been conducted since then. Nevertheless, the literature review revealed valuable insights and details. For example, the identified list of barriers linked to the practical implementation of LCA in public procurement or specific information on certain LCA based tools was evaluated and used as a basis for the development of Task 2.

2.4.2 Research approach for the Qualitative Assessment

Laws and resolutions, action plans & sustainability programmes and other relevant documents at the national level and in some countries (in AT, BE, DE, IT, CH), including for selected regions, were analysed to find **links to EF/LCA-based criteria** (incl. construction of public authorities) in the context of green public procurement.

Additionally, requirements/programmes enacted by the main contracting authorities in specific countries covered by this study with a link to EF/LCA-based criteria were assessed.

The first analysis of requirements and programmes lead to the distinction between direct and indirect links to EF/LCA-based criteria:

- **Direct link:** document mentions the direct use of EF/LCA-based instruments from any party in the procurement process.
- **Indirect link:** document mentions the use of ecolabels (Type I and Type III), LCC, Certification Schemes or other instruments that have a potential link to EF/LCA-based instruments.

All documents identified by the authors of this study with a direct or indirect link to EF/LCA-based criteria were taken into account and entered in the main excel worksheet for each country (work file on PP documents in Task 1) together with a short description of the legal

act/requirement's content. The main excel worksheet also includes most of the analysed documents, where no links to EF/LCA-based criteria were identified.

The analysis of the laws and resolutions, action plans, sustainability programmes and other relevant documents in the area of GPP was carried out using search words such as green, environment, eco, footprint, PEF, carbon, climate, emission, greenhouse, life cycle, LCA, label, impact, EPD, declaration, claim, sustainability, indicator, Key performance indicator, KPI.

A short description and information about the content of the direct or indirect links to EF/LCA criteria were added to the excel file, together with a direct copy of the relevant section that includes the link. As most of the documents are available only in the different national languages, the direct copies of relevant sections were the basis for the translation work described in the previous chapter.

Where appropriate, the following information about the identified EF/LCA-based criteria was assessed and included in the excel file for each country:

- Is the use of the EF/LCA criteria mandatory or voluntary?
- Is the use of the EF/LCA criteria limited to certain contracting authorities (central government, etc.)?
- Is the use limited to certain thresholds (contract values)?
- Is the use limited to certain product groups?
- Is there any information on where in the procurement process the EF/LCA criteria should be included (preliminary stage, the tender itself, evaluation stage, etc.)?
- If the criteria are to be included in the tender, how should they be included: selection criteria, technical specification, award criteria or contract performance clauses?

Additionally, findings and information were included when a concrete method was described or a standard offered on how to address a particular EF/LCA criterion. It was also mentioned when a tool was offered in a country that supported the disclosure of the relevant EF/LCA criterion in the tendering process.

In a last step, the authors of this study checked if any section identified could be linked to "Best Practice" for further evaluation under Task 3 and if any other information that seemed to be relevant had not yet been included in the work-file.

2.4.3 Description of legislation and LCA-based instruments in countries and main contracting authorities

In addition to the analysis at federal level, the scope of the study was broadened in specific countries to include the regional/provincial level, and findings on certain main contracting authorities (e.g. Austria, Germany, Denmark, and the Netherlands) were taken into account in a detailed manner.

Austria

The Austrian Public Procurement law 2018 (Bundesvergabegesetz 2018)[47] obliges public authorities to consider environmental criteria when tendering, for example in section 20 (5). The recently revised Austrian Action Plan on Sustainable Public Procurement[48] offers

[47] Bundesgesetz über die Vergabe von Aufträgen (Bundesvergabegesetz 2018 – BVergG 2018), StF: BGBl. I Nr. 65/2018, https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20010295

[48] https://www.nabe.gv.at/nabe-kriterien/

criteria for 16 products groups. Once the Council of Ministers takes the decision to implement the updated version[49], the criteria will be mandatory for all procurers at the national level.

In the Austrian regions Lower Austria, Upper Austria and Vienna, catalogues with minimum requirements are available. In Lower Austria and Vienna, the use of these minimum requirements is mandatory, see e.g. criteria for different product groups in Vienna[50] (although a system to monitor the inclusion of the mandatory criteria is not in place). Furthermore, an attempt is underway to make parts of the national Austrian Action Plan mandatory for the regional governments as well.

Among the criteria of the updated Austrian Action Plan, there is one criterion with a direct link to LCA criteria and there is none with a link to EF criteria. The LCA criterion is **the** Oekoindex (OI3), which is used for buildings/construction. It evaluates the environmental quality of all materials based on the environmental impact indicators greenhouse potential, acidification potential and the need for non-renewable primary energy. The Oekoindex can be calculated for the thermal building envelope, the whole building or for another system boundary. The Austrian Action Plan offers threshold values for the Oekoindex.

Three Austrian regions were examined for documents with a direct or indirect link to EF/LCA criteria. No documents with direct links were found, and only in Lower Austria documents with indirect links were identified.

The sectoral agreement "List of requirements on energy efficiency and sustainability of the buildings owned by the provincial government"[51] makes it mandatory to calculate LCC. On page 120 it says: that "additional costs that arise from a life cycle assessment should be taken into account. Even if these calculations are not yet required, it makes sense for economic reasons, to include them", meaning that costs from environmental externalities assessed with LCA shall be taken into account.

In several other documents in Lower Austria, LCC including the costs of externalities are mentioned. For example, the political action plan "Schedule on sustainable public procurement in Lower Austria" [52] refers to the method of LCC when procuring vehicles from the outdated clean vehicles directive.

Belgium - Flanders

Public Procurement law in Flanders (Wet inzake overheidsopdrachten, 2016[53]) permits the use of environmental aspects in public procurement and suggests the use of LCC including externalities. This is on a voluntary basis. Governmental guidance documents also suggest the use of LCC with externalities, as well as ecolabels and a so-called "Ecoscore" regarding the environmental impact of vehicles. This "Ecoscore" is an environmental score on a scale of 0 to 100 that is determined based on global warming, air quality and noise pollution. An online tool[54] allows the calculation of this score for specific vehicles.

On a regional level, guidance that is more detailed exists, for example, for specific product groups, such as work clothing, buildings, cleaning services, etc. These mostly suggest a

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[49] The Austrian Council of Ministers decided to implement the updated version on 23 june 2021 https://www.nabe.gv.at/wp-content/uploads/2021/06/Ministerratsvortrag-naBe-Aktionsplan-2021.pdf

[50] https://www.wien.gv.at/umweltschutz/oekokauf/ergebnisse.html

[51] http://www.noe.gv.at/noe/Energie/Pflichtenheft_Energieeffizienz-Nachhaltigkeit_Sept_2014_V31.pdf

[52] https://www.noe.gv.at/noe/Gemeindeservice/Beschaffungsfahrplan_10-2015.pdf

[53] Wet inzake overheidsopdrachten, Moniteur Belge, 17 June 2016, p. 44219-44500 http://www.ejustice.just.fgov.be/mopdf/2016/07/14_1.pdf#Page53

[54] https://ecoscore.be/en/home

general use of ecolabels. One specific guidance document (new buildings in Antwerp) suggests the use of LCA.

Belgium - Wallonia

The procurement law of Wallonia (Loi relative aux marchés publics, 2016)[55] offers several options for using environmental criteria in public tenders.

In the Action Plan for GPP for Wallonia (2017-2019) [56], 46 actions are described. Action 36 is about the development of sustainable criteria for the building materials "ornamental stone, wood and lime". The description of this action says that while building materials from Wallonia are already being used in the construction of public buildings, their share could be increased. It also says that a ministerial circular[57] was published in 2012 and reviewed in 2014, which is specifically dedicated to the use of environmental and social criteria for the procurement of ornamental stones and rocks. Among others, the ministerial circular suggested the following criteria: "*Ornamental stones must be transported with a low environmental impact in terms of the impact categories (air pollution, water pollution, water consumption, production of solid waste, global warming, destruction, of the stratospheric ozone layer, acidification, atmospheric, eutrophication, formation, photochemical ozone, resource depletion in abiotic elements, depletion of fossil fuel) used in life cycle assessment according to the ISO 14040 and 14044."*

To improve the use of this circular, several options have been identified, among others the use of LCA via Environmental Product Declarations (Ecolabel Type III). The description of Action 36 further says that these options will be explored within a working group. Furthermore, a preparatory study will be developed by a service provider. Currently, Wallonia is testing the use of the Dutch "CO2 performance ladder" (l'echelle de performance CO_2) for the construction sector in a pilot study[58]. The principle of the "CO_2 performance ladder": the more ambitious the measures a company takes to reduce its greenhouse gas emissions, the higher its score on the scale of performance, which ultimately gives it an advantage when it submits an offer for a public contract.

At the regional level (Hainaut), there is a "guide for businesses on public markets"[59] that offers information about LCC including costs of environmental externalities.

Denmark

There is generally no requirement for LCA in the Danish Public Procurement law (Udbudsloven)[60].
There are many guides suggesting criteria for public procurement and environmental

[55] Loi relative aux marchés publics, Moniteur Belge, 17 June 2016, p. 44219-44500, http://www.ejustice.just.fgov.be/mopdf/2016/07/14_1.pdf#Page53

[56] Plan d'Actions Achats Public Responsables 2017-2019 https://developpementdurable.wallonie.be/sites/default/files/2017-10/plan_apr_complet.pdf

[57] http://www.pierresetmarbres.be/fileadmin/files/pdf/PMW-circulaire_marches_publics.pdf

[58] http://developpementdurable.wallonie.be/lechelle-de-performance-co2

[59] Les marchés public, guide à destination entreprises https://www.marchespublics-pme.be/documents/GUIDE-MP-ENT-revu-nouveaux-seuils-2020.pdf

[60] Udbudsloven, Lovtidende A nr 1564 af 15/12/2015, Udgivet den 16. december 2015 https://www.retsinformation.dk/eli/lta/2015/1564

considerations are encouraged through voluntary implementation, although the main focus is often on Corporate Social Responsibility, the circular economy and finance.

Voluntary municipal partnerships[61] exist that require members to include LCA-related demands in their tenders.

Most procurement guides cite TCO as a valid tool for the tendering process, and there may be a tendency to equate this to a LCA, even if this comparison is incorrect. Clearer distinctions may be needed because only a few guides show a connection to environmental externalities via LCC. In conclusion, the use of LCA/EF calculation in public procurement is not a requirement according to Danish law, although it is encouraged. All regulations and guidelines are based on voluntary efforts of contracting authorities.

France

In response to the obligation to transpose the European directives in 2014, the law on French public procurement policy was radically amended in 2015, with the publication of an ordinance on 23 July (Ordonnance n° 2015-899)[62] to replace the various codes and references regulating public procurement in France until that point in time. The ordinance introduced novelties and aimed for simplification by significantly reducing the amount of various documents and provisions in public procurement legislation. Moreover, it ensured the inclusion of sustainable considerations at all stages of the public procurement procedure.

This ordinance was abrogated in September 2019 and replaced by a still applicable legal act (Ordonnance n° 2018-1074)[63]. This procurement law offers several options for using environmental criteria in public tenders.

The so-called law EGAlim of 2018[64], passed at the end of the "Etats Généraux de l'Alimentation", authorized the French government to reform the articles of the French Commercial Code on transparency, anti-competitive practices and other prohibited practices by means of a regulation. As an example this law specifically imposes a minimum threshold of quality and/or sustainable products on public entities purchasing catering services from January 1, 2022.

The national action plan on sustainable public procurement 2015-2020[65] describes the inclusion of ecolabels and LCC (incl. environmental externalities) and focuses on strengthening the uptake of sustainable public procurement across France.

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[61] Joint Municipal Procurement Strategy 2020-2024 by the National Association of Municipalities (https://www.kl.dk/media/23572/faelleskommunal-indkoebsstrategi-2020-2024.pdf); Partnership for Public Green Procurement by the Danish Environmental Protection Agency (https://ansvarligeindkob.dk/partnerskab/om-partnerskabet/)

[62] Ministère de l'economie, de l'industrie et du numérique : Ordonnance no 2015-899 du 23 juillet 2015 relative aux marchés publics. Journal Officiel de la République Francaise, 24.7.2015, Texte 38 sur 120, https://www.legifrance.gouv.fr/loda/id/JORFTEXT000030920376/

[63] Ministère de l'economie et des finances : Ordonnance no 2018-1074 du 26 novembre 2018 portant partie législative du code de la commande publique. Journal Officiel de la République Francaise, 5.12.2018, Texte 20 sur 155, https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000037695219?isSuggest=true

[64] LOI n° 2018-938 du 30 octobre 2018 pour l'équilibre des relations commerciales dans le secteur agricole et alimentaire et une alimentation saine, durable et accessible à tous, Journal Officielle de la République Francaise, 1 novembre 2018, Texte 1 sur 175 https://www.legifrance.gouv.fr/download/pdf?id=m7COyAtqezmpl8yN9AuaRk1tUE4pff_NWtPY0T-2KIM=

[65] https://www.actu-environnement.com/media/pdf/news-24434-pnaapd-2015-2020.pdf

Another strategic development of the federal administration is the focus on "Services Publics écoresponsables"[66]- accelerating the environmental transition of public services, where 20 mandatory measures are described.

The RAPIDD platform[67] (Network of public administrations integrating sustainable development) aims to bring together resources and disseminate information relating to both mechanisms: eco-responsible public services and sustainable public purchasing.

Germany

In Germany, tenders whose monetary value exceeds the thresholds under the public procurement directives (that mark the necessity of EU rules) must meet the legal requirements against restrictions of competition (Gesetz gegen Wettbewerbsbeschränkungen, GWB 2016[68]) and the procurement regulation (Vergabeverordnung, VgV[69]). Below the threshold, the federal budget regulations and the budget regulations of the federal states as well as the Regulation on sub-threshold procurement (Unterschwellenvergabeordnung, UVgO)[70] have to be observed. Rules for public procurement of construction works are detailed in a document called "Vergabe- und Vertragsordnung für Bauleistungen" (VOB)[71] [72]. These rules that were developed by contracting authorities and representatives of construction companies include public procurement procedures, contract performance clauses and regulations on billing. Besides, the administrative regulations of the federal government and the federal states must be taken into account. The GWB, the VgV and the UVgO all indicate that environmental requirements can be taken into account.

There is no separate National Action Plan on GPP in Germany that specifies minimum requirements. Nevertheless, the different regulations on GPP, the extensive support offered by the Environment Agency[73] and the "Kompetenzstelle nachhaltige Beschaffung (Competence Centre for Sustainable Procurement) [74] as well as the extensive information offered by the tool "Kompass Nachhaltigkeit" (Compass Sustainability)[75] can be seen as equivalent to a national action plan.

The following direct links to EF/LCA criteria were identified:

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[66] https://www.ecologie.gouv.fr/services-publics-ecoresponsables

[67] http://rapidd.developpement-durable.gouv.fr/group/8

[68] Gesetz gegen Wettbewerbsbeschränkungen in der Fassung der Bekanntmachung vom 26. Juni 2013 (BGBl. I S. 1750, 3245), das zuletzt durch Artikel 30 des Gesetzes vom 23. Juni 2021 (BGBl. I S. 1858) geändert worden ist, https://www.gesetze-im-internet.de/gwb/

[69] Vergabeverordnung vom 12. April 2016 (BGBl. I S. 624), die zuletzt durch Artikel 2 des Gesetzes vom 9. Juni 2021 (BGBl. I S. 1691) geändert worden ist, https://www.gesetze-im-internet.de/vgv_2016/

[70] Bundesministerium für Wirtschaft und Energie, Verfahrensordnung für die Vergabe öffentlicher Liefer- und Dienstleistungsaufträge unterhalb der EU-Schwellenwerte (Unterschwellenvergabeordnung – UVgO), Bundesanzeiger BAnz AT 07.02.2017 B1, https://www.bmwi.de/Redaktion/DE/Downloads/U/unterschwellenvergabeordnung-uvgo.pdf?__blob=publicationFile&v=8

[71] Vergabe- und Vertragsordnung für Bauleistungen, Teil A (VOB/A) – Ausgabe 2019 – vom 31. Januar 2019, BAnz AT 19.02.2019 B2, http://www.verwaltungsvorschriften-im-internet.de/bsvwvbund_31012019_BWI781063060120180001604634.htm

[72] VOB Teil B, Allgemeine Vertragsbedingungen für die Ausführung von Bauleistungen (VOB/B Ausgabe 2016), geändert durch Bekanntmachung vom 7. Januar 2016 (BAnz AT 19.01.2016 B3; ber. BAnz AT 01.04.2016 B1), http://www.verwaltungsvorschriften-im-internet.de/bsvwvbund_26062012_B15816361.htm

[73] https://www.umweltbundesamt.de/themen/wirtschaft-konsum/umweltfreundliche-beschaffung

[74] http://www.nachhaltige-beschaffung.info/DE/Home/home_node.html

[75] https://www.kompass-nachhaltigkeit.de/en/

- There is an evaluation system for sustainable construction for federal buildings (Bewertungssystem Nachhaltiges Bauen für Bundesgebäude)[76]. One of five categories is the environmental quality of the building. In this category, an LCA has to be conducted (an internet-based software tool called eLCA[77] is available). Nevertheless, this direct link to LCA-based criteria will often not become visible in in the tender, because the LCA is conducted in the planning stage. The results of the LCA will probably influence the selection of building material and therefore the building material that is tendered.
- In the Guide for Sustainable Construction[78], directed to public and private construction alike, direct links to LCA (specifically to Carbon Footprint) were identified. The guide suggests that a) in the planning process, as soon as the costs are calculated, an LCA is possible and that b) the Carbon Footprint of the use phase should be calculated. The guide says that the GHG emissions from heating and electricity consumption correspond to the carbon footprint in the use phase and are therefore part of the building's carbon footprint. Furthermore, it says that the carbon footprint can only be published if connected to the information about the system boundaries, adjustments of valued and explanation of reference values. Furthermore, a reference has to be made to the current standardization on the CO_2-footprint.

Besides several indirect links to EF/LCA criteria in documents on the federal level, there is a central regulation from the Federal Ministry of Defense "A-2036/5; Zentrale Dienstvorschrift; Nachhaltige Entwicklung, gültig ab 07.04.2016" that is linked to indirect EF/LCA criteria. It says that when calculating LCC, established procedures for LCA are to be used. Requirements for longevity, ease of repair, recyclability, ease of disposal and the use of resources over the entire life cycle must be considered (see also below "Main contracting authorities").

Italy

With the adoption of the "Action Plan for the sustainability of consumption in the Public Administration sector (PAN GPP)"[79], Italy defines minimum environmental principles and criteria (Italian: CAM, criteri ambientali minimi) that the public procurer must include in the calls for tenders in order to procure environmentally sound products and services.

The new Procurement Code (Legislative Decree No 50/2016) expressly requires that the contracting authorities contribute to the achievement of the environmental objectives set by the Action Plan through the insertion, in the project and tender documentation, of the technical specifications and contractual clauses contained in the CAM. It also prescribes how to take into account life cycle costs, including environmental costs, in the procurement and tendering process.

For the following product categories, the obligation to provide and insert the CAMs in the tender documents applies in general for at least 50% of the tender value of the contract, with the exception of the following product groups where the obligation covers 100% of the tender value of the contract:

- Public lighting
- Electrical and electronic office equipment, such as personal computers, printers, multifunction devices and photocopiers

[76] https://www.bnb-nachhaltigesbauen.de/bewertungssystem/bnb-bewertungsmethodik.html

[77] https://www.bauteileditor.de/

[78] https://www.bmi.bund.de/SharedDocs/downloads/DE/publikationen/themen/bauen/leitfaden-nachhaltiges-bauen.html

[79] https://www.minambiente.it/sites/default/files/archivio/allegati/GPP/all.to_21_PAN_GPP_definitivo_EN.pdf

- Energy services for buildings, lighting and motive power service, building heating / cooling service
- Assignment of design and work services for the new construction, renovation and maintenance of buildings and for the management of public administration sites.

The CAM must also be taken into consideration when drafting the tender documents and applying the criterion of the most economically advantageous offer, pursuant to Article 95, paragraph 6.

Despite the mandatory nature of GPP criteria for some product groups, there is no mandatory requirement for the application of LCA, PEF or other tools in the environmental evaluation of the tenders. However, the legislation promotes the use of different instruments for the environmental assessment of tenders such as LCC, PEF (as also stated in the Decree No. 56/2018[80]), EMAS and EU ecolabels.

Promoted through the Italian regulation on GPP, "Made Green in Italy" represents an instrument to increase the competitiveness of the Italian production system in the context of the growing demand for products with high environmental qualification on national and international markets.

"Made Green Italy" uses the EU Product Environmental Footprint method (PEF) defined in the Commission Recommendation 2013/179/EU[81].

Specifically, the environmental footprint assessment study contains the calculation of the values of the environmental indicators relating to the three main impact categories and three performance classes:

- class A, excellent products that perform better than the average product (benchmark);
- class B, products with performance equal to the benchmark;
- class C, products with worse performance than the benchmark.

Business can formally apply to obtain the certification of their products and services and obtain the "Made Green in Italy" logo if the audit of the environmental performance equals or is higher than reference benchmarks (corresponding to class A and class B products). Business can voluntarily apply to the scheme.

Concerning the link to GPP, the Ministry of the Environment recognizes the scheme "Made Green in Italy" as a tool for checking compliance with technical specifications for the old and the new adopted GPP minimum criteria. This applies when this is relevant for the life cycle of the product or service, also according to the Legislative Decree No 50/2016 regulating GPP and the mandatory inclusion of GPP minimum criteria in tendering process.

The analysed regions (Lombardy, South Tyrol and Trentino Alto Adige) have not implemented any mandatory rules for the application of LCA, PEF or other tools for an environmental evaluation of tenders, and tend to refer to national legislation for the application of the GPP principles. The most active region on this behalf seems to be Emilia-Romagna.

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[80] DECRETO 21 marzo 2018, n. 56 Regolamento per l'attuazione dello schema nazionale volontario per la valutazione e la comunicazione dell'impronta ambientale dei prodotti, denominato «Made Green in Italy», di cui all'articolo 21, comma 1, della legge 28 dicembre 201 ; Entrata in vigore del provvedimento: 13/06/2018 ; Gazzetta Ufficiale Della Repubblica Italiana: https://www.gazzettaufficiale.it/eli/id/2018/05/29/18G00078/sg

[81] Commission Recommendation of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations (2013/179/EU). Official Journal of the European Union L 124 of 4.5.2013, p. 1-210. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013H0179&from=EN

Sweden

There is no general requirement for LCA in the current Swedish legislation on public procurement. However, this is expected to change in the area of construction. How this will be done is currently being investigated at the request of the government. The National Public Procurement Strategy's policy includes a goal titled "Environmentally responsible public procurement".

There are many guides suggesting criteria for public procurement and voluntary implementation of environmental considerations is encouraged. They can to a large extent be found at the National Agency for Public Procurement's website[82]. Some of the criteria include a demand for LCA data.

The Swedish Transport Administration has included a mandatory LCA-based tool for their tenders above a certain size.

For some product categories the most commonly used ecolabels include demands for LCA-based information. These ecolabels can be used for tenders.

In conclusion, the use of EF/LCA-based criteria in public procurement is not a requirement under Swedish law, though encouraged under the National Public Procurement Policy and various guidance documents, but it might become a legal requirement in the near future in the construction sector. All regulations and guidelines are based on voluntary efforts by the contracting authorities.

Switzerland

The two main provisions that govern the award of public contracts at federal level, the Federal Act on Public Procurement (BöB)[83] and the Regulation on Public Procurement (VöB)[84], allow the use of green criteria in public tenders.

In Switzerland, a large number of tools are provided to the contracting authorities to help them include green criteria in their tenders. Furthermore, there are several tools intended for the construction sector, some especially addressed to public authorities. The platform "ecobau-Sustainability in public construction" offers tools with a direct link to LCA:

- The components catalogue: it evaluates the environmental impact of building materials according to environmental impact points, grey energy, primary energy PEI (total) and greenhouse effect (GWP).
- A standard on how to calculate Grey energy of building products.[85]
- The building standard/certification scheme Minergy ECO86, where the Gray energy of the building has to be calculated.

[82] https://www.upphandlingsmyndigheten.se/en

[83] Bundesgesetz über das öffentliche Beschaffungswesen. Totalrevision. 21. Juni 2019. Bundesblatt 2019 4505. Amtliche Sammlung des Bundesrechts 2020 641, https://www.fedlex.admin.ch/eli/cc/2020/126/de

[84] Verordnung über das öffentliche Beschaffungswesen vom 12. Februar 2020, Amtliche Sammlung des Bundesrechts 2020 691, Publikationsdatum 10. März 2020 https://www.fedlex.admin.ch/eli/oc/2020/127/de

[85] http://shop.sia.ch/normenwerk/architekt/sia%202032/d/D/Product

[86] https://www.minergie.ch/media/1004-1_08_80731_berechnung_graue_energie_online_2018_v2-2.pdf

Furthermore, there is a standard[87] on how to calculate the environmental impact of mobility due to the location of the building.

The only region where a link to EF/LCA criteria has been identified is Zurich. Zurich offers the "Concrete Type Calculator for the planning stage"[88] (as mentioned above) that includes information on the environmental impact of concrete products.

The Netherlands

Dutch legislation at federal level[89] explicitly allows the inclusion of environmental aspects in public procurement. These environmental aspects, however, are included on a voluntary basis and no specifics are given as to how to include them. There is only a reference to the possibility of using life cycle costing and the inclusion of the costs for external environmental effects. The federal action plan includes the intention to promote GPP, mostly through life cycle costing (including externalities).

Specific contracting authorities, especially Rijkswaterstaat (civil engineering) and the municipality of Rotterdam, are much further along with the use of sectoral agreements and action plans. They have developed several environmental assessment tools, including the climate-related "CO_2-prestatieladder" and the quantitative LCA-based "DuboCalc".

Main contracting authorities

In the nine EEA member countries included in the study, several contracting authorities were identified with regulatory approaches and guidance linked to EF/LCA criteria. The contracting authorities were either single or joint organisations. The regulatory approaches that offered a link to EF/LCA criteria were either action plans, regulations or agreements between organisations. The following paragraphs describe the three most noteworthy and interesting approaches derived from the findings. The first two approaches contain a direct link to EF/LCA criteria, while the third approach includes an indirect link via Ecolabels and Life Cycle Costing.

- **Green Deal Duurzaam GWW**: a green deal in the Netherlands, signed in 2013 by more than 60 organisations from the civil engineering sector. Among them are the Ministry of Defence, Rijkswaterstaat, several provinces and municipalities and the Rail Forum Netherlands. These organisations agreed to use the LCA tool DuboCalc in their tenders as well as the climate-related tool, the CO_2 Performance Ladder (CO_2-Prestatieladder).

DuboCalc[90] calculates the environmental impact of a Civil Engineering Designs. The methodology is based on the standardised methodology of life cycle analysis (LCA). The environmental impact of a construction project is expressed as a single score, the Environmental Cost Indicator value (ECI or in dutch MKI). The weighting of the different impact categories has been done based on priorities from national policies. Among others, DuboCalc can be used as an award criterion in the tendering process. Public authorities that use DuboCalc in their tenders have to buy a licence to be able to use the calculator. DuboCalc uses environmental impact data from the National Environmental Database. De Klein, J. (2018) identified in his master thesis several strengths and

[87] https://ppdb.hslu.ch/inf2/rm/f_protected.php?f=20170620123339_5948fa035ccd6.pdf&n=Methodenbericht_SIAMB2039_Vdef.pdf

[88] https://treeze.ch/fileadmin/user_upload/calculators/Betonsortenrechner_Planer_DE/Betonsortenrechner_Planer.htm

[89] Wet van 22 juni 2016 tot wijziging van de Aanbestedingswet 2012 in verband met de implementatie van aanbestedingsrichtlijnen 2014/23/EU, 2014/24/EU en 2014/25/EU, Staatsblad van het Koninkrijk der Nederlanden, Jaargang 2016, 241, https://zoek.officielebekendmakingen.nl/stb-2016-241.html

[90] https://www.dubocalc.nl/

weaknesses of DuboCalc, among others the following "The MKI weighs eleven environmental aspects, of which CO2 is very dominant. Depletion of natural resources is underrated in this indicator. The depletion of natural resources should be accounted for more heavily in the calculation system." (P. 43).

Companies can take part in the certification scheme **CO_2 Performance Ladder**[91]. They are assigned to one of five levels according to their CO_2 performance as shown in their carbon footprint, emission reduction targets and measures, transparency and participation in initiatives to reduce their sector's footprint. Annual audits are undertaken in companies that are certified on the ladder. The CO_2 Performance Ladder can be used as award criterion in public tenders. The certified companies receive a fictitious discount on the costs of their tenders. Due to this discount, their chances on the award of the contract increase. The higher the level of a company, the higher the award advantage. For example, a company on level 3 gets a 4 % fictitious discount, a company on level 4 gets a 7 %. According to De Klein, J. (2018), every contractor has already attained the highest step.

- The Austrian Federal Real Estate Company, **Bundesimmobiliengesellschaft BIG**: In 2019, the Austrian Federal Real Estate Company decided to use its Holistic Building Programme (HBP) in all of its construction and renovation projects. The HBP[92] consists of 43 sustainability measures, one of them aiming at compliance with a limit value for the **Oekoindex** (OI3) indicator[93]. This index evaluates the environmental quality of the material used for a building by aggregating the three LCA impact categories: global warming potential, primary energy consumption and acidification potential. The smaller the Oekoindex, the better the environmental quality of the building material. The Oekoindex is well known in Austria and there are several computer programmes that calculate it. The BIG uses the OI3 usually in the form of a threshold value in the planning process.

- The central regulation A-2036/5 "Sustainable Development" has been in force in the **German Federal Ministry of Defense** since April 2016. The regulation specifies not only that wherever possible, the criteria of ecolabels are to be used in tenders, but also that life cycle costs should be taken into account. It also states that when life cycle costs are calculated, established procedures for life cycle assessment are to be used.

2.4.4 Findings per document type

Information on links to EF/LCA criteria were found not only in legal acts (see chapter 2.2), but also in other documents. These other documents were categorised as follows:

- Secondary legislation
- Sectoral agreements/guidelines
- Political action plans/road maps
- Guidance
- Others

"Secondary legislation" includes mostly documents prepared by administrations, some of them of a binding nature, while others contain a description of goals. Among these

[91] https://www.skao.nl/

[92] https://hbp.big.at/

[93] https://www.ibo.at/materialoekologie/lebenszyklusanalysen/oekoindex-oi3

documents, there are for example ministerial circulars, regulations issued by individual ministries and guiding principles of national and/or regional administrations.

Guidelines with a focus on specific sectors such as buildings/construction, infrastructure or vehicles have been put in the group "**Sectoral agreements/guidelines**" which includes, besides documents issued by several administrations, sector specific standards that are used by public authorities.

"Political action plans/roadmaps" include national or regional action plans with a specific focus on public procurement or any other topic that involves public procurement. Government programmes are also included. These documents are plans or strategies designed to reach specific goals, some of them with concrete roadmaps and timelines for specific targets.

"Guidance" refers to documents whose goal is to offer information and support. Legal acts, secondary legislations or action plans usually represent the basis for these guidance documents, which may contain further information about the content of those documents, but the main goal of guidance documents is to support implementation.

All documents not included in the four groups mentioned above have been included under "**Others".** In this group, there are (among others) descriptions of good practice examples, pilot projects and tools used in public procurement, as well additional information obtained during the in-depth country analysis and identified as valuable for the purposes of this study.

An overview on the findings per country, document type and nature of the identified links (direct/indirect) can be found in ANNEX III.

2.4.5 General findings related to GPP

Screening the relevant documents using search words (as described under 2.4.1) also revealed more general findings on the life cycle perspective and a focus on environmental issues in the broader sense.

Statutory guidelines in the assessed EEA member countries - but also other guidance documents - state that technical specifications define the required characteristics of the works, supplies or services that form the subject of the tender. Such characteristics may refer to the process or specific methods of production or provision of works, products or services at any stage of their life cycle, even where such factors do not form part of their material substance, as long as they are linked to the subject matter of the contract and are proportionate to its value and objective. Additionally, many national action plans include the aim of maximising the uptake of GPP in the respective countries. Those findings were not the specific focus of the study, but provided contextual data for the direct or indirect use of EF/LCA criteria in public procurement procedures, so those findings were not excluded from our work with excel matrix files, but collected separately.

The Procura+ network assessed and stated in their Procura+ Manual[94] that "in terms of costs and product availability, some organisations may worry that including sustainability criteria will make it more difficult for small- and medium-sized enterprises (SMEs) to participate. Research on this question does not support that view. Instead, it suggests that most SMEs see green criteria as a basis on which they can compete effectively. A 2013 Eurobarometer survey of SMEs from across Europe found that of those who had bid for public contracts that included GPP criteria, 77% per cent said that they did not experience any difficulty with these requirements, while 21% reported some difficulty."

[94] https://procuraplus.org/fileadmin/user_upload/Manual/Procuraplus_Manual_Third_Edition.pdf

2.4.6 Direct Links to EF/LCA-based criteria

LCA-based Criteria

As described under 2.2, the regulatory framework for public procurement is defined by Directives (EU) 2014/24/EU and 2014/25/EU. This framework enables public procurers to include environmental requirements in their tenders for products, services or works. To support public procurers and those ministries in the Member States that are responsible for the development of national action plans, the EC publishes green criteria for different product groups – further information can be found under 2.4.9. Life cycle assessment (LCA) plays an important role in many of these criteria due to the following facts:

- The development of criteria is based on LCA results;
- Some of the criteria directly require the carrying out of a LCA (e.g. the award criterion "performance of the main building elements").

The latter is currently only to be found in the criteria sets for construction.

Direct implementation of LCA in Public Procurement Procedures

The implementation of LCA is mostly applied with specific tools for the use of procurers and bidders.

The following listing reflects the findings while assessing the relevant documents identified. All of them are directly mentioned in one or more documents included in the research.

DuboCalc: The use of a software tool, DuboCalc, in tenders for road and water works by Rijkswaterstaat is an excellent example of a link between procurement procedures and LCA. With DuboCalc, the bidder enters the material and energy necessary for the implementation of his bid into the tool. DuboCalc calculates the environmental impact and translates it into an Environmental Cost Indicator Value (ECI). The lower the results for the impact are, the higher is the ECI. The economically most advantageous tender is identified by deducting the ECI from the bidding price.

The **CO2-performance ladder:** is used in the Netherlands and (on a pilot level) in the Wallony (Belgium). Companies get assigned to one of five levels according to their CO_2 performance as shown in their carbon footprint, emission reduction targets and measures, transparency and participation in initiatives to reduce their sector's footprint

Oekoindex (OI3): Another example is the Austrian Oekoindex (OI3) in tenders for construction work. Each construction material has a specific OI3 value, which is calculated based on data from Environmental Product Declarations (EPD) and generic LCA data. The lower the results for the impact of the construction material are, the lower is the index. Several public procurers include a threshold for OI3 in their tenders, e.g. for the building envelope.

Klimatkalkyl (Swedish Transport Administration): The purpose of this mandatory guideline is to establish the Swedish Transport Administration's working methodology at impact assessment and reporting of the energy use of infrastructure management and climate impact in a life cycle perspective.

Bauteilkatalog "eco-bau" in Switzerland: In the building standard/building certification scheme Minergy, there is a module Eco where the Grey energy of the building has to be calculated. For the verification that the thresholds of the MINERGIE-ECO-Standard are reached, the "Bauteilkatalog" has to be used to calculate the grey energy of the building. The final calculation of the grey energy in the Bauteilkatalog is used as evidence for the MINERGIE certification body.

The **concrete-type-calculator** in Zürich: It is a short excel spreadsheet, that consists of one sheet. The tool calculates different impact categories (GHG-emissions and single score indicators) for different kinds of concrete (with a certain percentage of recycled material).

eLCA developed by the German Federal Institute for Building, Urban and Spatial Research (BBSR): the determined environmental impacts are evaluated against the BNB benchmarks, including additional building data. The LCA based calculation rule applies to the assessment of the environmental impact for several BNB criteria.

LCAbyg (developed by the Danish Ministry): In the autumn of 2014, the Danish government presented a national strategy for the building sector. Sustainability was mentioned as one of five focus areas for the future political work within the sector. Subsequently, the development of a national Life Cycle Assessment tool for buildings was initiated, and the first version of LCAbyg was launched in 2015.

The authors of this study assessed the tools more detailed in the second part of the project. The focus lied on how those tools are used in practice and what other tools of practical use for procurement procedures and with a link to LCA (including EF) exist in the countries under survey.

Criteria for the Environmental Footprint method

To harmonise LCA methodologies, the EC officially started an initiative on Product Environmental Footprint (PEF) and Organisation Environmental Footprint (OEF) methods in 2013. PEF and OEF are at the core of the Commission's Recommendation "on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations" (Commission Recommendation 2013/179/EU[95]). They are also closely linked to the Communication "Building the Single Market for Green Products" (COM(2013) 196 final)[96]. The initiative is now in the so-called "Transition Phase", in which possible links to existing policy instruments are examined, so that their practicability for public procurement can be further discussed with relevant stakeholders.

Due to the novelty of the EF methods, they are not yet part of the regulations or have not been put to direct use in many EEA member countries. The most striking example is Italy with Decree No. 56/2018 regarding "Made Green in Italy". Art.8 of this Decree states that the Ministry of the Environment uses the recognised scheme "Made Green in Italy" as a tool for checking compliance with technical specifications for the old and the newly adopted GPP minimum criteria. This applies whenever relevant for the life cycle of the product or service (also according to the Legislative Decree No 50/2016, which has been analysed for this study as well). The "Made Green in Italy" scheme itself is directly based on the PEF method[97].

2.4.7 Indirect Links to EF/LCA-based criteria

Public procurement approaches in the nine EEA member countries can be linked to instruments such as LCC, Ecolabel Type I, EPD (Ecolabel Type III) and buildings certification schemes, which in turn can have a link to EF and LCA criteria. Such a link to EF and LCA criteria in public procurement via another instrument is referred to as an

[95] Commission Recommendation of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations (2013/179/EU). Official Journal of the European Union L 124 of 4.5.2013, p. 1-210. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013H0179&from=EN

[96] Communication from the Commission to the European Parliament and the Council, Building the Single Market for Green Products, Facilitating better information on the environmental performance of products and organisations, Brussels, 9.4.2013, COM(2013) 196 final https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0196:FIN:EN:PDF

[97] https://www.minambiente.it/pagina/limpronta-ambientale-e-la-metodologia-pef-nello-schema-made-green-italy

indirect link. In the following, a brief description is given of that potential link between the instruments mentioned above and EF and LCA-based criteria:

Life Cycle Costing (LCC)

According to Art.68 of Directive (EU) 2014/24/EU Life Cycle Costing shall cover parts or all of the following costs over the lifecycle of a product, service or works:

- **Costs borne by the contracting authority or other users**, such as costs relating to acquisition, costs of use, maintenance costs, end of life costs.

- **Costs imputed to environmental externalities** linked to the product, service or works during its life cycle, provided their monetary value can be determined and verified; such costs may include the cost of emissions of greenhouse gases and of other pollutant emissions and other climate change mitigation costs.

The second part, the costs imputed to environmental externalities, should ideally be linked to a methodology that identifies the main environmental externalities, for example the EF- or LCA-methodology.

The majority of links between public procurement approaches and EF/LCA criteria identified in Task 1 were **indirect links via LCC**. This is not surprising, since public procurers are merchants and usually, all kinds of costs belong to their very own areas of interest and knowledge[98]. The majority of documents that contain information on LCC also mention the costs of environmental externalities and indirect or external costs. Besides the methodology for calculating LCC provided by Directive (EU) 2009/33/EC[99] and to be found in several public procurement laws, further methods for calculating LCC by including the costs of environmental externalities have been identified but without a link to legal documents:

- In 2019, DG Environment made LCC-tools available on its website[100] that are designed for public procurement. Currently specific LCC tools for computers and monitors, imaging equipment, indoor lighting, outdoor lighting and vending machines exist. Each of these tools offers the optional possibility to include environmental external costs. These externalities are taken into account in the form of the costs of GHG emissions from the energy consumption of the product. The default value in the tools for the costs of the GHG emissions is 90 EUR/tonne CO_2eq[101].

- LCC-tools for indoor and outdoor lighting, vending machines, household appliances, professional kitchen refrigerators and a general LCC-tool were developed by the Swedish National Agency for Public Procurement. The tools[102] offer the possibility to also calculate the costs of the climate impact, caused by energy or fuel consumption.

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[98] Nevertheless, the analysis of public showed a lack of use of LCC that included the costs of environmental externalities. This might be due to the lack of LCC-tools and the lack of figures for the costs of environmental externalities.

[99] Directive 2009/33/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of clean and energy-efficient road transport vehicles, Official Journal of the European Union, N° L 120, 15.5.2009, p. 5-12, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0033&from=DE

[100] https://ec.europa.eu/environment/gpp/lcc.htm

[101] The value has been taken from the report "Update of the Handbook on External Costs of Transport" by Ricardo-AEA, 2014.

[102] https://www.upphandlingsmyndigheten.se/en/subject-areas/lcc-tools/

Ecolabel Type I

Art. 43 of Directive (EU) 2014/24/EU specifies the characteristics of labels and the requirements for labels to be used in public procurement. Among others, label requirements have to be based on objectively verifiable and non-discriminatory criteria. Usually, all Ecolabel Type I requirements are based on the concept of LCA, to ensure that the use of the ecolabel reduces environmental impact considerably. Some ecolabel requirements are linked more directly to EF/LCA. An analysis of the guidelines and criteria for the EU Ecolabel, the German Blue Angel, the Nordic Swan, the Austrian ecolabel, Bra Miljöval and the KRAV label showed that some of them have a direct link to EF/LCA but that this is always restricted to certain product groups (see also 2.4.9).The following highlights some examples:

- The EU Ecolabel guideline on hard covering products[103] contains the same voluntary EF-based criterion for natural stone (energy consumption at the quarry and energy consumption at the transformation plant) and for precast concrete products or compressed earth blocks based on hydraulic binders or alternative cements (energy consumption at the precast concrete plant): "3 points shall be awarded where a carbon footprint analysis has been carried out for the product in accordance with ISO 14067 or **5 points if the Product Environmental Footprint method's elements related to greenhouse gas emissions has been used**."

- In the Austrian ecolabelEcolabel guideline for green meetings, events with more than 5,000 participants that are certified for the first time have to prepare an "*ex-ante environmental risk assessment (…) which indicates problems and contains proposals for solutions, e.g. an environmental input-output analysis, presentation of the environmental footprint, the preparation of a Green Legacy Report, an Environmental Impact Assessment, or the like*".[104] Clarifying research conducted as a follow-up to this finding revealed that this Austrian ecolabelEcolabel guidance on Green Meetings does not refer to an actual Environmental Footprint method; rather, it refers to LCA-based information, providing a general example.

- In the Swedish KRAV-label, farms with at least 200 ha agricultural land or at least 300 m² of greenhouses have to calculate and report their Climate Impact.

- The Swedish label Bra miljöval includes a mandatory criterion for the transport of the certified goods: The CO_2-emissions shall not be higher than 150 g/km.

As mentioned above, ecolabel requirements can include a link to EF/LCA. However, in the public procurement approaches considered in this study, only one document has been identified that refers to an ecolabel directive requiring an EF/LCA criterion: the programme of the Austrian Government for the period 2020-2024. The programme contains the mandatory certification of events carried out by public authorities with the Austrian ecolabel that requests an ex-ante environmental risk assessment, e.g. an Environmental Impact Assessment or the presentation of the event's environmental footprint (clarification: the "environmental footprint" in this specific document does not refer to the Environmental Footprint process that is currently under development, it means "Ökobilanz" – "LCA-based information" in a broader sense.).

Environmental Product Declarations (EPDs) – Ecolabel Type III

The application of Environmental Product Declarations (EPDs) in GPP may serve as useful support for tendering processes. Applied correctly, EPDs meet the general principles of

[103] Commission decision (EU) 2021/476 of 16 March 2021 establishing the EU Ecolabel criteria for hard covering products (notified under document C (2021) 1579), Official Journal of the EU No. L 99, 22.03.2021, p. 37

[104] See page 7 of the Austrian ecolabel guideline: https://www.umweltzeichen.at/file/Guideline/UZ%2062/Long/UZ62_R4.0_Green%20Meetings%20und%20Green%20Events_2018%20engl%20final.pdf.

non-discrimination and transparency as postulated in the underlying standard ISO 14025 as well as in the European directive on public procurement. Comparable information can be only provided if an EPD is based on a product category rule (PCR) which is in place for the respective product group. Theoretically, EPDs can be provided for all kind of product categories, which is frequently done following the International EPD® System based in Sweden. In practice, many EPD programmes are known to be focused on the construction sector and construction products, providing basic information for national building certification schemes.

Two examples have been identified where Environmental Product Declarations and/or an approach following ISO 14025 are directly mentioned in the official documents:

- Belgium – Wallonia: Action 36 of the Wallonian Action Plan on Sustainable Public Procurement[105], describes the development of environmental, social and ethical criteria for the building materials ornamental stone, wood and lime. A ministerial circular was published in 2012 and reviewed in 2014[106]. One way to improve the use of this circular is the promotion of LCA via EPDs.

- Sweden: the guidance document on "the product's (disposable gloves in healthcare) climate impact"[107] states that an "environmental declaration, footprint or equivalent containing results from life cycle analysis in accordance with ISO 14040-44, ISO 14067 or ISO 14025 or equivalent information on the climate impact of the product" can be requested on a voluntary basis.

The EAA member countries covered by this study have all established EPD Programme Operators who are in charge of managing and monitoring the EPD process, which can and could be used even more in support of public procurement.

2.4.8 Further characterisation of identified links to EF/LCA-based criteria

The direct and indirect links to EF/LCA criteria identified in the public procurement approaches can be characterised further:

Stage in the Procurement Process: The public procurement process can be roughly divided into three stages[108]:

- the pre-procurement stage with a market research and the development of the tender specifications;
- the tendering procedure itself with the publication of the tender documents and the award of the contract;
- the post-procurement stage with the monitoring of the performance of the contract.

Some of the direct and indirect links to EF/LCA-based criteria that were identified are designed to be used in the pre-procurement stage, others are designed for the tendering procedure. For example the tool/instrument AmbitionWeb[109] mentioned in the sectoral

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[105] http://developpementdurable.wallonie.be/sites/default/files/2017-10/plan_apr_complet.pdf

[106] Ministre de l'Économie : une circulaire du 19 juillet 2012 (modifiée par une circulaire du 9 janvier 2014) http://www.pierresetmarbres.be/fileadmin/files/pdf/PMW-circulaire_marches_publics.pdf https://www.parlement-wallonie.be/pwpages?p=interp-questions-voir&type=28&iddoc=44441 https://www.parlement-wallonie.be/pwpages?p=interp-questions-voir&type=28&iddoc=87277

[107] https://www.upphandlingsmyndigheten.se/hallbarhet/stall-hallbarhetskrav/sjukvard-och-omsorg/medicintekniska-forbrukningsartiklar/engangshandskar-inom-vard-och-omsorg2/produktens-klimatpaverkan/

[108] The stages in some procedures for the procurement of innovations like for example the innovation partnership are different.

[109] https://www.duurzaamgww.nl/ambitieweb/

agreement "Green deal sustainable ground, road, rail and water construction" (NL) is intended for the preliminary stage. With AmbitionWeb, public procurers define their ambitions in seven categories relevant for civil construction, e. g. "Water and soil" or "Material and resources". Based on their ambitions, they then define requirements that are to be used in the tender. Furthermore, there are several direct links to LCA especially for the construction of buildings that are designed for the pre-procurement or planning process of the building. They might be mentioned in contracts with those responsible for the planning or in tenders for general contractors that deliver the **planning and the construction of the building**, but they will not be mentioned in tenders for individual works (dry construction, painter, etc.).

Mandatory or voluntary use: The majority of public procurement approaches that are directly and indirectly linked to EF/LCA are of a voluntary nature. For example, the regulation of the German Ministry of Defence makes the use of external costs only mandatory when using LCC. The decision to include LCC in the tender is voluntary. An example of the mandatory use of EF/LCA criteria is the minimum requirements for sustainability of the Austrian Federal Real Estate Company. For their building projects it is necessary to reach a certain threshold value for the OI3 index (which is based on LCA).

When used in the tendering process itself, EF/LCA-based criteria seems to be included **as selection criteria, award criteria or technical specifications**. DuboCalc for example translates the environmental impact into environmental costs, or Environmental Cost Indicator Value (ECI Value). The lower the environmental impact, the lower the ECI Value and the higher the hypothetical discount on the bidding price (= award criterion).

2.4.9 Product groups

The findings derived from the assessment of relevant documents from the nine EAA countries revealed a specific focus on the following product/service groups where specific methods were concerned on how to include EF/LCA criteria:

- Construction products
- Textiles
- Food
- Meetings/Events

As mentioned in sub-chapter 2.4.5 the EC published GPP criteria for 20 product groups. Criteria of three product groups are directly linked to EF/LCA:

- Office Building Design, Construction and Management
- Road Design, Construction and Maintenance
- Waste Water Infrastructure

Furthermore, the following five product groups have an indirect link to EF/LCA criteria. They are linked to these criteria by requiring products/services to fulfil the EU Ecolabel criteria (using ecolabel criteria as a requirement, not as a means for verification):

- Cleaning products and services
- Copying and graphic paper
- Food catering services and vending machines
- Public space maintenance
- Textiles

2.5 Description of court cases at national or local levels related to the inclusion of environmental or EF/LCA-based criteria in public contracts

For the description of relevant court cases and the procedure to identify relevant court cases linked to EF/LCA-based criteria used in PP (directly or indirectly via ecolabels or LCC) or with a connection to relevant environmental issues within Europe, research platforms as well as the judicature references[110] have been used for this specific sub-task and juridical experts from other EAA countries have been contacted directly. In order to assess the relevance of individual decisions, the focus was on application of specific Public Procurement directives and possible subsequent decisions.

17 court cases have been analysed and are described in the following. Similar to the Public Procurement Directive, which refrains from a direct obligation to apply environmental or EF/LCA criteria, the contracting authority and therefore the judiciary is also reluctant to apply these criteria. Indeed, it turned out to be very difficult to find clear court rulings. Furthermore, the use of a professional network and the use of local professionals in individual Member States (e.g. to access unpublished judgments) has produced a clear result: public purchasers are only hesitantly beginning to use appropriate environmental criteria. However, this is also reflected in a low density of corresponding cases. For these reasons we focused our research in a first step on the ground-breaking decisions regarding the consideration of the environmental compatibility of services/products in general (for example European Court of Justice, Case C-448/01; European Court of Justice, Case C-513/99). In the following steps the authors took in their search grid decisions with inclusion of environmental criteria and environmental management systems in a broader sense and – of course – cases with a direct reference to LCA-based criteria. In summary, the following decisions were identified and are described in more detail:

- **3 court cases with direct reference to LCA-based criteria**

  (NL Case C / 16/470268 / KG ZA 18-706, NL Case C / 16/370903 / KG ZA 14-417, FR Case N° 363921)

- **4 court cases with possible indirect reference to LCA-based criteria**

  (AT Case W187 2227326-2/24E, AT Case W139 2222479-2/30E, EU/NL Case C-368/10, FR Case N° 0607628)

- **10 court cases regarding environmental criteria and environmental management systems in a broader sense**

  (FR Case N° 12PA01701 and 12PA01702, EU/GR Case T-331/06, DE Case 1 Verg 2/08, HU Case 19.K31.464/2008/4, AT Case K 085/06/2001.001/013, DE Case 1 VK 8/14, DE Case 17 Verg 4/05, AT Case C-448/01, EU/FI Case C-513/99, AT Case Ra 2017/04/0124-5)

[110] https://curia.europa.eu/jcms/jcms/Jo1_6308/; https://eur-lex.europa.eu/; https://www.kozbeszerzes.hu/; https://www.rechtspraak.nl/; https://www.legifrance.gouv.fr/; https://www.juris.de; https://www.ris.bka.gv.at/Judikatur/; https://rdb.manz.at; https://360.lexisnexis.at/

Country	Title of Case	Content	Relevance
Direct reference to LCA criteria			
NL	Gericht für mittlere Niederlande, Case C / 16/470268 / KG ZA 18-706	Concerning a construction contract for the renewal of used railway infrastructure – Obligation to investigate if a tender fulfils particular requirements (environmental cost indicator)	The environmental cost indicator (ECI) is a measure of the environmental impact of a civil engineering project throughout its life cycle.
NL	Zentralniederländisches Gericht, Case C / 16/370903 / KG ZA 14-417	Use of a "CO2 sensitisation certificate"	It shows how tools addressing environmental impacts may be used to be linked to PP via award criteria.
FR	Conseil d'Etat, Case, N° 363921	Environmentally friendly collection of household and similar waste – Assessment of the carbon footprint in the form of a "carbon balance sheet" as award criteria	It concerns the contracting authority's duty to specify the relevant content of methods/tools that are used to ensure the environmental friendliness of a tender.
Possible indirect reference to EF/LCA criteria			
AT	Bundesverwaltungsgericht, W187 2227326-2/24E	Framework agreement for the production of printing products – Questionable equivalence of EU-Eco-label and ISO 14001:2015	It shows that not only the product but also the whole production process can be considered as environmental award criteria.
AT	Bundesverwaltungsgericht, W139 2222479-2/30E	Framework agreement concerning the delivery of hygienic paper products – Award criterion that requires a certification that is reserved only to members of a, association and cannot be achieved by all tenderers.	It concerns a declaration of a producer on compliance with emissions from (pulp and paper) production.
EU, NL	ECJ, C-368/10 Commission v Netherlands	Contract for the management of automatic coffee machines – Missing possibility to proof that criteria underlying a specific environmental label are fulfilled	The ecolabel in question not only concerns the production process but also the organic origin of products.
FR	Tribunal Administratif de Nice, Case N° 0601628	Contract concerning the supply of products (individual composters) – Compliance with procurement principles for procedures below the threshold	The certification in question constitutes a collective mark corresponding to a national ecolabel.
Environmental criteria and environmental management systems in a broader sense			
FR	Cour administrative d'appel de Paris, Case N° 12PA01701 and 12PA01702	Contract concerning the door-to-door collection of household waste – Insufficient definition of an environmental award criterion	The environmental criterion in question concerns the environmental performance of the service organisation.
EU, GR	ECJ, Case T-331/06 Evropaïki Dynamiki / EUA	Call for tenders relating to the provision of information technology (IT) consultancy services – Acceptance of a very wide definition of an environmental award criterion	The award criteria in question, concerns the "General environmental policy".
DE	Schleswig-Holsteines Oberlandesgericht Vergabesenat, Case 1 Verg 2/08	Framework agreement for office supplies – Missing link to the contract of an award criterion concerning the environmental management system	The award criterion in question concerns the environmental management system.
HU	Public Procurement Council, Case 19.K31.464/2008/4	Construction contract for the renewal of prefabricated buildings –	An "environment management system" was

		Requirement of a link of the subject matter of the contract to environmental award criteria	required in connection with suitability criteria.
AT	Unabhängiger Verwaltungssenat Burgenland, Case K 085/06/2001.001/013	Construction contract for the expansion of a health resort – Formulation of environmental award criteria as technical specifications	The award criteria in question was" environmental compatibility of the services".
DE	Vergabekammer Baden-Württemberg, Case 1 VK 8/14	Contract for school transport services – Questioning of bonus points for an ecological power source	Relevant as bonus points were awarded for an ecological power source (hybrid drive, electric vehicle) before the entry into force of the Clean Vehicles Directive.
DE	Oberlandesgericht Rostock, Case 17 Verg 4/05	Contract for the implementation of residual waste disposal (recovery/disposal) for a state capital – Total price as sum of the tender price and a malus for transport kilometres	Relevant as transport kilometres are indirectly taken into account. Nevertheless transport kilometres are a much disputed environmental criterion in the awarding of contracts, as they are in favour of regional tenders.
EU, AT	ECJ, Case C-448/01 EVN and Wienstrom	Supply of electricity – Concerning a criterion requiring that the electricity supplied be produced from renewable energy sources	The use of renewable energy sources for producing electricity contributes to the reduction in emissions of greenhouse gases.
EU, FI	ECJ, Case C-513/99 Concordia Bus Finland	Contract for the operation of a route in the urban bus network – Concerning the award of additional points to a fleet with nitrogen oxide emissions and noise levels below certain limits	Relevant as bonus points were awarded in order to promote environmental protection (level of nitrogen oxide emissions and the noise level of the buses).
AT	Verwaltungsgerichtshof, Case Ra 2017/04/0124-5	Contract for road construction and earthworks – On the award criterion "strain on the public road network due to truck transport"	Transport kilometres are taken into account as environmental criteria. Nevertheless transport kilometres are a highly disputed environmental criterion in the awarding of contracts, as they are in favour of regional tenders.

2.5.1 ***The Netherlands**: Gericht für mittlere Niederlande, Case C / 16/470268 / KG ZA 18-706111*

concerning the use of the award criterion "Quality value of the sustainable use of materials",

judgement of 25 January 2019

Keywords

Environmental award criterion; Environmental Cost Indicator (ECI); DuboCalc.

Central statement

The basic principle is that a contracting authority is allowed to assume the accuracy of (information contained in) tenders in principle. The contracting authority is only obliged to investigate this further if there is reasonable doubt as to whether the tenderer fulfils a particular requirement (for example an environmental cost indicator assessed with DuboCalc). It is therefore questionable whether the applicant has argued sufficiently to raise reasonable doubts about the registration of the successful tenderer.

Facts of the case

The contracting authority intended to enter into a new construction contract for the renewal of used railway infrastructure. One of the award criteria was the "Quality value of the sustainable use of materials". In the tender documents the following description was included: DuboCalc is the tool for calculating the environmental impact in order to reduce the negative environmental impact of the use of materials and raw materials. The environmental impacts are monetised as follows: the Environmental Cost Indicator (ECI). The ECI value is a measure of the environmental impact of a civil engineering project throughout its life cycle.

With the DuboCalc calculation programme bidders can calculate the ECI value based on material selection and working methods. DuboCalc includes a database library that contains life cycle analysis (LCA) data of a large number of materials and raw materials. An optimal LCI value can be calculated by making the right choice of material types, quantities and transport distances. Based on the reference design, the contracting authority itself has performed a DuboCalc calculation, the so-called reference ECI (as benchmark model). The bidder can receive a fictitious discount on the bid amount if the ECI offered by the bidder is lower than the reference ECI. It is not permitted to register with a higher value than the reference ECI. The value offered becomes a contract requirement after the award.

The applicant filed an application for the review of the award decision and argued that the ECI of the successful tenderer is unrealistic and the award decision is insufficiently reasoned. The Public Procurement Tribunal rejected the action.

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111 https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBMNE:2019:245&showbutton=true&keyword=dubocalc

Findings of the court

The applicant's objection mainly relates to the fact that it is not clear whether the ECI calculation of the contracting authority and the successful tenderer was based on the correct data (e.g. material quantities and transport distances). According to the applicant, it is uncertain whether the successful tenderer used incorrect data for its ECI calculation given the large difference between the ECI registration values of the applicant and the successful tenderer.

The basic principle is that a contracting authority is allowed to assume the accuracy of (information contained in) tenders in principle. The contracting authority is only obliged to investigate this further if there is reasonable doubt as to whether the tenderer fulfils a particular requirement. It is therefore questionable whether the applicant has argued sufficiently to raise reasonable doubts about the registration of the successful tenderer.

The contracting authority denies that the registration of the successful tenderer would be unrealistic with regard to the ECI registration value. It points out that the difference between the ECI registration values of the estimated value and the successful tenderer is only 10%. According to the contracting authority this is not a big difference. The contracting authority states that in the tender documents it has explicitly considered that it is possible that it will be tendered with a ECI value below the ECI target value of € 162,000. The contracting authority explained that the target value was only considered as a guide value. In light of this, the fact that the successful tenderer’s ECI registration value is lower than the ECI target value of € 162,000 and even lower than the original ECI target value of € 153,000 does not provide insufficient evidence that the ECI value at which the successful tenderer has registered is unrealistic.

In view of the above, it is concluded that the applicant has not sufficiently demonstrated, in the light of the defence of the contracting authority and the successful tenderer, that the registration of the successful tenderer is unrealistic in relation to the ECI registration value. The contracting authority was therefore not obliged to investigate this further. To the extent that this was nevertheless done, the contracting authority stated that this did not show that the successful tenderer’s ECI calculation contained significant irregularities. The court had no reason to doubt this.

2.5.2 ***The Netherlands**: Zentralniederländisches Gericht, Case C / 16/370903 / KG ZA 14-417*[112]

concerning the use of the "CO2 sensitisation certificate", judgement of 30 July 2014

Keywords

CO2 sensitisation certificate; CO2 performance ladder.

Central statement

It is taken into account that the CO2 certificate is an objective document and the certificate was issued by a certified company before the registration date.

Facts of the case

The notional discount to be determined for a bidder is calculated on the basis of the assessment of the CO2 performance and/or the safety ladder, which is indicated as a level on the corresponding certificate. In order to be entitled to the fictitious discount, the bidder must submit a copy of the corresponding certificate when registering. Only certificates that are valid at the time of the bid are processed.

In the case of a combination, a copy of the corresponding certificate at registration has to be submitted for all combinations. The valuation price is calculated on the basis of the certificate of the combination with the lowest level on the respective ladder.

If a bidder has relied on the suitability and competence of one or more nominated subcontractors in the tender procedure, the bidder must submit a copy of their own relevant certificate and of the document corresponding to the nominated subcontractors when submitting the tender. In case of a tender with one or more nominated subcontractors, the calculation of the evaluation price is based on the certificate with the lowest level on the respective ladder.

No discount percentage will be granted if the above conditions are not met.

Findings of the court

The award criterion concerns the most economically advantageous tender. This is assessed on the basis of the registration price and the notional discount related to the step of the CO2 sensitisation certificate. The tender guidelines state that the bidder must enclose its own CO2 sensitisation certificate and that of its subcontractor with the bid and that it will not receive a notional discount if it does not do so. In this case, the claimant has attached its own CO2 sensitisation certificate to the bid, but not that of its subcontractor. The contracting authority does not grant a fictitious discount, which means that the bidder ends up in second place. It is considered that, in view of the ECJ case law (Sag[113] and Manova[114] judgements), the contracting authority may give the tenderer the opportunity to correct this omission, and that it may even be obliged to do so under the circumstances. The main claim for the award of the contract to the tenderer, if the contracting authority still wishes to put the contract on the market, is awarded.

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[112] https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBMNE:2014:3251&showbutton=true&keyword=CO2+Prestatieladder

[113] http://curia.europa.eu/juris/document/document.jsf;jsessionid=F06678EB4D39782027E0F1C405B57392?text=&docid=121164&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=700262

[114] http://curia.europa.eu/juris/document/document.jsf?text=&docid=142824&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=700848

2.5.3 ***France***: *Conseil d'Etat, Case N° 363921*[115]

concerning the assessment of the carbon footprint as award criteria
judgement of 15 February 2013

Keywords

Carbon accounting, carbon footprint (CF), environmental award criteria, environmentally friendly collection of waste.

Central statement

If the carbon footprint is chosen as a (sub-)award criterion in order to assess the environmental impact of a bid, detailed rules concerning the subject matter, the accounting method and the assessment of the given information have to be provided.

Facts of the case

The contracting authority intended to enter into a new contract for the "environmentally friendly collection of household and similar waste". Bidders had to provide information concerning carbon accounting in the form of a "*carbon footprint"*. Neither the mandatory content of the carbon footprint, nor detailed rules for the assessment were provided by the authority.

Findings of the court

In the tender documents the production of a "*carbon balance sheet*" was required. However, the contracting authority did not specify the required content or define the methods of assessment sufficiently. As a result, uncertainties and contradictions concerning the interpretation of this award criterion remained which could affect the selection of tenders.

Therefore, the contracting authority did not fulfil its obligations to ensure a fair competitive award procedure by providing sufficient information in the tender documents concerning the environmental award criterion.

[115] https://www.legifrance.gouv.fr/affichJuriAdmin.do?oldAction=rechJuriAdmin&idTexte=CETATEXT000027069259&fastReqId=407696488&fastPos=1

2.5.4 ***Austria**: Bundesverwaltungsgericht Österreich, Case W187 2227326-2/24E*[116]

concerning the technical equivalence of the environmental certification "EU-Eco-label" and ISO 14001:2015,
judgement of 19 February 2020

Keywords

Environmental must-criterion; certified environmental systems; environmental management system; EU Ecolabel; ISO 14001:2015.

Central statement

If the tender documents require certain certifications "or equivalent", the contracting authority must only recognise different certifications if the quality labels are equivalent. The evaluation of the equivalence has to be based on the corresponding object and scope of the certification (production process, product, operation and so on).

Facts of the case

The contracting authority intended to enter into a new framework agreement for the production of printing products. The following environmental criterion was defined as a "MUST" criterion in the tender documents as a means to prove technical capacity: "[...] The tenderer must prove that the printed products are produced in accordance with the European Eco-label - EU Ecolabel or similar certifications (at least UZ24 *[note: Austrian Ecolabel]* for printed products) and certified environmental systems (EMAS, ISO14001:2015, etc.) that comply with the EU Ecolabel. […]". The tender documents expressly stated that failure to meet this requirement would result in rejection of the tender.

The applicant submitted a tender within the time limit and included an ISO 14001:2015 certification (environmental management system). The applicant was subsequently requested by the contracting authority to submit a European Ecolabel - specifically an EU Ecolabel or Austrian Ecolabel UZ24 for printed products. The applicant did not comply with this request. Consequently, the applicant's tender was rejected. The applicant argued that the environmental criterion which was required according to the tender documents allowed that an alternative means to prove the technical capacity of an EU Ecolabel or an equivalent label was given. The requirement of a cumulative and not alternative environmental certification is not indicated in the tender documents. The Federal Administrative Court considered that the action was not justified.

Findings of the court

The applicant's tender was rejected because the applicant did not provide an EU Ecolabel or equivalent certification for the products. The applicant submits that, according to the wording of the tender, either the existence of an EU Ecolabel or equivalent or certification according to ISO 14001:2015 has to be proven.

The tender documents included the following specifications: "The tenderer has to prove that the printed products are produced in accordance with the European Eco-label - EU Ecolabel or similar certifications (at least UZ24 for printed products) and certified environmental systems (EMAS, ISO14001:2015, etc.) that comply with the EU Ecolabel". According to this definition, this requirement is a mandatory criterion and failure to prove

[116] https://elibrary.verlagoesterreich.at/article/10.33196/rpa202003013401 - Not available for free online – document can be shared upon request: BVwG Keine vergaberechtliche Gleichwertigkeit der Umwelt-zertifizierungen EU-Ecolabel und ISO 14001:2015

the fulfilment of this requirement would result in the contracting authority's rejection of the tender.

The existing case law states that the contracting authority requiring a specific certification or equivalent must only recognise similar certifications if the requirements are equivalent.

While interpreting the tender documents, the word "and" indicates that the contracting authority requires both an EU Ecolabel and a certified environmental system. The word "or" refers to the presentation of a certificate equivalent to the EU Ecolabel and does not imply that either an EU Ecolabel or ISO 14001:2015 certification is required. It only states that the application of the certified environmental system must not lead to requirements contradictory to those of the EU Ecolabel.

The EU Ecolabel is based on Regulation (EU) 66/2010 which, according to Article 2(1) of Regulation (EU) 66/2010, applies to products and services, referred to as products for the purposes of the Regulation, and allows the use of an EU Ecolabel. Art. 9 of Regulation (EU) 66/2010 regulates the procedure for the award of the EU Ecolabel, which is awarded to a specific manufacturer for a specific product or product group only upon application following a review for a specified period of time. If necessary, the certificate may also cover part of the production process. The EC shall keep a register of all EU Ecolabels which have been awarded.

The ISO 14001:2015 standard sets out requirements for an environmental management system that an organisation can use to improve its environmental performance. This International Standard is intended for use by organisations that want to improve their environmental responsibilities in a systematic way that contributes to environmental sustainability. This International Standard helps an organisation to achieve the intended results of its environmental management system, thereby providing added value for the environment, the organisation itself and interested parties. In accordance with the organisation’s environmental policy, the intended results of an environmental management system include the following:

- improving the environmental performance;
- fulfil binding obligations;
- achieving environmental objectives.

This International Standard is applicable to all organisations, regardless of their size, type or nature. It applies to those environmental aspects of its activities, products and services which the organisation determines to be either controllable or capable of being influenced by taking into account the life cycle of the organisation. This International Standard does not establish specific environmental performance criteria. This International Standard may be used for the systematic improvement of the environmental management. However, it is not allowed to claim conformity to this International Standard unless all its requirements are incorporated into an organisation’s environmental management system and are complied without exception.

As a result, the EU Ecolabel is a label for products and services. For the printed products which are subject to this tender, Decision 2012/481/EU determines the criteria for the award of this EU Ecolabel. These criteria relate both to the product and to any components and manufacturing processes. However, they do not relate to the organisation of the business. All printing, coating and finishing processes are taken into account in the award procedure. Paper represents only the initial product, which is further processed by the applied procedures to get the certified end product. A specific product is described with a specific final status.

In contrast to that, the ISO 14001:2015 standard determines processes in the company's operations with regard to achieving certain environmental requirements. The approach of this standard is to define certain objectives in relation to the organisation in question and to establish appropriate management tools, to evaluate the achievement of these objectives and to continuously improve existing processes. There are no absolute requirements for the environmental protection based on this International standard.

As a result, the two certificates are complementary to each other in such a way that the production process is certified to a certain extent by the product on the one hand and the operation process on the other hand. Therefore, it is impossible that the EU Ecolabel is equivalent to the ISO 14001:2015 certification. Therefore, the rejection of the applicant’s tender was justified.

2.5.5 ***Austria**: Bundesverwaltungsgericht Österreich, Case W139 2222479-2/30E*[117]

concerning the use of the award criterion "environment", judgement of 11 February 2020

Keywords

Ecolabels; Environmental criterion.

Central statement

An award criterion "environment" is discriminatory if a tenderer is awarded the maximum of points in case of certain eco-labels and has to ensure the fulfilment of the requirements by a paper profile, which is not generally accessible as it is reserved only to members of the association and cannot be achieved by all tenderers.

Facts of the case

The contracting authority intended to enter into a new framework agreement concerning the delivery of hygienic paper products.

The applicant filed an application for the review of the tender documents and argued that the award criterion "environmental criteria" is in violation of procurement law. In the case of the award criterion "environmental criteria", either 2 points up to a maximum of 32 points would be awarded for individual environmental criteria or, in the case of certain eco-labels, the maximum of 32 points would also be awarded. However, the requirements for the ecolabels are not consistent with the established environmental criteria. In addition to that, the tenderer has to declare that the emissions from pulp and paper production are compliant with the requirements set out in the tender documents. In order to ensure the fulfilment of the requirements a 'paper profile' has to be attached to the offer. The "paper profile" is a specific declaration of a producer of hygienic paper on compliance with emissions from pulp and paper production. However, this 'paper profile' is not generally accessible as it is reserved to members of the association, which means that tenderers who do not have an environmental certificate cannot obtain the points. Due to this fact the applicant argued that the award criterion is illegal. The contracting authority corrected the tender documents so that the 'paper profile' was not required any longer. The Public Procurement Tribunal rejected the action.

Findings of the court

According to the tender documents, the tenderer is awarded two points for each environmental criterion. If all environmental criteria are fulfilled by a certain product the tenderer is awarded the maximum of 32 points. However, the environmental criteria are automatically fulfilled by a product and the tenderer is awarded the maximum score of 32 points if the product in question has one of the following ecolabels (EU Ecolabel, Nordic Swan, Blue Angel or the Austrian Ecolabel).

The tender documents were corrected by the contracting authority so that the specification "However, the environmental criteria are automatically fulfilled by a product and the tenderer is awarded the maximum score of 32 points if the product in question has one of

[117] https://www.ris.bka.gv.at/Dokument.wxe?ResultFunctionToken=9a3f369d-c705-4df8-80bd-7db936701dc8&Position=1&SkipToDocumentPage=True&Abfrage=Bvwg&Entscheidungsart=Undefined&SucheNachRechtssatz=True&SucheNachText=True&GZ=&VonDatum=01.01.2014&BisDatum=12.08.2020&Norm=&ImRisSeitVonDatum=&ImRisSeitBisDatum=&ImRisSeit=Undefined&ResultPageSize=100&Suchworte=W139+2222479-2%2f30E&Dokumentnummer=BVWGT_20200211_W139_2222479_2_00+

the following ecolabels (EU Ecolabel, Nordic Swan, Blue Angel or the Austrian Ecolabel)" was deleted and the 'paper profile' was no longer required.

The allegations of discrimination based on the inadmissible award criterion "environment" and the inadmissible demand for a 'paper profile' need no longer be addressed by the court. By the second correction dated 06.09.2019, the aforementioned award criterion was redesigned and the demand for a paper profile was dropped. Thus, in this respect the applicant has been indemnified. Furthermore, the second correction was not contested by the applicant.

2.5.6 ***The Netherlands:*** *European Court of Justice, Case C-368/10*[118]

European Commission versus Kingdom of Netherlands concerning use of labels in the formulation of technical specifications and the award criteria, judgement of 10 May 2012

Keywords

Ecolabels; technical specification with environmental characteristics; sustainable purchasing and socially responsible business.

Central statement

Award criteria, in which a certain number of points are granted if certain products to be supplied bear specific labels, are not allowed in the tendering procedure, if the criteria underlying those labels are not listed and if the proof that the product satisfies those underlying criteria by all appropriate means has not been allowed.

Technical specifications may be formulated in terms of performance or functional requirements which may also include environmental characteristics. These technical specifications must afford equal access for tenderers and not have the effect of creating unjustified obstacles to the opening up of public procurement to competition and be sufficiently precise to allow tenderers to determine the subject matter of the contract and to allow contracting authorities to award the contracts, being clearly indicated, so that all tenderers know what the requirements established by the contracting authority cover.

Facts of the case

The province of North Holland intended to enter into a new contract for the management of automatic coffee machines. The tenders should be evaluated both on the basis of qualitative environmental criteria and on the basis of price. In the context of sustainable purchasing and socially responsible business the Province of North Holland required that the supplier fulfil the criteria concerning sustainable purchasing and socially responsible business. The Province of North Holland used the Max Havelaar and EKO labels for coffee and tea consumption.

Findings of the court

Under Article 23(3)(b) of Directive 2004/18, the technical specifications may be formulated in terms of performance or functional requirements which may include environmental characteristics. The text of the first subparagraph of that provision, with regard to the requirements concerning environmental characteristics, confers on contracting authorities the option to use the detailed specifications of an eco-label, but not the eco-label as such. Admittedly, in order to facilitate compliance with such a requirement, the second sub-paragraph of Article 23(6) also authorises the contracting authorities to indicate that the products bearing the eco-label, the detailed specifications of which they used, are presumed to comply with the specifications concerned. That second sub-paragraph does not however extend the scope of Article 23(6) because it permits recourse to the eco-label itself only indirectly, as proof of compliance with 'the technical specifications laid down in the contract documents'. According to that second sub-paragraph of Article 23(6) of Directive 2004/18, the contracting authorities must accept any other appropriate means

[118] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A62010CJ0368

of proof, such as a technical dossier of the manufacturer or a test report from a recognised body.

Moreover, far from constituting an excessive regard for formalities, the obligation of the contracting authority to mention expressly the detailed environmental characteristics it intends to impose even where it refers to the characteristics defined by an eco-label, is indispensable in order to allow potential tenderers to refer to a single official document, coming from the contracting authority itself and thus without being subject to the uncertainties of searching for information and the possible temporal variations in the criteria applicable to a particular eco-label.

In addition, it must be noted that the objection of the Kingdom of the Netherlands that, since the EKO label provides information relating to the organic origin of products bearing that label, the reference to detailed characteristics would have required it to list all the requirements of Regulation No 2092/91, which would have been much less clear than referring to that label, is irrelevant. Directive 2004/18 does not preclude, in principle, a reference, in the contract notice or contract documents, to legislative or regulatory provisions for certain technical specifications where such a reference is, in practice, unavoidable, provided that it is accompanied by all the additional information required by that directive. Thus, since the marketing, in the European Union, of products obtained from organic agriculture and presented as such must comply with relevant European Union legislation, a contracting party may, if appropriate, without disregarding the concept of 'technical specification' within the meaning of point 1(b) of Annex VI to Directive 2004/18 or Article 23(3) thereof, state in the contract documents that the product to be supplied must comply with Regulation No 2092/91 or with any other subsequent regulation replacing that regulation.

With regard to the later clarification made to point 11 of the information notice, according to which the reference to the EKO label also covered an equivalent label, it must be stated, in addition to what has been stated in points 54 to 56 above, that such a clarification cannot, in any event, compensate for the failure to identify the detailed technical specifications corresponding to the label concerned.

It follows from the foregoing considerations that by requiring, in the contract documents, that certain products to be supplied were to bear a specific eco-label, rather than using the detailed specifications defined by that eco-label, the province of North Holland established a technical specification which was incompatible with Article 23(6) of Directive 2004/18. Therefore, the first part of the first plea is well founded.

2.5.7 ***France**: Tribunal Administratif de Nice, Case N° 0601628*[119]

concerning a collective mark that corresponds to a national Ecolabel
judgement of 18 April 2006

Keywords

Collective marks, composters, national ecolabel

Central statement

Procurement procedures which are below the threshold laid down in the Public Procurement Directive have to comply with the principles of non-discrimination, equal treatment and transparency. The contracting authority is not allowed to request that certain products to be supplied bear specific collective marks that are equivalent to a national Ecolabel if products with equivalent or better quality are not accepted.

Facts of the case

The contracting authority intended to award a contract concerning the supply of products (individual composters). The estimated value of the procurement was below the threshold laid down in the Public Procurement Directive. Therefore, the contract was awarded under an adapted award procedure. Candidates were required to exclusively provide products bearing the "*NF Environnement*" mark, which was a national Ecolabel.

Findings of the court

Irrespective of the value, contracts awarded under an adapted procedure have to comply with the general principles of non-discrimination, equal treatment and transparency. To ensure a fair competitive award procedure, with which the most economically advantageous tender can be determined, sufficient information concerning the award procedure has to be provided in the tender documents.

The contracting authority is free to choose the competitive award procedure which is appropriate for the characteristics of the contract – in particular the subject matter, the estimated value, the degree of competition between the companies concerned and the conditions under which the contract will be awarded. This choice, however, must enable the contracting authority to comply with the abovementioned general principles.

The reference to a national ecolabel should not have the effect of creating unjustified barriers to principle of non-discrimination. The schedule of specific clauses of the contract in question requires, as a specification for products, the "*NF Environnement certification*". This certification constitutes a collective mark corresponding to a national ecolabel.

The contracting authority is free to define its needs and in particular the specifications of the product technology used by reference to an ecolabel. However, it is not allowed to require only products which are certified with the "*NF Environnement*" mark as the principle of non-discrimination is violated. Products with equivalent or superior characteristics to the named product even if they are not certified with the "*NF Environnement*" mark have to be allowed in the tender procedure.

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[119] Not available online – document can be shared upon request; TRIBUNAL ADMINISTRATIF DE NICE, statuant aucontentieux 18 avril 2006 Sté FM DéveloppementTRIBUNAL ADMINISTRATIF DE NICE, statuant au contentieuxLecture du 18 avril 2006

2.5.8 ***France***: *Cour administrative d'appel de Paris, Case N° 12PA01701 and 12PA01702*[120]

concerning appropriate information for the assessment of environmental (sub)criteria
judgement of 21 May 2013

Keywords

Assessment of sub-criteria, collection of waste, environmental award criteria.

Central statement

It is not sufficient to assess the environmental (sub-)criterion **"***environmental performance of the service organisation"* on the basis of "*the integration of sustainable and durable development in the organisation of the service*", as this element of analysis cannot be regarded as being defined sufficiently to prevent the possibility of a discriminatory award decision.

Facts of the case

The contracting authority intended to enter into a contract concerning the door-to-door collection of household waste. The only element of analyses of the (sub-)criterion "*environmental performance of the service organisation"* was "*the integration of sustainable and durable development in the organisation of the service*", which was not further defined.

Findings of the court

The public authority is free to choose the award criteria which it intends to use, provided that these criteria are justified by the subject matter of the contract and make it possible to identify the most economically advantageous tender. To ensure compliance with the principles of freedom of access to public contracts, equal treatment and transparency, candidates must be given appropriate information on the criteria for the award of a public contract. This information has to be provided as soon as the contract award procedure is initiated – in the notice of a public call for competition or in the specifications made available to the candidates.

Where the contracting authority wishes to use other criteria than the price, the appropriate information for candidates also has to cover the assessment of those criteria. The contracting authority is free to establish award criteria and the conditions for their assessment in a manner which is appropriate to the subject matter, characteristics and the value of the contract. If the contracting authority wishes to use sub-criteria that are likely to influence the presentation of tenders by the candidates and their selection such sub-criteria have to be regarded as award criteria themselves.

By limiting the element of analysis of a sub-criterion to the "*integration of sustainable and durable development in the organisation of the service*" – which is not free of ambiguity – the contracting authority failed to organise an assessment of the tenders received that guarantees equal treatment and transparency.

[120] https://www.legifrance.gouv.fr/affichJuriAdmin.do?oldAction=rechJuriAdmin&idTexte=CETATEXT000027610238&fastReqId=1347612473&fastPos=1

2.5.9 ***Greece:*** *European General Court, Case T-331/06*[121]

Evropaiki Dynamiki – Proigmena Systimata Tilepikoinonion Pliroforikis kai Tilematikis AE versus European Environment Agency (EEA) concerning use of general environmental policy as an award criterion, judgement of 8 July 2010

Keywords

General environmental policy, award criterion.

Central statement

An award criterion 'General environmental policy of the company' is allowed in the tendering procedure if the maximum points should be given to the one which had submitted evidence, in the form of a certificate, of a genuine general environmental policy, although the contracting authority did not regard such a certificate as being the only possible evidence in that regard.

Facts of the case

The applicant, Evropaïki Dynamiki – Proigmena Systimata Tilepikoinonion Pliroforikis kai Tilematikis AE, is a company established under Greek law, active in the field of information technology and communications. By a contract notice of 12 June 2006 published in the Supplement to the *Official Journal of the European Union* (OJ 2006 S 118-125101), the EEA launched a call for tenders relating to the provision of information technology (IT) consultancy services. The purpose of that call for tenders was to establish three framework contracts with companies offering a wide spectrum of IT and IT-related services. The award criterion "general environmental policy of the company" was rated with 10 percent. For this area of expertise the tenders will be scored for the three criteria between 0-45, 0-45 and 0-10 points respectively. By letter of 14 September 2006, the EEA informed the applicant that its tender had been rejected on the grounds that it was not the most economically advantageous of those tenders which were technically compliant, and reminded the applicant of its right to ask for additional information on the grounds for the rejection of its bid, including the characteristics and relative advantages of the successful tender and the name of the tenderer to whom the contract had been awarded. The applicant filed an application for the review of this decision and argued that the award criterion concerning general environmental policy was erroneously applied since the EEA based it on proof of a certified system, although the call for tenders referred simply to the 'general environmental policy of the company'. First, the EEA awarded maximum points to the only company which had submitted a certificate that was regarded as being relevant, without analysing the real contribution of the company to the protection of the environment. Secondly, it wrongly classified as 'intentions on the subject' an environmental policy which the applicant actually follows and the real contribution of which to the protection of the environment it explained. The defining factor for awarding scores was therefore not the actual environmental policy but that certificate which was not, however, required in the tender specifications. The applicant argues that it holds an ISO 9001:2000 certificate and that its policy complies with the Ecodynamic Enterprise Charter of the Brussels Institute for Management of the Environment ('the Brussels Environment Institute'). It should therefore have obtained the maximum number of points.

[121] http://curia.europa.eu/juris/document/document.jsf?text=&docid=81107&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=13992965

Findings of the court

It is apparent from the documents in the case that the third award criterion referred to the 'General environmental policy of the company', without further specification. It should also be observed that the comments on the scores allocated to the applicant and to the successful tenderers all refer to the possible existence of certification. In that connection the only company which obtained the maximum score of 10 points was the one which, according to the evaluation report, had a 'certified environmental management scheme' in place. Moreover, the applicant stated, and was not contradicted by the EEA, that it obtained the highest score out of all the tenderers who did not submit certification.

An award criterion worded in such a general way as in this case enables tenderers to present their policy in this field as they wish and to supply the evidence they consider to be appropriate. In that regard, submission of a relevant certificate is one of a number of conventional ways of providing evidence in the preparation of tenders in public procurement procedures. Since the applicant is a company which regularly takes part in this type of procedure, it could not be unaware of this. It stated itself in its tender and in its pleadings that its policy complied with the Brussels Environment Institute's charter and that it had an ISO 9001:2000 certificate.

In the particular circumstances of this case, the applicant has no grounds for asserting, first, that the necessary, or even the only, evidence required for the award of the best score was certification that was not required by the tender specifications or, secondly, that no comparison was made between its tender and the one obtaining the best score. If the submission of an appropriate certificate had been the only possible evidence of a general policy, those tenderers who had not submitted one would not have been awarded any points. Not only was that not the case, those tenderers who did not submit an appropriate certificate did not all obtain the same score. The Evaluation Committee therefore considered that among the bids submitted by such tenderers the applicant's was the best in that regard. However, on the basis of the descriptions of their respective general environmental policies, the Committee decided that the certificate in question provided the most convincing evidence of one company's general environmental policy and so it awarded the maximum points to that company. It follows that the Committee did indeed make a comparative assessment of the tenders, evaluating whether the environmental policies submitted by the tenderers were genuine, and that it found that only one of them had already put such a policy in place, whilst the others merely indicated good intentions in that respect.

As the EEA confirmed, the existence of an effective environmental policy could be proved in a number of ways. The Evaluation Committee considered that the applicant had not submitted documents that were equivalent to the certification at issue. Of the documents submitted, the ISO 9001:2000 certificate and compliance with the Brussels Environment Institute charter were not regarded by the Committee as providing assurances of an effective environmental policy.

Hence, the arguments put forward by the applicant merely enable the Court to conclude that, given its broad discretion, the EEA considered that among all the tenderers' bids, the maximum points should be given to the one which had submitted evidence, in the form of a certificate, of a genuine general environmental policy, although it did not regard such a certificate as being the only possible evidence in that regard.

In those circumstances, that complaint must be rejected and, consequently, the first plea must be rejected in its entirety.

2.5.10 ***Germany:*** *Schleswig-Holsteines Oberlandesgericht Vergabesenat, Case 1 Verg 2/08*[122]

concerning the legitimacy of an award criterion 'environmental management system',
judgement of 29 April 2010

Keywords

Environmental award criterion; environmental suitability criterion; environmental management system.

Central statement

An environmental management system introduced in the award procedure is not allowed and no points may be awarded, as such a suitability criterion requires a legal basis. Furthermore, this requirement is not contract-related and thus does not apply with the public procurement law.

Environmental requirements as proof of the tenderers' suitability are allowed if they are provided for by federal or state laws.

Facts of the case

The contracting authority intended to enter into a new framework agreement for office supplies.

The applicant argued that the weighting of the award criterion concerning the proof of the required environmental management with 20% was unclear and that the evaluation of the information concerning the required environmental management with 0 points is unfounded. Furthermore, the applicant argued that the tenderers were not informed that the information on environmental management was relevant to the evaluation of the award criterion 'environmental management system', nor of the weighting and number of points that would be given. The Higher Regional Court considered that the action was justified.

Findings of the court

The senate of the court expressed its doubts as to whether the criterion 'environmental management' can be allowed in an award procedure. The criterion has not been used as a performance criterion but as an award criterion. In the award procedure tenderers had to submit operational certifications or validations and 'measures to improve operational environmental protection' with the offer, which are not related to the services to be provided. Therefore, the criterion as a suitability criterion according to Section 97 (4) (second half-sentence) of the Restriction of Competition Act would require a legal basis which is not evident. Irrespective of this, it is also doubtful that a company-related environmental management system can be measured solely or decisively by certification.

It is not possible to evaluate a suitability criterion with points. If such a system is introduced as a suitability criterion, a tenderer may or may not fulfil the requirements. Therefore, a suitability criterion is not applicable to a scoring system where points are awarded.

[122] https://www.juris.de/jportal/prev/JURE100063161 (no free access)

Environmental requirements as proof of the tenderers' suitability are allowed if they are provided for by federal or state laws. Such a law for the consideration of an environmental management system as a suitability requirement has not been enacted yet. In cases in which such a system should be relevant for fulfilling the obligations of a contract, tenderers may be required to provide suitable evidence in order to proof the fulfilment of the suitability requirements for the (technical) performance. The tender documents must clearly distinguish between suitability criteria and performance criteria.

As a result, the criterion 'environmental management system' does not have any effect on the score relevant for the award of the contract. As a result, the complainant won the tender for lot 2; there are no other reasons not to award the contract to the complainant.

2.5.11 ***Hungary****: Public Procurement Council Hungary, Case 19.K31.464/2008/4*[123]

concerning the use of CE-marks and ISO 9001 labels as a suitability criterion, judgement of 5 June 2009

Keywords

Environmental suitability criterion; ISO 9001; ISO 14001:2015.

Central statement

The contracting authority may take into consideration environmental criteria as suitability criteria, provided that they are linked to the subject matter of the contract.

Facts of the case

The contracting authority intended to enter into a new contract for a construction contract for the renewal of prefabricated buildings within the scope of the so-called 'prefabricated building programme' (especially new panels for high-rise buildings). The service had to be provided by using energy-efficient building materials and special insulation with an innovative effect. According to the tender documents specific environmental knowledge or expertise of the staff as well as specific requirements including CE-marks for the quality of the insulation, ISO 9001 labels for the energy modernisation and ISO 14001:2015 or EMAS environment management system were required in connection with suitability criteria.

Findings of the court

Regarding the use of environmental criteria as suitability criteria the court referred to the reasons of the decision of the judgement of the European Court of Justice, Case C-513/99 (judgement of 17 September 2002) and concluded that the contracting authority may take into consideration environmental criteria, provided that they are linked to the subject matter of the contract.

[123] https://www.kozbeszerzes.hu/adatbazis/megtekint/dbhatarozat/portal_5525/

2.5.12 ***Austria**: Unabhängiger Verwaltungssenat Burgenland, Case K 085/06/2001.001/013*[124]

concerning the use of the award principle "environmental compatibility of the services",
judgement of 12 January 2001

Keywords

Environmental award criteria; environmental compatibility; technical specifications.

Central statement

The formulation of the award principle 'environmental compatibility of the services' may not be used as an award criterion.

Facts of the case

The contracting authority intended to enter into a new contract for a construction contract for the expansion of a health resort. One of the award criteria was named 'environmental compatibility of the services'. The applicant filed an application for the review of the award decision. The Regional Independent Administrative Panel considered that the action was justified.

Findings of the court

According to the tender documents the award criteria were 50% for the price, 18% for the tenderer's credentials, 8% for technical and functional performance of the tenderer, and 2% for environmental compatibility.

As regards the award criterion "environmental compatibility of the service", it is stated that this award principle should be complied with by giving preference to environmentally compatible services. However, the formulation of the award principle 'environmental compatibility of the services' as an award criterion is considered inadmissible. Accordingly, the environmental compatibility of the service may only be formulated as technical specifications of the tendered service that is required within the scope of specifications. On these grounds, the Regional Independent Administrative Panel considered that the award decision was unlawful.

Contrary to this decision, the information of the European Commission (COM (2001) 274 final of 4 July 2001 – "Commission interpretative communication Community law applicable to public procurement and the possibilities for integrating environmental considerations into public procurement") allows the integration of environmental considerations in the formulation of an award criterion.

[124] https://360.lexisnexis.at/d/artikel/uvs_burgenland_rpa_2001_73/z_rpa_2001_2_rpa_2001_02_0073_65dc688474?origin=rl&searchId=202008120608100

2.5.13 ***Germany****: Vergabekammer Baden-Württemberg, Case 1 VK 8/14* [125]

concerning the legitimacy of bonus points for an environmental power source, judgement of 25.3.2014

Keywords

Environmental criterion; environmental bonus points; environmental power source.

Central statement

Bonus points for an environmental power source (such as hybrid drive or electric vehicle) are not in violation of public procurement law if the chosen bonus system is transparent and non-discriminatory.

Facts of the case

The contracting authority intended to enter into a new contract for school transport services. The tender documents included bonus points for an environmental power source (such as hybrid drive or electric vehicle).

The applicant filed an application for the review of the tender documents and argued that the bonus points for an environmental power source (such as hybrid drive or electric vehicle) in violation of procurement law. The Public Procurement Tribunal rejected the action.

Findings of the court

Under the provisions of § 4 Para. 4 to Para. 6 b) of the Regulation on the Award of Public Contracts contracting authorities are required to consider appropriate means of energy efficiency in the context of technical specifications and award criteria. The Public Procurement Tribunal considered that the award of bonus points for an environmental power source (such as hybrid drive or electric vehicle), which is offered by the tenderer, constitutes an appropriate consideration within the framework of the evaluation methodology. Although the use of an environmental power source (such as hybrid drive or electric vehicle) might be more or less likely to occur, these considerations do not alter the fact that contracting authorities are required to consider appropriate means of energy efficiency in the manner prescribed by § 4 of the Regulation on the Award of Public Contracts. If the applicant's market knowledge is correct that such vehicles are currently not even procurable for school transport services, then the applicant would actually not be complained by this bonus system. Regardless of the question how to consider energy efficiency in the context of technical specifications, the contracting authority is allowed to freely include bonus points for a more environmental form of power source according to the contracting authority's point of view.

From the perspective of public procurement law, it is essential that the chosen bonus system is applied in a transparent and non-discriminatory way to the competing tenderers. The Public Procurement Tribunal did not have any doubts that the bonus system was transparent and non-discriminatory.

[125] http://www.landesrecht-bw.de/jportal/?quelle=jlink&docid=JURE140020092&psml=bsbawueprod.psml&max=true&doc.part=L&doc.norm=all

2.5.14 ***Germany****: Oberlandesgericht Rostock, Case 17 Verg 4/05* [126]

concerning the legitimacy of an award criterion 'transportation kilometres', judgement of 30 May 2005

Keywords

Environmental protection aspects; environmental award criterion; transportation kilometres; emissions from transport vehicles.

Central statement

The award criterion 'transportation kilometres' is as an extraneous aspect a legitimate award criterion.

Facts of the case

The contracting authority intended to enter into a new contract for the implementation of residual waste disposal (recovery/disposal) for a state capital. One of the award criteria was the facility location in form of transportation kilometres.

The main award criterion is the tender price, which, in addition to the offered disposal costs, also includes the necessary costs for handling and transporting the waste from the handling facility to the disposal facility. In addition to the tender price to be evaluated, the facility location in the form of transportation kilometres is included in the tender evaluation as financial penalty in the following way: ... malus of the determined tender price in EUR/Mg... The malus determined for the facility location is added to the evaluated tender price, which results in the total price. The contract is awarded to the tenderer with the lowest total price. The contracting authority rejected the applicant's tender because the applicant failed to provide adequate evidence for the availability and the sufficient capacities of the facility location. The applicant argued that the award criterion "transportation kilometres" is in violation of procurement law. The Higher Regional Court considered that the applicant's tender was justifiably rejected.

Findings of the court

The applicant cannot be awarded the contract. The applicant's tender was justifiably rejected.

The applicant has not provided efficient evidence clearly required in the tender documents that it has sufficient capacity to treat the residual waste quantities of the concerned state capital in the intended treatment plant. In addition, it has also failed – although this is no longer relevant – to prove that the temporary interim solution required in the contract documents is available for the period of time required.

Furthermore, the applicant's further argument that the tender documents do not apply to public procurement law is also not successful.

The contracting authority was allowed to include the award criterion 'transportation kilometres' as extraneous aspects. The fact that environmental protection aspects can constitute award criteria has not even been denied by the applicant. In view of the considerable emissions arising from transport vehicles, the transport kilometres to the disposal facility constitute a criterion which is related to the subject matter of the contract.

[126] https://dejure.org/dienste/vernetzung/rechtsprechung?Gericht=OLG%20Rostock&Datum=30.05.2005&Aktenzeichen=17%20Verg%204/05 (no free access)

Furthermore, there are no indications that an undue risk would have been imposed on the tenderers with regard to contractual adjustments in the sales price. A guaranteed price over a period of three years is usual contractual regulation for the implementation of residual waste disposal (recovery/disposal).

Since the applicant could not be awarded the contract, the complaint was rightly rejected.

2.5.15 ***Austria****: European Court of Justice, Case C-448/01*[127]

EVN AG and Wienstrom AG versus Republic of Austria concerning the illegality of an award criterion,
judgement of 4 December 2003

Keywords

Environmental criteria; renewable energy sources; most economically advantageous tender.

Central statement

The Community legislation on public procurement does not preclude a contracting authority from applying, in the context of the assessment of the most economically advantageous tender for a contract for the supply of electricity, a criterion requiring that the electricity supplied be produced from renewable energy sources, provided that this criterion is linked to the subject matter of the contract, does not confer an unrestricted freedom of choice on the authority, is expressly mentioned in the contract documents or the contract notice, and complies with all the fundamental principles of Community law, in particular the principle of non-discrimination.

Facts of the case

The defendant in the main proceedings invited tenders by way of an open procedure for the award of a public contract for the supply of electricity. One of the award criteria was impact of the services on the environment in accordance with the contract documents. The award criteria laid down were net price per kWh, with a weighting of 55%, and energy produced from renewable energy sources, with a weighting of 45%. It was stated in relation to the latter award criterion that only the amount of energy that can be supplied from renewable energy sources in excess of 22.5 GWh per annum will be taken into account. The applicants did not provide any concrete figures for the amount of electricity that they could supply from such sources, but instead merely stated that they had their own electricity generating plants in which they produced electricity from such sources. Therefore, the applicants in the main proceedings received the fewest points in respect of both criteria.

The applicants in the main proceedings then instituted review proceedings before the Bundesvergabeamt, seeking, inter alia, annulment of the invitation to tender in its entirety, of a series of individual provisions in the contract documents and of a number of decisions of the contracting authority. Those decisions included, in particular, the decision to make the absence of proof of the production and purchase of electricity from renewable energy sources in a defined period or the absence of proof of future purchase of such electricity grounds for elimination, the decision to make proof of the production or purchase of a defined amount of electricity from such sources over a defined period a selection criterion, the decision to make the availability of electricity from renewable energy sources in excess of 22.5 GWh per annum an award criterion, and the decision refusing to cancel the invitation to tender.

[127] http://curia.europa.eu/juris/liste.jsf?oqp=&for=&mat=or&lgrec=de&jge=&td=%3BALL&jur=C%2CT%2CF&num=C-448%252F01&page=1&dates=&pcs=Oor&lg=&pro=&nat=or&cit=none%252CC%252CCJ%252CR%252C2008E%252C%252C%252C%252C%252C%252C%252C%252C%252Ctrue%252Cfalse%252Cfalse&language=en&avg=&cid=14005344

Findings of the court

The European Court of Justice decided on the question, whether the provisions of Community law relating to the award of public contracts, in particular Article 26 of Directive 93/36/EEC, prohibit a contracting authority from laying down an award criterion in relation to the supply of electricity which is given a 45% weighting and which requires a tenderer to state, without being bound to a defined supply period, how much electricity he can supply from renewable energy sources to a group of consumers not more closely defined, where the maximum number of points is given to whichever tenderer states the highest amount and a supply volume is taken into account only to the extent that it exceeds the volume of consumption to be expected in the context of the contract to which the invitation to tender relates.

The Community legislation on public procurement does not preclude a contracting authority from applying, in the context of the assessment of the most economically advantageous tender for a contract for the supply of electricity, a criterion requiring that the electricity supplied be produced from renewable energy sources, provided that that criterion is linked to the subject matter of the contract, does not confer an unrestricted freedom of choice on the authority, is expressly mentioned in the contract documents or the contract notice, and complies with all the fundamental principles of Community law, in particular the principle of non-discrimination.

As regards the award criterion at issue in the main proceedings, the Court has already held that the use of renewable energy sources for producing electricity is useful for protecting the environment in so far as it contributes to the reduction in emissions of greenhouse gases which are amongst the main causes of climate change which the European Community and its Member States have pledged to combat (Case C-379/98 *PreussenElektra* [2001] ECR I-2099, paragraph 73).

Having regard, therefore, to the importance of the objective pursued by the criterion at issue in the main proceedings, its weighting of 45% does not appear to present an obstacle to an overall evaluation of the criteria applied in order to identify the most economically advantageous tender.

Since there is no evidence to support a finding that the requirements of Community law have been infringed, it must be held that the application of a weighting of 45% to the award criterion at issue in the main proceedings is not incompatible with the Community legislation on public procurement.

The national court is also uncertain as to whether the award criterion at issue in the main proceedings is lawful under Community law, since the contracting authority itself has admitted that it does not have the technical ability to verify whether electricity supplied to it has actually been generated from renewable energy sources and it did not require the tenderers to supply proof of their actual supply obligations or existing electricity supply contracts.

The award criteria must be applied objectively and uniformly to all tenderers. The principle of equal treatment implies an obligation of transparency in order to enable verification that it has been complied with, which consists in ensuring, inter alia, review of the impartiality of procurement procedures. Objective and transparent evaluation of the various tenders depends on the contracting authority, relying on the information and proof provided by the tenderers, being able to verify effectively whether the tenders submitted by those tenderers meet the award criteria. It is thus apparent that where a contracting authority lays down an award criterion indicating that it neither intends, nor is able, to verify the accuracy of the information supplied by the tenderers, it infringes the principle of equal treatment, because such a criterion does not ensure the transparency and objectivity of the tender procedure.

Therefore, an award criterion which is not accompanied by requirements which permit the information provided by the tenderers to be effectively verified is contrary to the principles of Community law in the field of public procurement.

An award criterion that relates solely to the amount of electricity produced from renewable energy sources in excess of the expected annual consumption, as laid down in the invitation to tender, cannot be regarded as linked to the subject matter of the contract.

Moreover, the fact that, in accordance with the award criterion applied, it is the amount of electricity in excess of the expected annual consumption as laid down in the invitation to tender which is decisive is liable to confer an advantage on tenderers who, owing to their larger production or supply capacities, are able to supply greater volumes of electricity than other tenderers. That criterion is thus liable to result in unjustified discrimination against tenderers whose tender is fully able to meet the requirements linked to the subject matter of the contract.

Finally, even assuming that that criterion was a response to the need to ensure reliability of supplies - an assumption which it is for the national court to verify - it should be noted that while the reliability of supplies can, in principle, be numbered amongst the award criteria used to determine the most economically advantageous tender, the capacity of tenderers to provide the largest amount of electricity possible in excess of the amount laid down in the invitation to tender cannot legitimately be given the status of an award criterion.

2.5.16 ***Finland****: European Court of Justice, Case C-513/99*[128]

Concordia Bus Finland Oy Ab versus Helsinggin kaupunki concerning criteria relating to the protection of the environment to determine the economically most advantageous tender, judgement of 17 September 2002

Keywords

Environmental criteria; nitrogen oxide emissions; noise level; economically most advantageous tender.

Central statement

The contracting authority may take into consideration environmental criteria such as the level of nitrogen oxide emissions or the noise level of the buses, provided that they are linked to the subject matter of the contract, do not confer an unrestricted freedom of choice on the authority, are expressly mentioned in the contract documents or the tender notice, and comply with all the fundamental principles of Community law, in particular the principle of non-discrimination.

The principle of equal treatment does not preclude the taking into consideration of criteria connected with the protection of the environment, such as those at issue in the main proceedings, solely because the contracting entity's own transport undertaking is one of the few undertakings able to offer a bus fleet satisfying those criteria.

Facts of the case

The city of Helsinki intended to award the contract for the operation of a route in the urban bus network of Helsinki to HKL-Bussiliikenne. According to the tender notice, the contract would be awarded to the undertaking whose tender was most economically advantageous overall to the city. That was be assessed by reference to three categories of criteria: the overall price of operation, the quality of the bus fleet, and the operator's quality and environment management. As regards the quality of the vehicle fleet, a tenderer could receive a maximum of 10 additional points on the basis of a number of criteria. Thus, points were awarded *inter alia* for the use of buses with nitrogen oxide emissions below 4 g/kWh (+2.5 points/bus) or below 2 g/kWh (+3.5 points/bus) and with external noise levels below 77 dB (+1 point/bus). Concordia (then Swebus) made an application to the Kilpailuneuvosto (Finnish Competition Council) for the decision of the commercial service committee to be set aside, arguing *inter alia* that the award of additional points to a fleet with nitrogen oxide emissions and noise levels below certain limits was unfair and discriminatory. It submitted that additional points had been awarded for the use of a type of bus which only one tenderer, HKL, was in fact able to offer. The Finnish Competition Court dismissed the action.

Findings of the court

Article 36(1)(a) cannot be interpreted as meaning that each of the award criteria used by the contracting authority to identify the economically most advantageous tender must necessarily be of a purely economic nature. It cannot be excluded that factors which are not purely economic may influence the value of a tender from the point of view of the

[128] http://curia.europa.eu/juris/liste.jsf?oqp=&for=&mat=or&lgrec=de&jge=&td=%3BALL&jur=C%2CT%2CF&num=C-513%252F99&page=1&dates=&pcs=Oor&lg=&pro=&nat=or&cit=none%252CC%252CCJ%252CR%252C2008E%252C%252C%252C%252C%252C%252C%252C%252C%252C%252Ctrue%252Cfalse%252Cfalse&language=en&avg=&cid=14005344

contracting authority. That conclusion is also supported by the wording of the provision, which expressly refers to the criterion of the aesthetic characteristics of a tender.

Next, it should be noted that the criteria adopted to determine the economically most advantageous tender must be applied in conformity with all the procedural rules laid down in Directive 92/50, in particular the rules on advertising. It follows that, in accordance with Article 36(2) of that directive, all such criteria must be expressly mentioned in the contract documents or the tender notice, where possible in descending order of importance, so that operators are in a position to be aware of their existence and scope.

It follows from the above considerations that, where the contracting authority decides to award a contract to the tenderer who submits the economically most advantageous tender, in accordance with Article 36(1)(a) of Directive 92/50, it may take criteria relating to the preservation of the environment into consideration, provided that they are linked to the subject matter of the contract, do not confer an unrestricted freedom of choice on the authority, are expressly mentioned in the contract documents or the tender notice, and comply with all the fundamental principles of Community law, in particular the principle of non-discrimination.

With respect to the main proceedings, it must be stated, first, that criteria relating to the level of nitrogen oxide emissions and the noise level of the buses, such as those at issue in those proceedings, must be regarded as linked to the subject matter of a contract for the provision of urban bus transport services.

Next, criteria whereby additional points are awarded to tenders which meet certain specific and objectively quantifiable environmental requirements are not such as to confer an unrestricted freedom of choice on the contracting authority.

Consequently, the contracting authority may take into consideration environmental criteria such as the level of nitrogen oxide emissions or the noise level of the buses, provided that they are linked to the subject matter of the contract, do not confer an unrestricted freedom of choice on the authority, are expressly mentioned in the contract documents or the tender notice, and comply with all the fundamental principles of Community law, in particular the principle of non-discrimination.

The fact that one of the criteria adopted by the contracting entity to identify the economically most advantageous tender could be satisfied only by a small number of undertakings, one of which was an undertaking belonging to the contracting entity, is not in itself such as to constitute a breach of the principle of equal treatment.

The principle of equal treatment does not preclude the taking into consideration of criteria connected with protection of the environment, such as those at issue in the main proceedings, solely because the contracting entity's own transport undertaking is one of the few undertakings able to offer a bus fleet satisfying those criteria.

2.5.17 ***Austria****: Verwaltungsgerichtshof, Case Ra 2017/04/0124-5*[129]

concerning the award criterion 'strain on the public road network due to truck transport',
judgement of 17 April 2020

This case has been found to be of interest, because of its concern with environmental criteria as an award criterion. Furthermore, the contentious point concerns the use of transport kilometres which on the one hand has environmentally a high relevance to the avoidance of transport kilometres and on the other hand may be regarded as an unacceptable regional criterion.

Keywords

Environmental criteria; strain on the public road network; transport kilometres; truck transport.

Central statement

If the tender documents require the address of departure of the offered mixing plant or the facility location where the truck actually uses the public transport network for the first time, it is irrelevant if the exit from the office building nearby could actually be used by construction measures or if it could be used from a legal perspective at the time of bidding. The depending award criterion "*Load of the public road network by truck transports*" is a promise of performance that is directed towards the future. The specified exit already existed at the time of the bidding. It was possible to use it at the time the service was provided.

Facts of the case

The contracting authority intended to enter into a new contract for road construction and earthworks. One of the award criteria was the strain on the public road network due to truck transport. Based on the tender documents the tenderer had to calculate the distance from the mixing plant or the facility location according to the specifications in the tender documents by using Google Maps[130]. The address of departure had to be the address of the offered mixing plant or the facility location. For this purpose, the starting position must be positioned in the distance program by the left mouse button, if necessary, exactly at the point next to the mixing plant or the facility location where the truck uses the public transport network for the first time. The distance in kilometres is to be indicated by the tenderer properly rounded up to whole kilometres. If, contrary to this rounding rule, the tenderer declares a shorter mileage, the tenderer will not be awarded points for this award criterion. If the tenderer declares a longer distance in kilometres, this information is used to determine the winner of the tender.

The applicant's offer did not include a detailed address or graphic maps where the exact position of the mixing plant or facility location as well as the exact position where the truck uses the public transport network for the first time was clearly evident. The contracting authority requested that the applicant named the exact facility location and the exact address. Subsequently the applicant named the address of departure where the truck uses

[129] https://www.ris.bka.gv.at/Dokument.wxe?ResultFunctionToken=b9109431-4505-4e75-a55f-7c9e4aba06d3&Position=1&SkipToDocumentPage=True&Abfrage=Vwgh&Entscheidungsart=Undefined&Sammlungsnummer=&Index=&AenderungenSeit=Undefined&SucheNachRechtssatz=True&SucheNachText=True&GZ=&VonDatum=17.04.2020&BisDatum=17.04.2020&Norm=&ImRisSeitVonDatum=&ImRisSeitBisDatum=&ImRisSeit=Undefined&ResultPageSize=100&Suchworte=&Dokumentnummer=JWT_2017040124_20200417L00

[130] https://www.google.at/maps

the public transport network for the first time. But at this address of departure was the access road to an office building but not to the facility location of the gravel mining. On the day on which the offer was received this address of departure could not be used with trucks that came from the facility location of the gravel mining. Therefore, the applicant did not name the exact address where the truck uses the public transport network for the first time in the offer. Therefore, the applicant did not receive any points for this award criterion. The Higher Administrative Court considered that the action was not justified.

Findings of the court

Based on the evaluation of the tender documents the address of departure had to be the address of the offered mixing plant or the facility location where the truck actually uses the public transport network for the first time. Therefore, it was irrelevant whether the exit from the office building could actually be used by construction measures and whether it could be used from a legal perspective. The subsequent construction of access and exit roads to the mining fields of the applicant would give the applicant a competitive advantage by shortening the distance in kilometres. In the interests of equal treatment and transparency, the verification of the information on the award criteria and the relevant evidence was therefore only possible with regard to the time of the opening of the tenders.

The Higher Administrative Court concluded that based on the tender documents the Regional Administrative Court concluded, on the basis of an interpretation that was not unreasonable, that the applicant was rightly awarded zero points for this award criterion.

2.5.18 Additional Finding related to LCA

Additionally, a case from Denmark has been discussed by the authors of this study as it shows possible direct links to EF/LCA information but has no direct connection to procurement law.

This case was considered relevant, as the contentious point is a direct comparison of environmental impact (of Paper Wool vs. Rockwool). If the PEFCR on thermal insulation had been in place and recognised in 2011, conducting an Environmental Footprint study comparing the own product with the EU-market average could have been a meaningful alternative for Papiruld Danmark. Of course, the assertion using Rockwool's information directly would still have been inappropriate.

Denmark: DK Case V-62-11 Paper Wool – Deceptive and Unsuitable Statements[131]

"A number of environmental statements and claims used by the defendant in the marketing of its insulation materials were found to be misleading and inappropriate and thus contrary to Paragraphs 1 and 3 of the Marketing Act. Some of the statements also constituted comparative advertising contrary to section 5 of the Marketing Act. By one of the statements, the defendant had also infringed the plaintiff's trademark rights. The defendant was dismissed as inadmissible with regard to the applicant's lack of interest and failure to act."

Rockwool A/S (Advocate Claus Barrett Christiansen) versus Paper Wool Denmark (Advocate Jane Frederikke Land)

Background of the proceedings and the form of order sought by the parties

The case was originally instituted by the Court of Justice on 10 June 2011, following a bailiff case before the Court of Hillerød on whether to prohibit Papiruld Denmark in its marketing to use various environmental claims and statements as well as statements about the fire resistance of paper wool, the working environment and price comparison. Following the proceedings, Rockwool A/S made a number of further allegations prohibiting the marketing of Papiruld Denmark, for infringement of the trademark rights and fines of Rockwool A/S.

"The appendix (…*of the marketing brochure from Papiruld Danmark…*) mentions the insulation value of paper wool together with batts from, among others, Rockwool, whose products are stated to be 73% worse than declared. According to the choice of words, a direct link is made between properties of products belonging to Papiruld Danmark and Rockwool's products, which are competing companies. After the presentation of evidence, Papiruld Danmark has not provided evidence - by presenting studies from recognised institutions - for the correctness of the statement." (Translation from Danish to English)

[131] https://www.selskabsadvokaterne.dk/domme/soegs=kraenkelseplusafplusvaremaerkerettighed/

3 USE OF PUBLIC PROCUREMENT PROCEDURES THAT INCLUDE EF/LCA-BASED CRITERIA

This chapter provides an overview of the use of EF/LCA-based criteria in public procurement procedures in nine selected EEA-countries. The structure of the chapter is as follows:

- the research approach is described
- tenders with LCA-based criteria are described,
- an overview of identified LCA-based criteria is given,
- detailed information for each of the nine EEA countries is provided in the form of country fiches and finally,
- conclusions are drawn with regard to the use of LCA-based criteria in public procurement procedures.

The study tries to capture the currently used EF/LCA-based criteria as comprehensively as possible. Nevertheless, it does not aim to present an exhaustive overview on existing instruments in the nine EEA countries that it covered.

Because no public tenders were identified that included EF-criteria, the study uses the term LCA-based criteria instead of EF/LCA-based criteria when presenting the results.

3.1 Research approach

As a first step, the authors of this study screened public tenders for keywords like "Life Cycle Assessment (LCA)", "Carbon Footprint (CF)", "Environmental Footprint (EF)", "environment", "CO_2", "carbon", "GHG" etc. in the respective language, in order to identify those tenders that included EF/LCA-based criteria. The screened public tenders were selected using the database Tenders Electronic Daily (TED). TED offers contract notices for EU-wide tenders for each of the EU Member States. The contract notices usually include a link to the national, regional or organisation-wide electronic platform that offers the procurement documents for unrestricted and full direct access, free of charge. There are a number of electronic platforms in each of the EU Member States. Next to the EU-wide tenders, tenders below the threshold for EU-wide announcement were selected from these national, regional or organisation-wide electronic platforms and also screened for the keywords mentioned above.

Tenders Electronic Daily (TED)

Calls for tenders from EU Member States that exceed certain value limits have to be published in the Official Journal of the EU. TED is its online version.

TED offers different kinds of notices for public tenders. For all of these notices, the European Commission provided the template. The most common is the contract notice, an approximately 4 page description of the tender completed by the Contracting Authority. Next to the contract notice, there are for example notices for design contests, for dynamic purchasing systems and for work or service concessions.

These notices include a link to an e-procurement platform where usually "the procurement documents are available for unrestricted and full direct access, free of charge".

Some contract or other notices published on TED offer information that LCA-based criteria are included in the tender. But for a majority of tenders with LCA-based criteria, the notices did not offer any hints about there being this kind of criteria included in the tender.

It happened several times that while the link to the procurement documents came with the information that the procurement documents would be available

for unrestricted access, this was not the case. In these cases, different tenders were selected.

TED does not offer any public tenders from Switzerland. All public tenders in Switzerland are published on the e-procurement platform simap.ch and none is published on TED. The platform simap.ch requires registration and a fee. Additionally, the platform intelliprocure.ch, offered by the Digital Sustainability Research Center (University of Bern) is open for procurers, suppliers and other organizations and includes all tenders that were published on simap.ch. It also offers a thorough and very valuable search function. Because all procurement documents are uploaded on intelliprocure.ch, the search for key words does not only include the contract notices (unlike the TED platform), but all procurement documents.

Identification of tenders with LCA-based criteria and their responsible contracting authorities

The research approach described above proved to be of limited success. A refined search of keywords among the contract notices in TED brought only those few tenders into light for which the contract notices included an information about the use of LCA-based criteria. An additional selection and screening of tenders was conducted based on the contracting authorities and the product groups that seemed promising based on the analysis from the mapping of national rules on the integration of EF/LCA-based criteria. This selection approach turned out to be a search "for the needle in the haystack".

Therefore, the authors of the study complemented the research approach as follows: they contacted GPP experts from the regional and national level (starting with experts from DG ENV's GPP AG) and asked for information about the use of identified LCA-based criteria in public tenders. In most of the nine EEA-countries, these experts were able to offer tender documents, contact of contracting authorities or contacts to further experts. The following figure explains the two approaches to identify contracting authorities that developed tenders with LCA-based criteria and the associated tender documents.

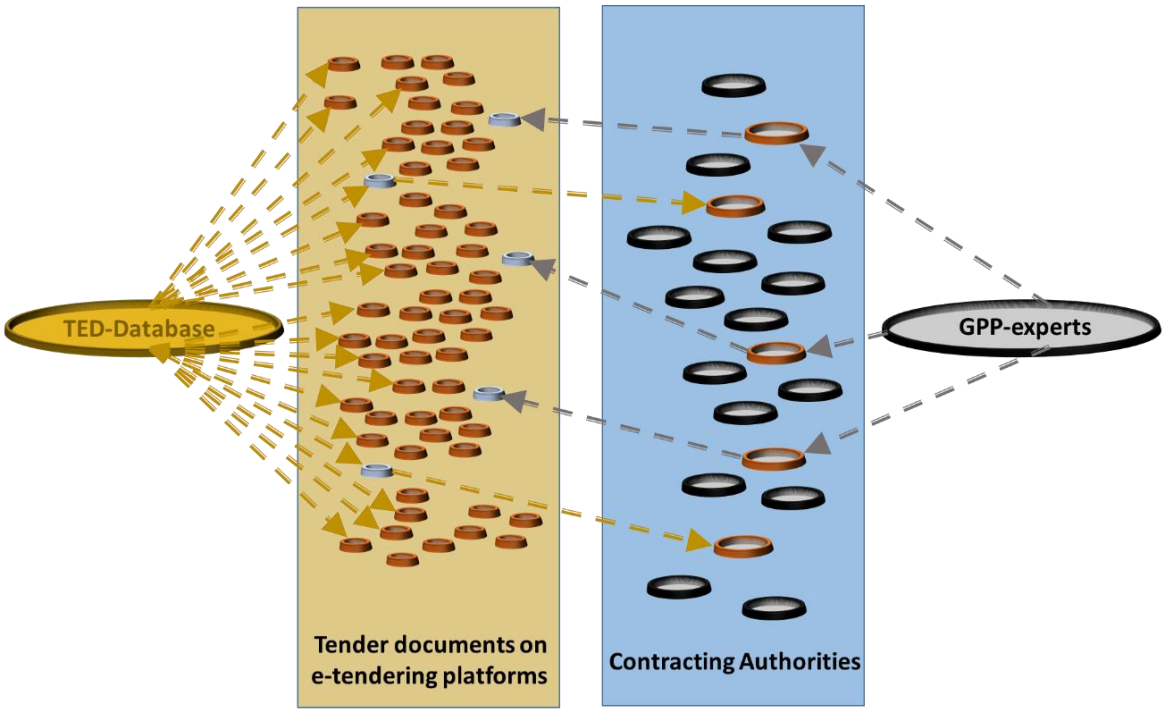

Fig. 1: Two approaches to identify tender documents with EF/LCA-based criteria and contracting authorities that developed these tenders.

Assessment of tenders

The tender documents were screened for the following information:

- Title, name of the contracting authority, contact of a responsible person in the organisation, year of the submission date, name of the national e-tendering platform
- Categorization of the EF/LCA-based criteria identified (if any)
- Description of how the EF/LCA-based criteria is used in the tender (award criteria, etc.)
- Copy of the criteria, description of the information that has to be provided by the tenderer,
- Description of the method to "calculate" the EF/LCA-based criteria, availability of a calculation tool
- Information about verification of the criteria
- Value of the tender

Interviews with contracting authorities and tenderers

Next to the information gained directly from the tender documents, the study aimed for further information:

- Numbers of procedures launched using EF/LCA-based criteria since 2016, numbers of contracts signed and amount of money spent on these contracts
- Experience of contracting authorities and tenderers with EF/LCA-based criteria
- Benefits and barriers for the application of EF/LCA-based criteria

This information was collected by conducting interviews with contracting authorities and tenderers. The interviews were conducted via email, web-meetings or telephone calls.

The following questions were presented to the contracting authorities:

1. In your tender [information about the tender] you have included [identified EF/LCA-based criteria]. Is this the first tender where you have included this criterion or a criterion with similar content or since when is your organisation familiar with tendering in that way?
2. Could you indicate the budget for this tender?
3. In what kind of tenders do you include this or similar criteria? (in all, regarding specific product groups like (…), in tenders for contracts with bigger volumes, etc.)
4. Where does the methodology behind the criterion come from?
5. Did the use of [identified EF/LCA-based criteria] have an impact of the number of bids or on the quality of the tenders?
6. Did you need an external expert for the use of this criterion in the tender?
7. Do you have any indication about increased costs for the contract(s) as consequence of using these kind of criteria in the tender(s)?
8. Could you please tell us some pros and cons using this kind of criteria?
9. Will you continue to use this kind of criteria in your tenders, or will you do something different in the future?
10. Are you satisfied with the execution of the contract?
11. We would also like to conduct an interview with the tenderer that won (or applied to the tender) the contract about the assessment, verification procedure and experiences with the criteria. Could you provide us the name of the tenderer and relevant bidders or otherwise, forward our questions in our name?

The following questions were presented to the tenderers:

1. Do you have experience in providing information for this kind of criterion [identified EF/LCA-based criteria]?
2. How much time did you/your staff need to provide the necessary information?

3. Do you see benefits in using these kind of criteria and if yes, which benefits would you highlight?
4. According to your experience, which were the main hurdles for you to comply with the criteria, to offer data and information/proof regarding that criterion? Did you need external support to provide the information?
5. Did you ever come across tenders from other public procurers with LCA-, PEF- or LCC (including environmental externalities) related criteria? If yes, could you please provide us the name of the responsible contracting authority?

The complemented research approach made it necessary to also contact national and regional GPP experts. These intermediaries were asked for information about LCA-based criteria in public tenders, contracting authorities that use EF/LCA-based criteria in their tenders and further intermediaries who might have information on LCA-based criteria in public tenders.

Difficulties concerning the interviews and solutions taken

The study design foresaw 90 interviews with contracting authorities and tenderers. Due to the difficulties to identify tenders with EF/LCA-based criteria only by screening tenders downloaded from e-tendering platforms and the resulting necessity to carry out a complementary second approach, additional interviews with regional and national GPP experts were necessary.

Additionally, interviews with contracting authorities that were recommended by GPP experts and whose tender documents were usually not known prior to the interviews, made it necessary to talk about EF/LCA-based criteria and their integration in the tender before asking the questions mentioned above. Thus, these interviews took usually considerably longer than the 10 minutes intended in the study design. Another hurdle became apparent in the interviews with contracting authorities. While most contracting authorities were willing to pass information – if available – about the opinions of tenderers with regard to LCA-based criteria, there was a reluctance to pass on contacts of tenderers. Furthermore, if contacts were available, most of the contacted persons chose not to reply.

The results from the interviews cannot be considered representative. The number of interviews per selected EEA-country, with contracting authorities and with tenderers in countries with different framework conditions regarding the LCA-based criteria would have been too small. It should be borne in mind that the results from the interviews are not representative but represent individual assessments with no certainty that they can be generalized.

All assessment steps were carried out using search words linking and requesting information from interviewees to equally EF and LCA-based information. Nevertheless, there were no direct examples of current implementation of EF-based criteria in public tenders revealed from the nine EAA countries under study. Due to this fact, the following analysis and the content of the nine country fiches relate to "LCA-based criteria" only.

Country Fiches

For each country, a country fiche was developed. These fact sheets are between 3-10 pages long, depending on the abundance of information identified in each of the countries. They offer the following information:

- Specific framework in the country addressing environmental criteria and LCA-based information
- "In a nutshell": Description of LCA-based instruments identified in public procurement procedures in this country
- "In a nutshell": Integration of those instruments within the procurement process
- Benefits and limits of LCA-based criteria – perspective of contracting authorities
- Benefits and limits of LCA-based criteria – perspective of suppliers
- Conclusion

The content of the Country Fiches is processed and included in this report. The content regarding the rationale and findings of legal documents, guidance, etc. is part of chapter 2.3.3. The other points are shown in chapters 3.4-3.7. The country fiches themselves are not directly included in the annex of the main report, but accompany this report as separate documents.

3.2 Categorisation of LCA-based criteria

LCA-based criteria in public procurement procedures focus on the environmental impact of the tendered products, services or works. It can cover the whole life cycle or only certain of its elements, such as the environmental impact of transport. As with all environmental criteria, there are different options for the implementation of LCA-based criteria in the public procurement process. They may be used in the design and planning stage, the tender (via inclusion as award criteria or other types of criteria) or in the post-tendering stage (e.g. monitoring).

In addition, LCA-based criteria identified in public procurement procedures can be categorized according to whether they consist fully of LCA information, or if they stand for a larger system that includes LCA information as well as criteria which is not LCA-based. In this study, four of these larger systems were identified: Life Cycle Costs, ecolabels Type I, Environmental Product Declarations and Building Certifications Schemes. This categorization assigned the identified LCA-based criteria to one of the following five categories:

1. Criteria accompanied by an LCA-based instrument to quantify the respective environmental impact(s).
2. Criteria that require Life Cycle Costs (LCC) including the calculation of the costs resulting from environmental externalities - which are based on the environmental impact(s).
3. Criteria that require a certain ecolabel (Type I) or parts of its underlying criteria that include quantified LCA-based information.
4. Criteria that require an Environmental Product Declaration (EPD) as proof that the tendered products, services or works meet certain limit values for environmental impact(s).
5. Criteria that require a certain level of a Building Certification Scheme, which is based on EPD-results according to EN 15804 or another LCA-based instrument.

3.3 Tender Assessment

In the study, **a total of 207 tenders** were assessed. Of these, **61 tenders** included LCA-based criteria:

- 22 tenders included criteria accompanied by LCA methods or instruments.
- 17 tenders required a Building Certification Scheme (that included LCA-based instruments)
- 2 tenders required an ecolabel that included LCA-based instruments directly within their requirements and further 8 tenders required an ecolabel without any LCA-based requirements directly included.
- 4 tenders included LCC that also calculated the costs of environmental externalities
- 1 tender required an EPD
- 7 tenders required **other** kind of (LCA-based) information

Among the seven tenders that required other kind of information, five tenders included instruments to calculate "tank-to-wheel" emissions from vehicles. These emissions tackle only a small part of the life cycle of vehicles (focussing only on direct emissions during use stage) and are therefore not interpreted as actual LCA-based information. Due to this, the instruments to quantify these direct emissions (e.g. the Ecoscore calculator) are not included in the description of LCA-based instruments below.

No tenders were identified that included the Environmental Footprint method. This may change in the near future in Italy – if tenders implement the criteria according to CAM mentioning the Made Green in Italy Certification/Label as means of proof[132].

3.4 Overview of identified LCA-based instruments

The table below describes 32 LCA-based instruments identified in the tender assessment and the interviews with GPP experts. Some of them are just being developed and are not used yet in public procurement procedures. These LCA-based instruments are labelled with "DRAFT". All identified LCA-based instruments are presented according to the categories defined in 3.2.

Tab. 1: Overview of identified LCA-based instruments

Category	Number of LCA-based instruments
Criteria accompanied by LCA methods or instruments	15
Criteria accompanied by LCA-based tools	*10*[133]
Criteria asking for an LCA	*5*[134]
Criteria that require LCC	5
Externalities: GHG/CO_2	*2*[135]
Externalities beyond GHG/CO_2	*3*[136]
Criteria that require a certain ecolabel	5[137]
Criteria that require an EPD	1[138]
Criteria that require a Building Certification Scheme	3[139]
Other criteria	3[140]

The highest number of LCA-based criteria identified in public tenders can be assigned to the first category, criteria accompanied by LCA methods or instruments. In this category, the majority consists of criteria accompanied by LCA-based tools (10).

The following table shows the subjects for which the LCA-based instruments can be applied. The sum of the following instruments is 34 because two instruments are calculated twice. One of them was used for construction and laundry services and the other for laundry services on the product level and laundry services on the corporate level and was calculated

[132] See description for "Italy" in section 2.4.3 above.

[133] The 10 tools are: Klimakalkyl (SE), TOTEM (BE), Wood calculator (CH), Textile calculator (CH), Concrete Calculator (CH), Higg Material Sustainability Index (BE), SBB Tool (CH), Carbon Footprint and Energy Efficiency Quantification Tool (FR), Oekoindex (AT), LCAByg (DK).

[134] The 5 criteria asking for an LCA are: Made Green in Italy (IT), Product Carbon Footprint (DK), LCA according to ISO 14040/14044 (IT), Corporate Carbon Footprint or water footprint (IT), CO2-performance ladder (NL, BE).

[135] The 2 LCC incl. environmental externalities related to GHG/CO2 are: OEBB TCO-CO2 (AT), Intercent ER – LCC for Vehicles.

[136] The 3 LCC incl. Environmental externalities beyond GHG/CO2 are Mettiamoci in RIGA project (IT), Enviro-nmental Cost Indicator (NL), Road vehicles according to Directive (EU) 2009/33/EC (DE).

[137] The 5 ecolabels are Catering (AT), Thermal Insulation Composite Systems (AT), Rigid foam insulation materials made from polymers (AT), Tissue Paper (DK, SE) and Textile laundry service (DK, SE).

[138] The criterion that requires and EPD is called EPD according to ISO 14025 (IT).

[139] The 3 building certification schemes are DGNB/BNB (DE, AT, DK), klimaaktiv (AT), Minergy Eco (CH).

[140] The 3 other criteria are CO2 Pulp/paper (AT), GHG distance (AT), NBBW (DE),

in the product group "laundry services" and "corporate level". For the LCA-based instruments applied for the company (and not to a product), the "product group" is called "corporate level".

Tab. 2: Number of LCA-based instruments for different subjects

Subject	Number of LCA-based instruments
Construction (buildings and civil engineering)	14
(Tissue) paper	3
Textiles	2
Vehicles	2
Laundry services	2
Coffee cups	1
Catering	1
Sanitary waste	1
Miscellaneous	5
Corporate level	2

The table shows that the majority of LCA-based instruments identified in public tenders are meant to be used in the construction product group. Three different LCA-based criteria were identified in tenders for tissue paper. For other product groups there were no more than one or two LCA-based criteria that could be found in public tenders.

3.4.1 Criteria accompanied by an LCA-based method or instrument to quantify the respective environmental impact(s)

The criteria described in this category is divided in two groups: The first group describes LCA-based criteria that come with a calculation tool. The second group of criteria ask for an LCA.

Criteria accompanied by LCA-based tools

LCA-based tool at the product level: Climate calculation tool – Carbon Footprint of Construction – Klimatkalkyl (SE)
The most advanced tool used today in public procurement is the climate calculation tool "Klimatkalkyl"[141], developed by the *Swedish Transport Administration (Trafikverket)*. The model applies basic principles of LCA in accordance with ISO 14040 and ISO 14044, and further specified calculation rules for all construction products according to EN 15804. However, it is not completely compliant because it only includes Global Warming Potential (GWP) and primary energy and not all the impact categories that are to be included *according to EN 15804. The tool includes a generic database with background data, which* can be replaced with specific data for the used project materials. Contractors have to use verified data from Environmental Product Declarations.

LCA-based tool on product level: TOTEM Building tool (BE)
TOTEM Building[142] is a free online tool developed collaboratively by the three Regions of Belgium in order to help the Belgian construction sector analyse and reduce the environmental impact of buildings. TOTEM stands for **T**ool to **O**ptimise the **T**otal **E**nvironmental impact of **M**aterials. The TOTEM tool's development followed a

[141] https://www.trafikverket.se/tjanster/system-och-verktyg/Prognos--och-analysverktyg/Klimatkalkyl/

[142] https://www.totem-building.be

methodological framework in accordance with current European standards (EN 15804, EN 15978, EN 15643-2 and TR 15941).

The TOTEM tool can help create a model of a specific building as a whole, including floors, walls, roof, energy use, etc. Its data library includes generic component data sourced from the LCA inventory database Ecoinvent[143], as well as specific component data sourced from the *Belgian federal Environmental Product Declaration (EPD) database*[144]. Based on the model, results are calculated using the CEN (climate change, ozone layer depletion, acidification, eutrophication, photochemical oxidant formation) and CEN+ (human toxicity cancer and non-cancer, particulate matter formation, ionizing radiation, eco toxicity terrestrial, freshwater and marine, land use and change, water scarcity) impact categories. These can be combined into a single score using weighting factors based on the costs to repair the environmental damage caused.

LCA-based tool on product level: Wood calculator (CH)
The Wood calculator**[145]** calculates the environmental impact of production[146], transport and disposal of 1m^3 of processed wood used mainly in construction. It provides information on five different wood processing product groups: sawn timber, soft fibre and chipboard, laminated timber, three-ply panels and cross-laminated timber. The calculator provides results for the following environmental indicators: total primary energy, non-renewable primary energy, renewable primary energy, greenhouse gas emissions and the single score indicator, the Swiss Environmental Impact Points (UBP)[147]. The user must enter the following data (for some data, default values are available):

- wood product's specification (e.g. type of wood, processing)
- wood's country of origin
- distance from the wood's place of origin to the sawmill (default value)
- share of the transport that takes place by truck (default value)
- country of the sawmill's legal address
- distance between the sawmill and Switzerland
- proportion of the wood products' transport that takes place by truck (default value)

The environmental impact's calculation is based on KBOB[148] life cycle assessment data.

LCA-based tool on product level: Textile calculator (CH)
The Textile calculator was developed by the organizations Quantis and BSD Consulting on behalf of the Zurich Environment and Health Protection Agency[149]. It offers two functions. On the one side, it can determine if the environmental and social criteria in the tender are

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[143] https://www.ecoinvent.org/

[144] https://www.health.belgium.be/en/database-environmental-product-declarations-epd

[145] https://treeze.ch/fileadmin/user_upload/calculators/631-Holzrechner_v1.0.xlsx

[146] According to Althaus H.-J., Dinkel F., Stettler C. and Werner F. (2007) Life Cycle Inventories of Renewable Materials. Final report ecoinvent data v2.0 No. 21. EMPA, Swiss Centre for Life Cycle Inventories, Dübendorf, CH, page 29: "Growth of natural wood, i.e. the physiological processes of trees, is normally not covered in LCA. An exception is usually the consideration of the CO2-uptake during photosynthesis and the embodiment of solar energy (de Feyter 1995). In this project the embodiment of solar energy is defined to equal the calorific gross value of the wood. The carbon dioxide uptake is calculated based on the carbon content of wood which for this project is 49.4% (w/w) of dry wood matter".

[147] The Swiss Environmental Impact Points (Umweltbelastungspunkte) are calculated based on the method of ecological scarcity (Methode der ökologischen Knappheit). This method includes a number of different impact categories, for example, emissions to the air, emissions to surface and ground water, emissions to the soil, resource use and waste.

[148] KBOB is the Coordination Conference for Public Sector Construction and Property Services (Koordinationskonferenz der Bau- und Liegenschaftsorgane der öffentlichen Bauherren)

[149] The textile calculator belongs to the City of Zurich, the database belongs to the Swiss LCA-consultancy Quantis Intl.

met by the bid and, on the other, it calculates GHG emissions in the textiles' life cycle (production of the raw material, manufacturing and disposal). The calculation of GHG emissions is based on the World Apparel and Footwear Life Cycle Database (WALDB database) by Quantis, which in turn uses data from the Ecoinvent database. The bidders have to fill out the Textile calculator, while crosschecking by the public procurers is recommended.
The bidders have to include the following information about their offer (e. g. t-shirt), among other, in the calculator:

- weight of the textile
- type and proportion of the three most relevant fibres contained
- production locations, technologies and processes used in the production incl. the raw material production (e.g. cultivation method, spinning technology
- and transport.

Once the bid is opened, the public procurer has to copy the information provided by the bidders to a results sheet in the textile calculator that is only available to the public procurer. As a result, the calculator offers each bids' GHG emissions and compares them with the GHG emissions of a reference product. The textile calculator and overall results as well as the carbon emission calculations of each of the production steps are made transparent. Only the emission factors are not shown to the bidders for reasons related to the LCA software's licence protection.

LCA-based tool on product level: Concrete Calculator (CH)
The Concrete calculator for planners was developed on behalf of the City of Zurich. It can calculate the environmental impact of production, including the extraction of raw material[150] and end-of-life of different variants of concrete. The calculator provides results for the following environmental indicators:

- total primary energy
- non-renewable primary energy
- renewable primary energy
- GHG emissions
- and the single score indicator, the Swiss Environmental Impact Points (UBP)[151].

The calculator is based on data from the LCA database developed by the "Koordinationskonferenz der Bau- und Liegenschaftsorgane der öffentlichen Bauherren (KBOB)[152]", which is based on the LCA database Ecoinvent LCA. KBOB is the Coordination Conference for Public Sector Construction and Property Services. Users must provide the following information:

- area of the concrete's application, e.g. concrete for building construction or civil engineering
- cement type
- composition of aggregates: proportion of natural aggregate (R_u), proportion of concrete granulate (R_b) and proportion of mixed granulate (R_c).

LCA-based tool on product level: Higg Material Sustainablity Index (BE)
The Higg Material Sustainability Index (MSI)[153], an online tool developed by the Sustainable Apparel Coalition, can help assess the cradle to gate environmental impact of apparel, footwear and home textile products. The tool contains a material database with background

[150] The environmental impact of the construction phase is not included.

[151] The Swiss Environmental Impact Points (Umweltbelastungspunkte) are calculated based on the method of ecological scarcity (Methode der ökologischen Knappheit). This method includes a number of different impact categories, for example, emissions to the air, emissions to surface and ground water, emissions to the soil, resource use and waste.

[152] https://www.kbob.admin.ch/kbob/de/home.html

[153] https://howtohigg.org

and inventory data from several sources, including the GaBi life cycle database[154], and it calculates results on five impact categories: global warming potential, eutrophication, water scarcity, abiotic resource depletion and toxicity (eco toxicity and human toxicity). In addition, it assigns a single score to each material, allowing the comparison of overall environmental impact between them. MSI is available for free, with some extra features for paying members of the Sustainable Apparel Coalition.

LCA-based tool on product level: Schweizer Bundesbahnen - LCA-Tool (SBB Tool) (CH)
The Swiss Federal Railways (SBB) usually uses an Excel file developed by themselves as LCA-based instrument in the pre-tendering stage to roughly analyse the environmental hot spots in the life cycle of the product under interest (applicable to various types of products). They also use this Excel file to develop specific environmental criteria for the tender (i. a. for lighting solutions or technical equipment). For those tenders where a rough analysis is not sufficient, an external expert organisation develops an LCA under contract of the *SBB*.

The *SBB* also has started to use an LCA-based instrument in the tendering stage, a simple excel-sheet, which is currently being improved. So far, only a small number of tenders have used this LCA-based instrument to assess the environmental impact (GHG emissions, cumulative energy demand (CED) and the single score indicator, the Environmental Impact Score (UBP)) of parts of the life cycle, for example the impacts from transportation. In this specific case, the procurer made the LCA-based instrument available to the bidders.

LCA-based tool on product level: Carbon Footprint and Energy Efficiency Quantification Tool - Ville de Malaunay (France)
In 2014 the contracting authority of Ville de Malaunay started to use the LCA approach with focus on carbon foot printing in the planning and design stage for the restructuring of a sports centre[155]. They compared two options – renovating or demolition and new building. Since then, the city's government pushed for further development of this approach to be implemented in tendering. An external consultancy was hired to set up an excel-based spreadsheet model for the direct and comparative quantification of GHG effects and energy performance according to construction and restructuring projects tendered by Malaunay's responsible procurement department. This approach has been followed through for each respective tendering process since then.

LCA-based tool on product level: Oekoindex (AT)
Oekoindex (OI3) quantifies the environmental impact of construction materials. It is a single score indicator based on three environmental impact categories:

- global warming potential (GWP)
- acidification potential (AP)
- total use of non-renewable primary energy resources (PENRT)

To calculate the *Oekoindex*, the user can choose among six system boundaries, from the material used for the thermal building envelope (the most basic system boundary called BG0) up to the most detailed system boundary, whole buildings (BG6). The data used to calculate OI3 are either generic values from the *baubook*[156] tool or product specific values from Environmental Product Declarations (EPD). Various software programs[157] are available to calculate the OI3.

[154] http://www.gabi-software.com/databases/

[155] https://www.arec-idf.fr/fileadmin/DataStorageKit/AREC/Etudes/pdf/arec_fiche_batsportif_sept19.pdf

[156] http://www.baubook.at

[157] For example Eco2soft (https://www.energieinstitut.at/unternehmen/energie-und-umweltwissen/werkzeugkasten/baubook-eco2soft/) , Archiphysik (https://archiphysik.at/oekoindex-oi3-die-oekologische-bewertung-von-gebaeuden/)

LCA-based tool on product level: LCAByg (DK)
LCAByg[158] is a Danish Life Cycle Assessment tool free of use for buildings developed by the Danish Building Research Institute. It uses the German database oekobaudat[159] that.

Criteria that asks for an LCA

LCA on product/service level: full LCA according to ISO 14040/44 (IT)
The region Emilia-Romagna, with its contracting authority Intercent-ER, applied LCA-based criteria in a tender[160] on collection and removal of sanitary waste (medicines and needles) in 2018. The supplier was required to present an LCA study according to ISO 14040/44 one year after signing the contract to show the environmental impacts connected to the actual waste removal.

LCA on Product/service level: Made Green in Italy according to PEF (IT) - DRAFT
The certification scheme Made Green in Italy requires procurers to include the environmental criteria reported in the technical specifications section of the CAMs (Minimum Environmental Criteria) foreseen by GPP. In this case, the application of the scheme Made Green in Italy guarantees compliance with the technical specifications of the CAMs. As Product Category Rules for products and services are currently under development, there is no tender example available from practice yet, adopting criteria with a direct reference to Made Green in Italy.

LCA on product/service level: Product Carbon Footprint (according to GHG Protocol or other recognised standards) (DK)
Region Midt is looking to replace single use plastic cups and other articles for more sustainable alternatives with the same functions. To achieve this, they required the tenderer to provide documentation showing that the new product was at least equal in environmental impact to the product being replaced by means of CO_2 calculation for the product during its lifetime. They refered to the tool GHG Protocol[161] as a valid reference, but still required third-party verification of CO_2 data. The parties involved identified this instrument themselves, as the tender itself does not mention LCA-based or CO_2-related requirements in the text available on the Tender Electronic Daily platform.

LCA on product service or corporate level: Water footprint according to ISO 14046 or corporate carbon footprint according to ISO 14064-1 (IT)
One tender[162] by the region Calabria identified for this study integrated the newly adopted CAM on industrial laundry services, requesting "the possession" of a corporate carbon footprint according to ISO 14064-1 and/or an ISO 14046 water footprint.

LCA on corporate level: CO_2-performance ladder (BE, NL)
The CO_2 Performance Ladder, a certification scheme for organisations, assigns companies taking part in the scheme to one of five performance levels. The level assigned depends on their CO_2 performance, as shown in their corporate carbon footprint, their emission reduction targets and their measures, transparency and participation in initiatives to reduce their sector's footprint. Reporting on other GHG emissions, such as methane, were still optional at the time of writing. Certified companies are subject to annual audits within the program. The CO_2-performance ladder was developed by the Dutch government task organisation, Prorail[163].

[158] https://www.lcabyg.dk/index

[159] https://www.oekobaudat.de/en.html

[160] https://intercenter.regione.emilia-romagna.it/servizi-imprese/bandi-e-avvisi_new/bandi-chiusi/BANDO_GARA_PORTALE@494338

[161] https://ghgprotocol.org/calculation-tools

[162] https://www.regione.calabria.it/website/portaltemplates/view/view.cfm?20900&20900

[163] https://www.prorail.nl/

3.4.2 Criteria that require Life Cycle Costs (LCC) including the calculation of the costs of environmental externalities - which are based on the environmental impact(s).

The criteria described in this category is divided in two groups. Both describe LCC calculations that include the calculation of environmental externalities. The first group describes criteria for which the calculation of environmental externalities relate to GHG/CO2, and the second group describes criteria for which the environmental externalities go beyond GHG/CO2.

LCC incl. environmental externalities related to GHG/CO2

OEBB TCO-CO2 (AT): DRAFT
The *Austrian Federal Railways (ÖBB)* is currently developing a TCO-CO2 calculator. It is an extension of the Total Costs of Ownership (TCO) calculation already used by the company. The TCO-CO2 calculator estimates the costs of GHG emissions. ÖBB developed the tool together with the Technical University of Graz. It requires the following data:

- Production: The bidder can either use data for energy consumption and GHG-emissions from an EPD or offer data on the energy consumption of production and the weight of the most relevant materials in the product (in terms of weight).
- Transport and construction: The bidder has to offer data on distances, means of transport and weight of the construction material as well as data on the transportation of construction workers.
- Use phase: The bidder has to offer data on energy consumption and maintenance.

The calculator adds the GHG-emissions from the different phases and multiplies them with a monetization factor, which is currently 20 Euro/t CO_2eq monetary value of the sum of GHG-emissions.

LCC-calculation for road vehicles according to Directive (EU) 2009/33/EC[164](DE)
In the meantime, Directive (EU) 2009/33/EC has been revised (new Directive (EU) 2019/1161[165]) but the calculation method from Directive (EU) 2009/33/EC is still part of regulations for public procurement in the EU Member States and some public authorities still apply this method in their tenders.

Intercent-ER: LCC for Vehicles (IT)
The region Emilia-Romagna with its contracting authority *Intercent-ER* required the calculation of LCC, including costs for environmental externalities. The best price for the vehicles tendered was calculated taking into consideration the product's costs during the whole life cycle (including indirect costs for CO_2-emissions) with an excel-based tool provided by the contracting authority.

LCC incl. environmental externalities beyond GHG/CO_2

Environmental Cost Indicator (ECI)/DuboCalc/SBK (NL)
The Environmental Cost Indicator (ECI) is a single score indicator that represents 11

[164] Directive 2009/33/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of clean and energy-efficient road transport vehicles, Official Journal of the European Union, N° L 120, 15.5.2009, p. 5-12, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0033&from=DE

[165] Directive (EU) 2019/1161 of the European Parliament and of the Council of 20 June 2019 amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles, Official Journal of the European Union, N° L 188, 12.7.2019, p. 116-130. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L1161&from=DE

environmental impacts (abiotic raw material depletion, fossil fuel depletion, climate change, ozone layer depletion, photochemical oxidation, acidification, eutrophication, human toxicity, freshwater aquatic ecotoxicity, marine aquatic ecotoxicity and terrestrial ecotoxicity), e. g. for Civil Engineering Design. The indicator's single score weights the different impact categories based on priorities from national policies[166]. The *Ministry of Infrastructure and Water Management (Rijkswaterstaat)* developed a shadow price method for monetization of impacts included in the ECI as part of DuboCalc in 2004. The shadow price is the government's highest permissible cost level (prevention costs) per unit of emission control. Rijkswaterstaat has not updated the method since 2004.
The table below shows an overview of the main elements for calculating the ECI. The result for each environmental impact category reflects the outcome of the characterized effect scores, multiplied by the weighting factors for each unit. There is therefore no prior normalization.

Environmental impact category	Equivalent unit	Weighting factor [€ / kg equivalent]	
Depletion of abiotic raw materials (excluding fossil energy carriers) - ADP	Sb eq	€0.16	Raw materials
Depletion of fossil fuels - ADP	Sb eq[8]	€0.16	
Climate change - GWP 100 y.	CO_2 eq	€0.05	Emissions
Ozone layer depletion - ODP	CFC-11 eq	€30	
Photochemical oxidation - POCP	C_2H_4 eq	€2	
Acidification - AP	SO_2 eq	€4	
Eutrophication - EP	PO_4 eq	€9	
Human toxicity - HTP	1.4-DCB eq	€0.09	
Freshwater aquatic ecotoxicity - FAETP	1.4-DCB eq	€0.03	
Marine aquatic ecotoxicity - MAETP	1.4-DCB eq	€0.0001	
Terrestrial ecotoxicity - TETP	1.4-DCB eq	€0.06	

1-point score

Fig. 2: Overview of the main elements for calculating the ECI

Source: Determination Method for determining the environmental performance of buildings and civil engineering works over their entire service life, based on EN 15804, English translation of version 3.0 January 2019 from Stichting Bouwkwaliteit (SBK), table 5 on page 40.

ECI's calculating tool DuboCalc includes the Dutch National Environmental Database (Nationale Milieu Database)[167]. This database contains pre-calculated LCA results for a wide range of building materials and focuses on civil engineering works. It includes generic datasets, but also allows producers to submit their product data for inclusion in the database.

Stichting Bouwkwaliteit (SBK) Assessment Method Environmental Performance of Buildings and Structures.
The Environmental Performance of Buildings and civil engineering works Determination Method was developed by Stichting Bouwkwaliteit (SBK, Foundation for Building Quality) to standardize the calculation of material-related environmental performance of buildings and civil engineering works over their entire life cycle in a clear and verifiable manner. Any datasets entered into the National Environment Database in DuboCalc need to comply with this methodology. The standardised basis for this method is the NEN-EN 15804.

Mettiamoci in RIGA project (IT)
Mettiamoci in RIGA identified LCA- and LCC-approaches, which represent valid instruments to support the public administration in the enhancement of tenders' award criteria, defined within the minimum environmental criteria, in the award phase for their procurement procedures.
The first project report[168] describes a summary of the methodologies for quantification and

[166] RWS report by TNO-MEP 'The price of toxicity. Methodology for the assessment of shadow prices for human toxicity, ecotoxicity and abiotic depletion within DuboCalc', 8 March 2004 (source : method v3 january 2019)

[167] https://milieudatabase.nl/

[168] https://www.minambiente.it/sites/default/files/archivio/allegati/MIR/L4/pubb_a4_web_documento_indirizzo_062020.pdf

verification of environmental impacts across the life cycle of goods and services, which are currently applied in Italy, and which can represent valid tools for promoting development of sustainable product and purchasing policies.

3.4.3 Criteria that specify a certain ecolabel (Type I), whose underlying criteria include quantified LCA-based information.

EU Ecolabel on hard covering products - Commission Decision (EU) 2021/476[169]
The EU Ecolabel on hard covering products contains the same voluntary LCA-based criterion for natural stone (a) energy consumption at the quarry and b) energy at the transformation plant) and for precast concrete products or compressed earth blocks based on hydraulic binders or alternative cements (energy consumption at the precast concrete plant): "3 points shall be awarded where a carbon footprint analysis has been carried out for the product in accordance with ISO 14067 or **5 points if the Product Environmental Footprint method's elements related to greenhouse gas emissions has been used**."

EU Ecolabel on electronic displays[170]
The applicant shall gather from their LCD display suppliers the following information, among other: "Annual fluorinated GHG emissions intensity (in kg CO_2eq per m^2 of flat panel displays (array glass) produced) across manufacturing sites for the most recent year". By presenting this information, the suppliers shall demonstrate their activities to reduce GHG emissions from the production process, including the performance of abatement systems they have installed.

EU ecolabel on tourist accommodation[171]
The EU ecolabel contains criteria for the frequency of preventive maintenance for appliances using fluorinated GHG as refrigerants according to the CO2 equivalents of the refrigerants. It also contains criteria for water-based space heating appliances using refrigerants: "Minimum Seasonal Space Energy Heating Efficiency/refrigerant GWP" values and a GHG emissions limit of "150 g CO_2-equivalent/kWh heating output".

Ecolabel on industrial catering – UZ 200 (AT)
he Austrian ecolabel guideline 200 „Tourism and Leisure Industry" (including hotels, restaurants, catering, industrial catering, event locations, museums and exhibition locations) contains the voluntary criterion "CO_2-emissions"[172]. The relevant tender identified, specified this criterion specifically for the service of "Industrial Catering" (=canteens). The compliance with the voluntary criteria offers a maximum of 3 points. An "Industrial Catering" (canteen) is suitable for certification with the Austrian ecolabel if it complies with the mandatory criteria and obtains a total of 35 points from complied voluntary criteria:

- The enterprise -and/or the premises assesses its CO_2 emissions (e. g. per m^2, per meal) and communicates them actively to its guests (1.5 points)
- The CO_2 emissions generated are offset via recognized climate mitigation projects (3 points).

The Austrian ecolabel guideline 200 „Tourism and Leisure Industry does not describe the method to quantify and report the CO_2 emissions.

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[169] Commission decision (EU) 2021/476 of 16 March 2021 establishing the EU Ecolabel criteria for hard covering products (notified under document C (2021) 1579), Official Journal of the EU No. L 99, 22.03.2021, p. 37

[170] Commission decision (EU) 2020/1804 of 27 November 2020 establishing the EU Ecolabel criteria for electronic displays, Official Journal of the EU No. L 402, 01.12.2020, p. 73

[171] Commission decision (EU) 2017/175 of 25 January 2017 on establishing EU Ecolabel criteria for tourist accommodation, Official Journal of the EU No. L 28, 02.02.2017, p. 9

[172] https://www.umweltzeichen.at/file/Guideline/UZ%20200/Long/Ec200_R7.0a_Tourism-and-Leisure-time-Industry_2018.pdf

Ecolabel on thermal insulation composite systems – UZ 79 (AT)
The Austrian ecolabel guideline 79 includes minimum requirements for thermal insulation composite systems to be eligible for certification. The guideline includes one criterion on GHG-emissions. It provides a threshold for GHG emissions in the life cycle together with the requirement to quantify the GWP according to EN 15804 and to use a specific database (ecoinvent/GaBi). However, no tender was identified that addressed this Ecolabel Guideline.

Ecolabel on waterproof heat-insulating materials made of fossil materials – UZ 43 (AT)
The Austrian ecolabel guideline 43[173] includes minimum requirements for waterproof heat-insulation materials made of fossil materials to be eligible for certification. The guideline includes thresholds for several impact categories (eutrophication, acidification, etc.) together with the requirement to quantify these impact categories according to EN 15804 and to use a specific database (GaBi). However, no tender was identified that addressed this Ecolabel Guideline.

Ecolabel on tissue paper – Nordic Swan (DK, SE)
The Nordic ecolabel scheme uses LCA- or Carbon Footprint-based criteria for some product categories (car care products, grease-proof paper, hotels/restaurants/conference facilities, textile services and tissue paper). Not all of those product groups seem relevant for public procurement. As an example, to obtain a certification on tissue paper, CO_2 emissions from energy and heat production must not exceed certain thresholds, depending on the material composition of the paper. The Nordic ecolabel Criteria Document[174] mentions this criterion and explains it in detail in the Basic Module for Paper Products 2.5, Appendix 2.4[175].

Ecolabel on textile/laundry service – Nordic Swan (DK, SE)
The Nordic ecolabel uses a threshold for the environmental impact category GWP in its guideline for textile/laundry services[176]. However, it is not fully transparent how this threshold is calculated. No tender was identified that addressed this ecolabel Guideline.

EPD according to ISO 14025 (IT)
The region Emilia-Romagna, with its contracting authority *Intercent-ER,* included the carbon footprint in its tender[177] for paper for sanitary use in 2012. In the tender, the supplier was required to indicate which LCA methods they would adopt throughout the product's value chain to quantify the carbon footprint. As means of proof, the supplier had to present an EPD conform to the standard ISO 14025, or an LCA-study conform to ISO 14040/44. The study had to reflect the content of the requirements, the number of products concerned and the quantities described in the tender.

3.4.4 Criteria that require a certain level of a Building Certification Scheme, which is based on EPD-results according to EN 15804.

DGNB/BNB (AT, DE, DK)
The main system of the DGNB-Building Certification Scheme was developed jointly by the German Sustainable Building Council (DGNB) and the German Building Ministry. The Ministry also specified the main system for the application in federal buildings (BNB Building Certification Scheme). Furthermore, the DGNB developed a complete certification system for a wide variety of building uses. Nevertheless, both systems are similar and were therefore combined for the assessment in this study.

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[173] https://www.umweltzeichen.at/de/produkte/bau#guideline=UZ43

[174] https://www.nordic-ecolabel.org/product-groups/group/DownloadDocument/?documentId=4546

[175] https://www.nordic-ecolabel.org/product-groups/group/DownloadDocument/?documentId=4492

[176] https://www.nordic-ecolabel.org/product-groups/group/?productGroupCode=075

[177] Tender documents not publicly available anymore – information received directly via Intercent-ER

DGNB (German Sustainable Building Council) and BNB (Assessment System for Sustainable Building) include five main criteria groups. One of them is the Ecological Quality of the building. One criterion in this criteria group is a Building life cycle assessment. This criterion asks for an LCA based on the standard EN 15978 and compares the results with reference values for the same kind of building.
There are differences in the application of the DGNB-system between the different countries, some criteria are applied in one national DGNB-system and not in the other. Nevertheless, the mandatory LCA for the building is included in the criteria set of each of the three countries.
The use of BNB is mandatory for federal contracting authorities for building projects with a budget of more than 2 Mio Euros.

Klimaaktiv (AT)
The Austrian Building certification scheme *klimaaktiv*[178] includes the Oekoindex (see above) as mandatory requirement.

Minergy Eco (CH)
The grey energy of building products can be calculated using the building certification scheme Minergie ECO®. Requests for certification with the *Minergie-ECO*®building scheme for a new building or renovation must comply with limit values for grey energy, i.e. the non-renewable primary energy of the building materials[179]. For new buildings and in some cases (also for renovations) the embodied energy must be calculated according to SIA 2032. The energy reference area AE (according to SIA 380) is used as a reference value. The results are shown as annual specific grey energy in MJ/m^2 AE. The *eco-bau* association has approved several software tools for the calculation[180] such as *Enerweb, Lesosai* and *Thermo*.

3.4.5 Other instruments

CO2 Pulp/paper (paper profile or equivalent) (AT)
A tender for tissue paper included a threshold value for CO_2 emissions from the combustion of fossil fuels during the production of pulp and paper. The calculation of CO_2 emissions had to correspond with the method used by Paper Profile[181], an environmental declaration for paper, or with the EU ecolabel for tissue paper or tissue products[182].

GHG distance (AT)
An LCA-based criterion is included in the criteria set of the Austrian Action Plan for Sustainable Public Procurement for civil engineering and linen rental (2020)[183]: "Additional points can be awarded for the lowest possible GHG emissions from transport. The following formula should be used to calculate **GHG emissions from transport (THG_{TR})** in kg:

- $THG_{TR} = EF_{TRM} * m * L * f$
  where
  - EF_{TRM} = direct GHG emissions of transportation used in kg CO_2eq/tkm
  - m = weight of the mineral building material in t
  - L = distance from the production site of the building material to the building site in km

[178] https://www.klimaaktiv.at/english/buildings.html

[179] More information (in German) on how to calculate Gray Energy: https://www.minergie.ch/media/1004-1_08_80731_berechnung_graue_energie_online_2018_v2-2.pdf

[180] http://bauteilkatalog.ch/ch/de/Bauteilkatalog.asp

[181] Paper Profile forms are intended to be used only by member companies of Paper Profile.

[182] See Commission Decision (EU) 2019/70

[183] https://www.nabe.gv.at/wp-content/uploads/2021/06/Textilien-und-Miettextilien-Services_naBe-Kriterien-2020.pdf

- f = 0.7 for recycled building materials and 1 for primary building materials".

Sustainability criteria in state-subsidized municipal building construction in Baden-Württemberg, NBBW (DE)

The programme Sustainable Building in Baden-Württemberg (NBBW)[184] offers sustainability criteria for the planning and construction process of state sponsored municipal building projects in the federal state Baden-Württemberg. In the programme, it is mandatory to conduct an LCA for certain components (foundation, floor slab, ceilings, roofs, walls, props, windows, doors) with the same impact categories used by BNB (see above). The use of the programme requires appropriate training and education of the user.

3.5 Integration of the LCA-based instruments in public procurement procedures

Among the 32 LCA-based criteria and instruments described above, two are still being drafted and have not been included in a public procurement procedure. For further five criteria, there was no tender or other information available on how they might be integrated in the public procurement procedure. The following chapter describes how the remaining 24 LCA-based criteria were integrated in the public procurement procedure. The procurement procedure was divided in the planning stage, the tendering stage and the post-tendering stage. The description is also based on the categorization drawn in chapter 2.2. The following table shows an overview of the different kinds of integration (some criteria and instruments were included in different ways).

[184] https://www.nbbw.de/

Tab. 3: Overview of the integration of identified LCA-based criteria in public procurement procedures (SC = Selection criteria; TS = Technical specifications; CPC = Contract Performance Clauses; AC = Award criteria)

Category	Plan-ning	Tendering			Post-ten-dering	Other
		SC	TS/ CPC	AC		
Criteria accompanied by LCA methods/instruments	**2**	**1**	**3**	**6**	**1**	**1**
Criteria accompanied by LCA-based tools	*2*		*2*	*4*	*1*	*1*
Criteria asking for an LCA		*1*	*1*	*2*		
Criteria that require LCC				**4**		
Externalities: GHG/CO_2				*2*		
Externalities beyond GHG/CO_2				*2*		
Criteria that require a certain Ecolabel			**1**	**1**		
Criteria that require an EPD				**1**		
Criteria that require a Building Certification Scheme		**1**	**2**			
Other criteria	**1**		**2**	**1**		
TOTAL	**3**	**2**	**8**	**13**	**1**	**1**

The assessment of tenders, which was one of the main focus of the research approach, did often not reveal if LCA-based instruments were used in the **planning stage** of the public procurement procedure. Because of that, the real number of LCA-based instruments used in the planning stage is probably much higher than the number included in the table above. From the other main part of the research approach, the interviews with GPP experts and contracting authorities, it became apparent (especially for Italy, France and Austria), that LCA-based information and –instruments are (mainly) used as input to market analyses in the pre-tendering stage for designing and planning of new tendering procedures.

The same is true for LCA-based instruments that are used in the post-tendering stage, e.g. for monitoring. Usually, the tender assessment did not offer any information about the post-tendering stage.

Please keep in mind that the planning stage referred to in this chapter and in the table is the planning stage of the procurement procedure and thus, in the case of a construction project, different from the planning stage of the construction process. Therefore, while LCA-based instruments in Building Certification Schemes are mainly applied in the planning stage of the construction process, they are usually not relevant for the planning stage of the public procurement procedure. In the planning stage of the public procurement procedure, the contracting authority has only to decide if a certain Building Certification Scheme should be applied.

3.5.1 Integration of criteria accompanied by an LCA-based method or instrument to quantify the respective environmental impact(s).

The majority of criteria accompanied with LCA-based instruments were used as award criteria. For example, in several tenders (NL), companies with a CO_2 Performance Ladder certification received a theoretical discount on the costs of their tenders (aligned with a scoring system), according to the level they had reached. The higher the level, the higher the theoretical discount. For instance, a company on step 3 might get a 3 % theoretical discount; a company on step 4 might get 4 %.

The CO_2 Performance Ladder was developed several years ago and well received by the market. Thus, there are many companies in the Netherlands that reach a high level of the ladder. Therefore, the tender assessment identified tenders that used the instrument as selection criteria. According to one example from the Province Noord-Holland in 2019, the bidder had to have a valid CO2 Performance Ladder certificate level 5. As means of evidence, he had to present a copy of the corresponding certificate, issued by a certification body accredited for this purpose.

Three LCA-based instruments were included as mandatory criteria either as Technical Specification or as Contract Performance Clause:

- In the case of the tool "Klimatkalkyl" (SE), the contractor had to plan and implement the infrastructure project showing a certain decrease in terms of GWP, compared to a benchmark model for the baseline project, defined by the procurer (all calculated with the Klimatkalkyl). The required decrease in GWP started at 15 % and had to be increased to 30 % by 2025. The tool was used again at the end of the project to prove that the contractor had met the required threshold for the GWP. The tool is only used for projects over 50 M SEK (about 5 M EUR).
- In the case of the Oekoindex (AT), the tender of planning services included the information that it would be mandatory for the planning to comply with the threshold level of the Oekoindex for the building material.
- An Italian tender for the collection and removal of sanitary waste determined that an LCA-study should be conducted one year after the start of the contract. In this case, the LCA-based instrument was implemented as an obligation during the execution of the contract in the post-tendering stage.

One LCA-based instrument, the textile calculator (CH), was used in the tendering stage to receive information for the organisation's monitoring in the post-tendering stage. The bidders had to provide data for the textile calculator that were necessary for the calculation of GHG emissions. Those inputs also had an impact on the valuation of selection and award criteria. The textile's calculated reduction of GHG emissions compared to the reference product, had no impact on the award decision, but was used only as part of the organisation's monitoring and for public relations.

3.5.2 Integration of criteria that require Life Cycle Costs (LCC) including the calculation of the costs of environmental externalities

All criteria that require LCC (including the calculation of environmental externalities)[185] were used as award criteria. The integration of the criteria ECI together with the LCA-based tool DuboCalc in the tender seems especially interesting: With the DuboCalc calculation programme bidders can calculate the ECI value based on material selection and working methods. DuboCalc includes a database library that contains life cycle analysis data of a large number of materials and raw materials. An optimal life cycle impact (LCI) value can be calculated by making the right choice of material types, quantities and transport distances. Based on the reference design, the contracting authority itself has performed a DuboCalc calculation, the so-called reference ECI (as benchmark model). The bidder can receive a fictitious discount on the bid amount if the ECI offered by the bidder is lower than the reference ECI. It is not permitted to register with a higher value than the reference ECI. The value offered becomes a contract requirement after the award.

Several German tenders for the supply of road vehicles used the calculation method described in Directive (EU) 2009/33/EC (the previous Clean Vehicles Directive). One tender offered the corresponding LCC-tool ("Lifetime cost Calculator" that was originally provided

[185] OEBB TCO-CO2 (AT); Intercent ER: LCC for Vehicles (IT); Environmental Cost Indicator (ECI)/DuboCalc/SBK (NL); Road vehicles according to Directive (EU) 2009/33/EC (DE).

by the EC)[186]. This method included the calculation of the costs of environmental externalities caused by certain emissions, among others, CO_2-emissions.

3.5.3 Integration of criteria that specify a certain Ecolabel (Type I), whose underlying criteria include quantified LCA-based information.

One tender was identified that asked for a certain ecolabel Type I including an LCA-based criterion. This was an Austrian tender for a catering contract with a 10 years contract term. The Contract Performance Clause (CPC) made it mandatory for the contractor to obtain a certification with the Austrian ecolabel (guideline 200 „Tourism and Leisure Industry") within the first eight months of the contract period. While the certification itself was mandatory for the contractor, the calculation of CO_2 emissions was only a voluntary criterion within the criteria of the Austrian ecolabel guideline 200. Besides, the tender included an award criterion: additional points were given according to the plausibility of a description of how the tenderer wanted to receive and keep the Ecolabel-certification.

3.5.4 Integration of criteria that require an Environmental Product Declaration (EPD) as proof that certain limit values for environmental impact(s) are met

The Italian tender for the supply with sanitary paper (2012) included the EPD-information as award criteria.

3.5.5 Integration of criteria that require a certain level of a Building Certification Scheme, which is based on EPD-results according to EN 15804.

A construction project without a main contractor includes at least two different tendering stages, mainly those in the planning process of the construction project (tendering of basic surveys e. g. of the soil conditions, design contests, tendering for the project management, tendering of planning services, etc.) and in the construction process (tendering of different works).

In the tenders for construction projects that aimed to reach a certain level of a Building Certification Scheme, the Scheme was addressed in different ways:

In two Danish tenders for planning processes of construction projects that aimed at the certification with certain Building Certification schemes, a selection criterion was used that required the tenderer to provide references of similar projects completed within the past years.

In several German tenders for construction works, the tenderers were informed that the building were to be built in compliance with a certain Building Certification Scheme and that it would be mandatory for the contractor (CPC) to comply with the criteria and to offer information needed for the certification process.

3.5.6 Integration of other LCA-based instruments

The three other LCA-based instruments were included as award criteria or as technical specification.

[186] https://www.vergabeblog.de/2016-04-10/berlin-umweltvertraegliche-beschaffung-wird-ausgebaut/

3.6 Benefits and limits of LCA-based criteria

3.6.1 Perspective of Contracting Authorities

The following feedback from contracting authorities is composed of opinions from several interviewees on individual aspects. Even though not every interviewee mentioned all points, there were no remarks that contradict the following statement:

On the one hand, the use of LCA-based criteria in public procurement procedures offers several benefits for those who want to reduce the environmental impact of their organisation. On the other hand, it leads to an increase in costs, the workload, the time span of the procurement process, and the risks for litigation. It also increases the burden for companies to make an offer and this makes it more difficult for SMEs to apply in comparison to large enterprises. Therefore it seems advisable to focus on the use of LCA-based criteria on the planning stage of the public procurement procedure and to apply them only in the tendering stage of those procedures – if at all – that offer a relevant environmental saving potential. Moreover, it seems advisable to offer more LCA-based instruments to be used by contracting authorities on a voluntary basis at the planning stage and the tendering stage alike.

Below, the individual aspects of the statement are described in more detail.

Benefits of LCA-based criteria

The interviews with contracting authorities did not reveal many benefits for the use of LCA-based approaches directly in the tendering phase. According to one interviewee, an employee at a contracting authority that is also an LCA-expert, the application of LCA-based instruments in the pre-tendering phase is very helpful for the development of green criteria for the tender.

Another contracting authority that already uses a sophisticated LCA-based instrument that offers the costs of environmental externalities, described the following benefits of the instrument's use:

- it enables them to base their decision on physical metrics,
- it provides scope for innovation within the whole product value chain and
- it offers the possibility to easily compare the environmental impact of innovative solutions offered by different bidders.

Limits of LCA-based criteria

The main limits that became apparent in the interviews are described below:

- need of LCA expertise and thus increased workload
- increased costs
- increased duration of the public procurement procedure
- increased risk of litigation
- increased burden mainly for SMEs.

Need of LCA expertise and thus increased workload

In the interviews, it also became apparent that the use of LCA-based instruments requires a certain Know How. If this Know How does not exist in the organisation (and new employees with the appropriate expertise cannot be hired), it has to be procured in the form of external LCA-experts. This is currently particularly common in the building construction sector. For example, for those buildings where a Building Certification Scheme is applied, "Building Certification Scheme Coordinators" are often tendered and contracted. In the case of the German Building Certification Scheme BNB, the tasks of the coordinator usually involve the development of the LCAs and the coordination with those involved in the project, e.g. architects, specialist planners, service providers and the contracting authority. Advanced trainings are available for those who want to become a BNB-coordinator.

However, the contracting of external LCA experts is not yet common outside of the construction area, e.g. the procurement of products or services (e.g. paper, textiles, cleaning services). These are usually developed with employees from the contracting authority, mainly procurers, in-house lawyers and employees of specialized departments. Italy seems to be an exception – several contracting authorities work together with external LCA experts on product groups other than construction.

The Italian contracting authority from Emilia-Romagna (Intercent-ER) stated that they cannot verify the compliance with green criteria and LCA-based criteria based on the bidder's self-declaration, but need to personally verify that the required criteria are fulfilled. For example, if a bidder declares that he possesses an operational plant that works with green energy and that the offered product entails a certain carbon footprint, documentation and other proof need to be assessed, analysed and verified by them. For this purpose, know-how is necessary, but most contracting authorities do not have this expertise among their own employees.

The contracting authority could reduce their workload (and increase that of the tenderers) by asking for LCA information on the bids from them. However, an employee at a contracting authority in Switzerland, who is also an LCA-expert, advices against this practice. She does not require any LCA results from tenderers due to the fact that these results may derive from different methods and databases. According to the interviewee, it is most important for the equal treatment of tenderers to calculate the environmental impact in the exact same way for every bid, either by the contracting authority itself, by a contracted organisation of LCA-experts, or by a tool with integrated and using underlying LCA data.

Nevertheless, there are contracting authorities that chose to require LCA results from the tenderers. For example, contracting authorities in the Netherlands require tenderers to offer LCA results for the ECI-values for each of their building materials relevant for the tender. According to these contracting authorities, the verification process has to become more efficient. Currently, they have to verify all the LCA results offered by the tenderers. This is time consuming and costly (audit of the reports).

The increased workload is not limited to the tendering procedure, but also extends to the post tendering stage. In several interviews, the importance of the contract's execution's monitoring was highlighted. Therefore, the recipients of the procured goods and services have to check if the delivered these comply with the LCA-based criteria that was used in the tender. In the simplest case, they have to check whether the ecolabel is to be found on the packaging. The interviewees stated that the monitoring is very time consuming.

Increased costs
This also became apparent in the interviews. The costs are not only increased through the involvement of LCA experts but also through the reduced number of bidders. The experiences of the Italian contracting authority Emilia-Romagna and the French Ville de Malaunay showed that including LCA- or Carbon Footprint-based criteria in the tendering directly, leads to a reduced number of offers.

Increased duration of the public procurement procedure
The use of LCA based-criteria requires more preparation time for the procurers and for the bidders. In the interviews, contracting authorities raised the problem that the increased workload might lead to time constraints in the tendering process. In order to comply with a rule that prescribes that a tender has to be assigned within a maximum of 6 months, the judging committee cannot consist of more than three members - otherwise it would take too much time to evaluate and decide on the awarding results. That is why it is almost impossible to include an additional LCA-expert on the evaluation team for the actual procuring process. If the evaluation team consisted mainly of technical experts (such as LCA-experts or environmental engineers), they could help interpreting the means of proof, but not with the full evaluation of proposals. The interviewed authorities consider the CAM to be surely a very useful guide, but they do not think that its integration is compatible

with other rules that have to be applied during the evaluation process. Additionally to the threshold of 6 months for awarding the tender, there is also a budget threshold -the price of a product or service has to be in line with the price foreseen by ANAC, the anti-corruption national authority[187]. Often all these instruments (CAM, timing, price threshold) seem to pull in different directions and not to work in synergy (IT).

Increased risk of litigation
Some authorities hesitate to use LCA-based criteria, as they may eliminate certain companies from the competition for certain contracts, violating EU legislation on inclusion. Therefore, in fear of a misstep and potentially having to publish a new tender, some authorities shy away from including LCA-based criteria (DK).

In the past, LCA-experts directly supported Consip's GPP-team. Due to challenges with existing uncertainty in LCA and the consequential risk of litigation – mainly based on the lack of robust data due to database issues and missing verification procedures, Consip is currently not focussing on the direct use of LCA-based instruments in their procurement procedures or assistance tasks for other contracting authorities anymore (IT).

Increased burden mainly for SMEs
An increased burden for SMEs usually leads to a reduced amount of bids and to an increased price. Contracting authorities are aware that the use of LCA-based instruments increases the burden for tenderers and that it usually hits SME harder than large enterprises.

A procurement expert (FR) described the LCA-based tool focusing on product carbon footprinting - "Bilan produit"[188], developed by the French Agency for ecological transition (ADEME[189]). This tool was used once in a tender process as an award criterion. Due to high complexity for the tenderers while applying for the tender and delivering the required information, the criterion was afterwards cancelled out and not used again.

It was mentioned in several interviews, that suppliers and service providers are not (yet) familiar with addressing LCA-based information and data in their offers. They see it as a serious potential barrier for certain tenderers and fear a reduced numbers of offers if they apply instruments or criteria containing high level of complexity and uncertainty. The contracting authority from Ville de Malaunay faced this issue with around halved replies to their tenders since the implementation of the data template and strong criteria regarding carbon footprint and energy performance into their tenders.

Prerequisites for LCA-based criteria

- **Availability and access**:
  Contracting authorities from Flanders (BE) that used LCA-based instruments in their procurement highlighted that these LCA-based instruments were available online and free of charge. This included the LCA-database.

- **Simplicity**:
  LCA-based instruments have to be simple to use. They have to provide a fast way to assess environmental criteria without requiring detailed LCA knowledge or elaborate calculations. One interviewee mentioned the specific need for robust and transparent methods for the evaluation of GHG emissions as input for assessing costs attributed to environmental externalities (FR). In 2016, two Italian working groups of the Department of Legal Affairs (DAJ) pointed out the need that specific evaluation methods (on quantitative and qualitative environmental aspects) have to be practicable for both contracting authorities and tenderers (in particular SMEs). Procurers need good guidelines, ecolabels and joint EU standards. Tools that would

[187] http://www.anticorruzione.it/portal/public/classic

[188] http://www.base-impacts.ademe.fr/bilan-produit

[189] https://www.ademe.fr/en

enable contracting authorities to include LCA-based criteria are not yet widely available (DK).

- **Necessity of a noteworthy potential for reducing the environmental impact**:
  There has to be a noteworthy potential for reducing the environmental impact. LCA-based criteria should only be included if there is a significant potential for improvement related to the respective decrease in the environmental impacts and thus, if bidders can compete. Therefore, the time must be ripe to use LCA-based criteria in tenders. The example of concrete can illustrate this. The concrete currently offered on the Austrian market shows significant but similar environmental impact. Therefore, the market has to develop alternative materials with the same quality but lower environmental impact first. Once alternatives are available, LCA-based criteria will be helpful to support their use.
  The contracting authority of Rotterdam indicated that, in the future, ECI-values will reach their lowest possible values, meaning that differences between the ECI-values of bids will become inconsequential and award criteria based on ECI-values will not lead to any competition between companies. Once values reach low levels, LCA-criteria will become meaningless.

3.6.2 Perspective of Tenderers

The following opinions are not representative for several reasons. On the one hand, only a few tenderers were interviewed. On the other hand, these tenderers may have been biased because a majority of them were awarded the contract (that resulted from a tender with LCA-based criteria).

Benefits of LCA-based criteria

In an evaluation of the tenderers experiences with the LCA-based criteria (CH), some pro-active tenderers were pleased to find that a contracting authority was finally including more demanding criteria in the tender and thus valuing their activities.

Two companies (IT) developed EPDs for their products because they expected to get some extra points in public tenders and hoped to maintain their market advantage.

One company described that, while the development of LCAs is an effort, they have no choice because they want to stay in business. The company explained its development first towards an environmental certification and, at a later stage, to an LCA-study focusing on GHG. In order to maintain the company's existing market advantage and to remain competitive, the company decided to cooperate with experts on carbon footprinting at the University of Genova and a GHG-consultancy in order to get the carbon footprint of their products quantified. Two tenderers (NL) saw benefits in the use of LCA-based criteria, mostly for steering decision making towards more sustainable approaches.

A study[190] on the experiences of contractors with LCA-based criteria in tenders showed that tenderers assume that performing LCA studies can lead to improved designs in terms of lower GWP. However, some tenderers questioned if this is the most cost-effective way to decrease GHG emissions, and if the focus should not be on the choice and amount of materials.

Two tenderers (NL) stated that the use of costs of environmental externalities would make it easier to compare different criteria with each other.

[190] https://www.researchgate.net/publication/342641106_Life_cycle_assessment_in_public_procurement_of_transport_infrastructure

According to one Service Provider (BE) a most apparent benefit of LCA-based criteria in tenders is that they required an understanding by the contracting authority about what is relevant in terms of environmental impact.

Limits of LCA-based criteria

When asked about the effort necessary to insert the data in the LCA-based calculator (CH), the answers of tenderers ranged from "less than an hour" and "1-2 hours" to "1 week". Especially those bidders with no prior knowledge had to invest a considerable amount of time to get the necessary data.

In one contract (IT), the contractor had to provide an LCA-study one year after the beginning of the contract. The experts in the contractor's company required one month of work to assess the primary data, to set up the method and to produce the report. Some additional effort was needed from external consultants[191].

Two tenderers (NL) mentioned that there are some hurdles in the implementation, such as the need to get support from LCA specialists and collect data from contract partners or subcontractors. In addition, there is not always enough detailed data available for proper comparisons. Additionally, updates in methodology mean that recalculations can become necessary.

Prerequisites for LCA-based criteria: Need for transparency

- Tenderers (information based on studies) perceived the uncertainty of the baseline scenario (within the benchmark-model) as a problem (SE).

- Tenderers sometimes did not get full access to the emission factors provided by the LCA-calculators (CH) for reasons of licence compatibility. They only get access to the emission factors if they purchased the licence for the database.

- A service Provider (BE) saw the main hurdle in the inclusion of environmental aspects that are not part of the LCA methodology, such as circularity.

3.7 Conclusions on tender assessment and interviews

In the 207 public tenders assessed, 61 LCA-based criteria were identified. They were divided into 5 categories:

1. Criteria accompanied by LCA methods or instruments (22)
2. Criteria that require LCC (including environmental externalities) (4)
3. Criteria that require a certain Ecolabel (2 that includes LCA-based criteria and 8 that referred to an Ecolabel without LCA-based criteria)
4. Criteria that require an EPD (1)
5. Criteria that require a Building Certification Scheme (that includes LCA-based criteria) (17)

The numbers in brackets represent the numbers of identified public tenders that included this kind of LCA-based criteria. Among the 61 tenders with LCA-based criteria there were 7 tenders with "other LCA-based criteria" that were not assigned to the 5 categories.

3.7.1 Conclusions for each country

Public tenders were identified in each of the nine EEA-countries addressed in the study. Based on the LCA-based criteria found in the public tenders, the following was concluded for each country:

[191] https://www.ervet.it/

Austria: There is an older and well-developed LCA-based criterion for the construction sector (Oekoindex), a small number of Austrian Ecolabel-guidelines with LCA-based criteria and a newly developed LCC-tool for the procurement of the Austria federal railways.

Belgium: It seems that there first steps are being taken in Belgium when it comes to the use of LCA-based criteria in tenders, e.g. in the case of the pilot project to introduce the CO2-ladder into the market and of the newly developed calculator for textiles used in a tender.

Denmark: Two LCA-based criteria were identified in Denmark. One in a building certification scheme and another for the procurement of plastic products. There are more LCA-based instruments, but they could not be identified in public tenders.

France: There is political support to include LCA-based criteria in public tenders. However, harmonised methods, practicable and easy to apply, still have to be developed.

Germany: It seems that LCA-based criteria are only found in building certification schemes. One of these sophisticated schemes, the BNB, is mandatory for new federal public buildings and general renovations in public buildings.

Italy: Several contracting authorities have profound experience with integrating LCA-based criteria in public procurement procedures. Because Italian contracting authorities are struggling with the complexity of integrating LCA-approaches into public procurement procedures, the Italian Ministry for the Environment started the development of LCA-based tools and training activities for public procurers.

Sweden: One well-developed LCA-based criteria is used (Klimatkalkyl), but mainly for the construction sector. More LCA-based criteria seem to be in the process of development.

Switzerland: There is a range of LCA-based criteria used in public tenders. They are mainly used by three frontrunners and it remains to be seen if they are taken up by other public organisations.

The Netherlands: Mainly two well-developed LCA-based criteria are in use, one for civil engineering works (EVI) and the second for the company of the bidder (CO2-performance-ladder).

Besides the nine EEA countries under survey, there is **Finland** with its City of Helsinki that is currently taking part in the Canemure Project[192] with nine pilot procurements. The goal of these nine pilot projects (project period 2019-2024) is to identify suitable ways to implement carbon footprint criteria in public procurement. The LCA-based criteria will be included in the planning stage, the tendering stage and the post-tendering stage (monitoring). Some pilot projects are already finalised while others not seem to have started yet.

3.7.2 Benefits and limits – combined results from the literature review and the interviews

Some **benefits** were raised in the interviews by contracting authorities as well as tenderers. According to contracting authorities, the use of LCA-based instruments in the pre-tendering stage is helpful for the development of green criteria that are to be included in the tender. Jenssen et al. (2019) argue in the same direction by stating that identifying criteria with LCA is one thing, evaluating them is another.

Furthermore, LCA-based instruments enable the contracting authorities to base their decision on physical metrics, provide scope for innovation within the whole product value

[192] https://www.hiilineutraalisuomi.fi/en-US/Canemure/Subprojects/Helsinki

chain and offer the possibility to easily compare the environmental impact of innovative solutions described in different bids. These statements suggest that LCA-based instruments are especially useful for the tendering of innovative solutions.

The tenderers who rated the inclusion of LCA-based instruments in public procurement beneficial were mostly companies which are pro-active in the reduction of environment impacts.

The results of the interviews showed clearly that there are **limits** of the inclusion of LCA-based instruments in public procurement procedures. Due to the fact that the application of LCA-based instruments requires expertise and a certain skillset, contracting authorities have to include this expertise either by hiring or contracting LCA experts. Thus, the use of LCA-based instruments increases the workload and the costs for contracting authorities. The scientific literature came to comparable results. *According to Jenssen et al. (2019), LCA is more suitable for experts than procurers. Jelse et al. (2018) stated that "no matter how it is approached, LCA is a complex topic that requires a certain skillset to be able to interpret information generated by the study. So even if LCA and EPD data was to be available for all products participating in a public tender, there would need to be quite some knowledge required for the procurement departments in order to identify the best possible product for a certain application" (p. 500-501). Ilrado et al. (2016) identified the lack of human resources within public authorities among the most relevant barriers to implement LCC including environmental externalities. Furthermore, De Klein (2018, Jenssen et al. (2019) and Iraldo (2016) all stated that the use of LCA-criteria in public procurement increases the costs.*

According to the interviews, the use of LCA-based criteria also increases the duration of the procurement procedure and the risks of litigation and leads to a comparatively higher burden on SMEs. Similar assessments can be found in the literature. *According to De Klein (2018) time constraints play a major role for contractors and public authorities: "time to check all relevant information before awarding the contract (…) the time it takes to obtain a verified LCA is longer than the time contractors have to submit their bid" (p. 41-42). Jenssen et al. (2019), stated too, that time constraints limit the efficiency of LCA-based tools in the procurement context (p. 1204).*

According to Mélon (2020) the limited uptake of GPP (not only LCA-based criteria) is mainly due to two reasons, the risk of the illegality of a particular use of GPP and the experience deficit of contracting authorities with these GPP criteria. De Klein (2018) stated that the LCA-based tool DuboCalc included outdated and unreliable data. Jenssen et al. (2019) draw the conclusion that identifying criteria with LCA is one thing, evaluating them is another. They further stated that LCA-based information is far too complex to be used as a basis for tenders.

Iraldo (2016) stated that the most relevant barriers for the implementation of LCC (including environmental externalities) consist in a poor availability of supporting tools. Suikkanen et al. (2020) stated that for comparisons and competitive bidding, the availability of the specific Product Category Rule and the databases provided for use free of charge were essential.

3.7.3 Requirements for public procurement procedures eligible for LCA-based criteria

There are certain stages or cases of public procurement procedures where the inclusion of LCA based criteria has a higher benefit:

- Planning stage: The use of LCA-based criteria in the planning stage reduces the risk of litigation considerably and makes it easier for procurers to meet the time requirements for the award procedure. Additionally, it offers the possibility for the contracting authority to estimate the environmental relief potential in advance of a tender. This is important because the use of LCA-based criteria in the tendering

stage is only advisable if there is a noteworthy potential for reducing the environmental impact of the tendered solution.

- Public procurement of innovation: To ensure that the purchased innovation offers environmental benefits and that a benefit in one impact category (e.g. climate change) does not lead to a burden in others, the use of LCA-based criteria appears to be particularly suitable for the procurement of innovative solutions. That is why many of the LCA-based criteria presented in this study, are used in civil engineering and building construction. Most of these construction projects have at least the potential of being innovative.

The following aspects will likely increase the use of any LCA-based criteria in public procurement procedures:

- The additional burden that LCA-based criteria create for the contracting authority and the tenderer are manageable. Thus, the criteria and the attached LCA-based instruments have to be simple to use. They have to provide a fast way to assess environmental criteria without requiring detailed LCA knowledge or elaborate calculations. Furthermore, they have to be available online and free of charge.

- LCA-based instruments that create an additional burden for the tenderer, should come with a remedy, such as one of the following:

    - Good results in the LCA-based criteria offer significant cost advantages to the bidder (e.g. fictitious deductions of the bidding price are substantial for bidders that can offer a certificate proving that they belong to the CO2-ladder's best level).

    - The terms of the contract are beneficial – e.g. a longer-duration of the contract, e.g. ten instead of two years.

- The LCA-based criteria could be part of a larger certification scheme, for example a building certification scheme or an Ecolabel. Especially in building certification schemes, external LCA experts are already included in the process. In the case of an Ecolabel Type I, the burden of including external LCA experts could be justified with the large number of items which are marked with the ecolabel.

- Contracting authorities should be extra careful with any amendments of the methodology, e.g. the use of impact categories like "circularity" or "biodiversity" do not (yet) belong to widely tested and used methods of current LCA impact assessment practices. Any assumptions that contracting authorities make in the framework of the LCA-based instrument they build their tenders on, e.g. assumptions underlying a required benchmark scenario, have to be well explained and requirements with any consequence for tenderers have to be made transparent.

4 BEST PRACTICE EXAMPLES

Building on the research described above, the authors developed a system of criteria to assess and evaluate the instruments under study according to their comprehensiveness, practicability and transferability within the EU and taking into account the grade of responsibility and influence of procurers applying those instruments.

The criteria were evaluated in an empirical manner and the valuation was based on the feedback from the interview partners (contracting authorities and suppliers/service providers), complemented by expert judgement of the authors.

Tab. 4: Criteria to assess and evaluate the LCA-based instruments

Topic	Criterion	Description
Comprehensiveness of the instrument	**Product groups/services addressed**	What product groups/services are addressed by the instrument?
	Environmental impacts covered	Evaluation of the holistic perspective of instruments - Addressing comprehensiveness and environmental aspects
Practicability within the procurement procedures	**Comparability**	Evaluation of practical comparability of the instrument's results
	Effort for the contracting authority	Amount of personnel resources needed and costs (for handling the tendering in CA)
	Effort for tenderers	Amount of personnel resources needed and costs (for processing the product or service related LCA-based information)
	Effort for data provider/producer of required inputs	Amount of personnel resources needed and costs (for providing the LCA-based information)
Responsibility and influence of procurers	**Comprehensibility**	Evaluation of comprehensibility of instruments' methods and results for procurers (without specific environmental expertise)
	Potential legal risks	Assessment of potential legal risks when applying the instruments
Transferability within EU	**Potential replication in other countries**	Background requirements for instrument (e.g. national LCA database, national EPD-system, national ecolabel) in the respective country
	Accessibility to instrument across countries	Documentation and accessibility (e.g. language barriers, access restrictions)

4.1 Results of the qualitative evaluation

All identified instruments from the tender assessment and interviews were grouped again according to the following structure and qualitatively evaluated based on expert judgement according to the above listed criteria:

- Criteria accompanied by an LCA-based instrument to quantify the respective environmental impact(s).
- Criteria that require Life Cycle Costs (LCC) including the calculation of the costs resulting from environmental externalities - which are based on the environmental impact(s).

- Criteria that require a certain Ecolabel (Type I) or parts of its underlying criteria that include quantified LCA-based information.

- Criteria that require an Environmental Product Declaration (EPD) as proof that the tendered products, services or works meet certain limit values for environmental impact(s).

- Criteria that require a certain level of a Building Certification Scheme, which is based on EPD-results according to EN 15804 or another LCA-based instrument.

Criteria accompanied by an LCA-based instrument to quantify the respective environmental impact(s).

a. Criteria accompanied by LCA-based tools

LCA-based tool at the product/service level: Climate calculation tool – Carbon Footprint of Construction – Klimatkalkyl (SE)
Products/services: construction works
Environmental impact(s): climate change (GHG)

Comparability: Since each project is evaluated by comparing an approximate project model of the project (prepared by the contracting authority in advance of the tender), the fairness of the benchmark model becomes an element of discussion with the actual outcome of the project.

Effort for users: The contracting authority has to prepare a benchmark model and tenderers have to provide comprehensive data to the tool to prove that they meet the benchmark.

Comprehensibility: Clear structure of the tool - commonly used, well understood, comprehensible descriptions and training material available.

Potential legal risk: There seems to be low risk, if phrased as technical specification (-15% decrease of GWP compared to benchmark model) with following contractual control mechanism in the post-tendering stage.

Transferability within EU: Theoretically transferable to each country with an EN 15804 compliant EPD-based database in place. Documentation only available in Swedish.

LCA-based tool at the product/service level: TOTEM Building tool (BE)
Products/services: construction, buildings
Environmental impact(s): climate change (GHG), ozone layer depletion, acidification, eutrophication, photochemical oxidant formation, human toxicity cancer and non-cancer, particulate matter formation, ionizing radiation, eco toxicity terrestrial, freshwater and marine, land use and change, water scarcity

Comparability: Clear approach with methodological framework in accordance with current European standards (EN 15804, EN 15978, EN 15643-2 and TR 15941)

Effort for users: Training for users needed to implement the tool. It is currently not actively in use for tenders, with its main users being architects, design offices, contractors, engineers and students. One contracting authority stated that the tool is being used by colleagues to gain insight and understanding during the planning stage, but it is not required and linked to any tenders.

Comprehensibility: Conducting and interpreting an LCA-study (full study behind the EPD) is quite complex. However, this tool and its documentation aim for an increased comprehensibility.

Potential legal risk: It depends on the actual use. If the tool is only used in the planning stage (no reference found in a tender), the actual legal risk seems to be low.

Transferability within EU: The tool's database includes generic component data sourced from the LCA-database ecoinvent. Energy systems of all European countries are included. The tool and its documentation is available in different languages.

LCA-based tool at the product/service level: Wood calculator (CH)
Products/services: construction material (wooden products)
Environmental impact(s): GHG, UBP

Comparability: The calculator quantifies mainly the environmental impacts from the wood's transport in a comparable manner. Default emission factors are available. The effort for contracting authorities increases if they need to verify the information. Effort for tenderers depends on the knowledge and specific information they have on the products' value chain. The producer has to provide information, but the information - where does the wood come from - is accessible to producers without much effort.

Comprehensibility: Distance, means of transport and respective GHG emissions are easy to comprehend.

Potential legal risk: The wood calculator quantifies the environmental impact of the transport. Inclusion of criteria directly limiting transport kilometres is prohibited. However, the EU procurement directives offer the possibility to include the costs of environmental externalities and therefore also the indirect inclusion of transport kilometres (translated into external environmental costs for emissions).

Transferability within EU: The method itself can be replicated. However, the data is specific for the use of wooden products in Switzerland. The background data should be adapted for other countries. The calculator and dedicated documentation is only available in German.

LCA-based tool at the product/service level: Textile calculator (CH)
Products/services: apparel, textiles
Environmental impact(s): GHG

Comparability: tenderers have to offer information about their product, the production processes and geographical location of the value chain. The calculation is done in the model by the contracting authority, which increases the comparability.

Effort for users: The contracting authority has to conduct the quantification of results - there is a tool for the calculation. Therefore, the effort is reasonable. The effort for a tenderer with information and deep knowledge on the value chain and the production process seems not too high; the effort for a tenderer who has to collect all information can be higher, as the producing companies in the value chain have to offer primary data about the actual production process at the respective production location(s).

Comprehensibility: As the tool is based on GHG emissions, the comprehensibility seems to be high. The calculator offers GHG-emissions for the different phases in the textile production - raw material, yarn production, fabric manufacturing, finishing, confection, transport, packaging and EoL, which makes it even more comprehensible. However, the emission factors are not available to the tenderers (due to licence restrictions) or only to those tenderer who own the licence. This results in a reduced comprehensibility.

Potential legal risk: Currently, the textile calculator has to be filled in by the tenderer but the result of the calculation is not included in the award decision. Therefore, the legal risk seems to be low. However, if the result were to be included in the award decision, the risk could be greater due to the use of generic values and default values and the difficulty for the contracting authority to verify the information.

Transferability within EU: Currently, the tool is not yet publicly available. Once it will be published, other contracting authorities from other countries could use it. Once the calculator is published, it should be easily accessible with a license. Information in English.

LCA-based tool at the product/service level: Concrete Calculator (CH)
Products/services: construction material (concrete)
Environmental impact(s): GHG, primary energy and UBP

Comparability: The tool uses background information from a database as default emission factors and the procurer only needs to enter the respective planning data in a well-structured manner. Therefore, the comparability seems to be high.

Effort for users: The effort for contracting authorities is low because the tool is only used in the planning stage. The tool provides the contracting authority with information about the options to reduce the environmental impact of concrete. There is no effort for the tenderer, as the tool is used by contracting authorities in the planning stage. The companies in the value chain have to offer primary data about the production process and the location. Most of data is part of the background database.

Comprehensibility: Clear documentation, easy to comprehend.

Potential legal risk: The tool is only used in the planning stage, not in actual tendering. Therefore, the legal risk seems to be low.

Transferability within EU: The tool could be replicated from the (Swiss) database and adapted to the suitable regionalisation. Documentation is available in French and German.

LCA-based tool at the product/service level: Higg Material Sustainability Index (BE)
Products/services: apparel, footwear, home textiles
Environmental impact(s): GWP, eutrophication, water scarcity, abiotic resource depletion and toxicity (eco toxicity and human toxicity)

Comparability: One tool, that offers same quantification method and background data for all respective products.

Effort for users: The contracting authority has to verify the calculation of the Higg Score offered by the tenderer. The tenderer has to quantify the Higg Score for the textiles. The tool reduces the effort, but the tenderer has to gather the information/data from producers. The production companies in the value chain have to offer primary data about the production process and the location.

Comprehensibility: It relates to multi-criteria LCA, which in itself is complex. However, the tool and the respective documentation seem to increase the comprehensibility.

Potential legal risk: As used directly in awarding the contract the legal risk is higher, compared to clear technical specifications linked to an LCA-based instrument. The risk is minimised by transparent and clear requirements (description of the methods) in the tool's documentation.

Transferability within EU: The tool seems to be replicable in other countries. The textile chain is mostly international. Therefore, the tool should be available for all contracting authorities in the EU. The tool and all documentation is available in English.

LCA-based tool at the product/service level: Schweizer Bundesbahnen - LCA-Tool (SBB LCA-Tool) (CH)

Products/services: infrastructure, parts of the life cycle of e.g. transport
Environmental impact(s): multi-criteria LCA

Comparability: The contracting authority performs the calculation in the planning stage itself or it asks the tenderer for specific data such as transport distances and calculates the respective environmental impact.

Effort for users: The contracting authority (SBB) has an LCA-expert available. This expert calculates the environmental impact in the planning stage before the actual tendering. In some cases, the LCA-results were included in award criteria. In these cases, the LCA-expert at SBB calculated the environmental impact based on the primary data required and received from the tenderers.

Comprehensibility: The data and the calculation is comprehensible for the organisation because they have an LCA-expert as one of their employees. For other contracting authorities in different settings it might be difficult.

Potential legal risk: The risk seems to be low when the tool is only used in the planning stage and medium to high when the tool is used for the tendering (to award a contract based on the emissions of the transport could include some risk).

Transferability within EU: The Excel spreadsheet tool is easily replicable. However, it seems that the data for the characterisation factors is not available without a licence to specific database. The Excel file is not publicly accessible – it is in full possession of the contracting authority. The file used for planning is not available at all and the file used in some tenders was only available to the tenderers.

LCA-based tool at the product/service level: Carbon Footprint and Energy Efficiency Quantification Tool - Ville de Malaunay (FR)
Products/services: construction works, restructuring projects, civil engineering, infrastructure
Environmental impact(s): GHG

Comparability: Good comparability as the contracting authority performs the quantification with the tool - all tenderers have to provide the same inventory data respective to their specific planning.

Effort for users: Mentionable effort for the development of the tool (~20.000 EUR). The contracting authority calculates with the tool, evaluating the tender with the support of external consultants. Tenderer and service provider is most likely the same: significant effort to plan and "translate" planning into an "inventory data sheet" (~6-pages template) for the tool.

Comprehensibility: The data and the calculation is comprehensible for the contracting authority because they have an LCA-/energy-expert as one of their employees and external consultants as support. It might be more difficult for other contracting authorities.

Potential legal risk: It is used to award the contract. Due to its well-designed transparency and verifiable results, the legal risk seems to be limited.

Transferability within EU: Excel spreadsheet model - method could be replicated also for another context and in other countries. The excel-file is not publicly available, as it is in the possession of the contracting authority. The inventory data request template is part of the ANNEX in several restructuring tenders from Ville de Malaunay. Documentation available only in French.

LCA-based tool at the product/service level: Oekoindex (AT)
Products/services: construction works, buildings, restructuring projects
Environmental impact(s): GWP, AP, PENRT

Comparability: Clear method and comprehensive meta-data available (in an Austrian database)

Effort for users: Low for contracting authority and tenderer – high for the producer of construction materials - Many of the software products to quantify the energy performance certificate of buildings in Austria also calculate the Oekoindex without any additional effort. The tool is used in the planning stage with data from a database. The tenderer (planner) has to provide no additional data (only the design). The effort lies with the producers of the building materials, who have to develop EPDs for their products. The means of proof (LCA/EPD- data) have to be delivered by the producer of construction materials.

Comprehensibility: The instrument itself is less complex than conducting a full LCA with ~15 impact categories. Nevertheless, the methodology behind OI3 is complex. However, there are several tools that are easy to apply and the single score indicator is easy to comprehend.

Potential legal risk: The tool is mostly used in the planning stage. If used in tendering, it is implemented as a technical specification but not in the awarding procedures. Therefore, the potential legal risk seems to be limited.

Transferability within EU: National database and tools are necessary, but the methodology can be replicated. Most documentation only in German - some information is available in English.

b. Criteria that ask for an LCA-study

LCA at the product/service level: full LCA according to ISO 14040/44 (IT)
Products/services: paper for sanitary use, collection and removal of sanitary waste
Environmental impact(s): multi-criteria LCA

Comparability: High uncertainty and almost no comparability without PCR available for comparison of results.

Effort for users: High effort for contracting authorities in evaluating the offers and verifying the LCA results. Tenderer and producer/service provider are the same. High effort for presenting a multi-criteria LCA study without having the option to follow a scheme/PCR. Thus costs for LCA datasets and/or consultant work.

Comprehensibility: Multi-criteria study results not easy to evaluate without LCA-expertise.

Potential legal risk: For paper for sanitary use Uncertainty/lack of transparency in scoring during the awarding procedure related to the underlying evaluation to adjudicate 1-4 points.
For removal of sanitary waste: LCA study must be presented 1 year after the beginning of the contract to provide environmental information for the evaluation of the service.

Transferability within EU: This could be done in all countries – ISO is an international standard. No access restriction, all documentation available in English.

LCA at the product/service level: Made Green in Italy (MGI) according to PEF (IT)
Products/services: laundry services (CAM links to PP) - MGI available for more product groups but not relevant to PP
Environmental impact(s): multi-criteria LCA (according to EF-method)

Comparability: Clear PCR developed for specific product groups or services.

Effort for users: –Contracting authorities' perspective: easy to implement in a tender but hard to verify the proof of equivalence. Tenderer/Producer: Full LCA according to PEF to meet the criteria of MGI needed.

Comprehensibility: The PEF methodology is not easy to understand for non LCA-experts. The verification of proof of equivalence is not manageable for the contracting authority itself without LCA-expertise.

Potential legal risk: There is a potential legal risk, when used as selection or award criterion.

Transferability within EU: Development of national PCRs including specific benchmarks (according to PEF methodology) and national datasets/database are required. All documentation only available in Italian.

LCA at the product/service level: Product Carbon Footprint (according to GHG Protocol or other recognised standards) (DK)
Products/services: cups (single-use plastic and alternatives)
Environmental impact(s): GHG

Comparability: Product Carbon Footprint Studies without underlying PCR are not easily comparable. The comparison in this case is part of each Carbon footprint study received by the contracting. The scope, the database in the background etc. might be different for each offer. Not possible to compare between different proposals/studies.

Effort for users: LCA- expertise needed for the interpretation of the results - especially background knowledge in the requirements of GHG-quantification (standards). Nevertheless, the learning effect for contracting authorities might be high through this exercise. Tenderer and service provider is most likely the same: significant effort to implement a correct comparative GHG –quantification.

Comprehensibility: GHG issues itself are quite comprehensible. Accounting methods in the background and requirements in certain GHG quantification standards are complex.

Potential legal risk: High risk when comparing the study results without PCR or clear benchmark available in the background.

Transferability within EU: This could be done in all countries - ISO is an international standard. No access restriction, all documentation available in English

LCA at the product/service or corporate level: Water footprint according to ISO 14046 or corporate carbon footprint according to ISO 14064-1 (IT)
Products/services: all (example identified industrial laundry services)
Environmental impact(s): GHG

Comparability: Only presenting a carbon footprint study according to ISO 14064-1 or water footprint study according to ISO 14046 is required. No focus on actual results.

Effort for users: The effort for contracting authorities is low. It is a simple "Yes or No"-check. Tenderer and service provider is most likely the same: It is a high effort to implement a correct 14064-1 or 14046 quantification. The effort doesn't seems adequate for only one point out of 70 under scoring in the awarding procedure.

Comprehensibility: The requirement on possession of Corporate Carbon Footprint or Water Footprint regarding the service is easy to apply – an actual focus on the result of the CF report would be less comprehensible without expertise in GHG- or WF-accounting.

Potential legal risk: Although used as award criterion, the % in points is so small that the respective legal risk can be qualified as low.

Transferability within EU: This could be replicated in all countries - ISO is an international standard. No access restriction, all documentation available in English.

LCA at the corporate level: CO_2-performance ladder (BE, NL)
Products/services: organizations from all sectors
Environmental impact(s): CO_2

Comparability: According to the methodology of the scheme, the comparability of different "levels" is transparent and easy to apply.

Effort for users: Effort for contracting authorities is low as certification is part of the scheme (external verification via regular audits is part of it). Tenderer and applicant for the CO2-performance ladder is the same: They have a significant effort to apply for the scheme in the first place.

Comprehensibility: Methodology is easy to understand and easy to apply to procurement procedures.

Potential legal risk: Application as selection criteria seems to offer a smaller risk. The use as award criteria offers a risk because the criterion does not only focus on the subject matter of the contract but on the tendering company.

Transferability within EU: Only available in NL and BE so far. Certification only for applicants to the scheme, documentation available in French, English and Dutch.

Criteria that require Life Cycle Costs (LCC) including the costs of environmental externalities - based on environmental impact assessment.

a. LCC incl. environmental externalities related to GHG/CO2

OEBB TCO-CO2 (AT)
Products/services: mainly for construction
Environmental impact(s): GHG

Comparability: The tenderer has to provide either EPD-information for the product or, if an EPD is not available, data for the production's energy consumption and the material content of the product/service. The bidder has to offer information about the transport of the construction material and of construction workers, as well as on the energy consumption and the maintenance during the use phase of the building/infrastructure. This represents a rather large amount of information.

Effort for users: The contracting authority verifies the data. The effort for the bidder without access to EPD information could be higher. They would need to provide large amounts of information that may be difficult to verify, e.g. transport distance for construction workers. E Reduced burden for the tenderer if it has EPD for all relevant materials available. However, this is not mandatory and not the case for all construction materials currently used.

Comprehensibility: The impact category "climate impact" is comprehensible. However, the tool addresses the production stage, the construction stage and the use stage. This makes it more complex and more difficult to comprehend.

Potential legal risk: There might be a legal risk because not only EPD-data is accepted as means of proof. If no EPD is available, tenderers shall provide information on materials and energy consumption during production. This information might not be judged as equal to EPD-information.

Transferability within EU: In full possession of OEBB. The method behind the tool could be replicated with some changes to the data (e.g. national specific emission factors).

Once the tool is finalised, the instrument and documentation will probably be made publicly available.

LCCByg (DK)
Products/services: buildings, construction material
Environmental impact(s): GHG

Best Practice criteria: Not possible to evaluate - no actual case of implementation identified - Tool available only in Danish and the authors did not have full access to information regarding the instrument.

LCC for vehicles according to Directive (EU) 2009/33/EC (DE, IT)
Products/services: vehicles
Environmental impact(s): CO_2

Comparability: An excel-based tool with a transparent structure and methodology, as well as a relevant level of comparability.

Effort for users: The contracting authority calculates the costs of the CO_2-emissions in the use phase of the vehicle with a very easy formula (kg CO_2*0,004 EUR). Tenderer and producer are most likely the same: low effort to use the Excel-based tool. The vehicle's producer has to provide the data on the emissions in any case.

Comprehensibility: The calculation is easy to comprehend. However, the costs for the emissions are not easy to understand and they were not defined in Directive (EU) 2009/33/EC.

Potential legal risk: Although used as award criterion in the case of vehicles, the legal risk is lower due to a transparent reference to Directive (EU) 2009/33/EC.

Transferability within EU: Each country in the EU and beyond could access the method and the data. The method has been applied all over the EU.

b. LCC incl. environmental externalities beyond GHG/CO2

Environmental Cost Indicator (ECI)/DuboCalc/SBK (NL)
Products/services: construction works
Environmental impact(s): abiotic raw material depletion, fossil fuel depletion, climate change, ozone layer depletion, photochemical oxidation, acidification, eutrophication, human toxicity, freshwater aquatic ecotoxicity, marine aquatic ecotoxicity and terrestrial ecotoxicity.

Comparability: Comparability secured, as all impacts are translated/normalised into costs, nevertheless the uncertainty of the background LCA data, methodologies and results still exist.

Effort for users: The verification process has to become more efficient for the contracting authority. It is time consuming and costly for the procurers (who have to audit the reports) and carry license costs for the tool DuboCalc. Procurers need training for these issues. Currently, bidders have to offer reports on the ECI-values for each of their building materials. The process is therefore time consuming and costly for the tenderers (who have to contract LCA consultants) and carry the license costs for the tool DuboCalc.

Comprehensibility: Tool results are comprehensible to procurers - all is translated into costs. The Environmental Cost Indicator (ECI) conversion from environmental impacts into costs is based on a method developed by Delft University in 2004.

Potential legal risk: Environmental impact to cost ratio is based on complex methods that contain uncertainty and date back to 2004. The identified court case concerning the use of the award criterion "Quality value of the sustainable use of materials", judgement of 25 January 2019 (see 2.5.1) highlights the potential risk of legal action.

Transferability within EU: Linked to a national LCA-database - only available for construction works in the NL - would have to be strongly adapted for other countries. Some documentation available in English - most guidance documents and tool itself only available in Dutch.

LCC method from Mettiamoci in RIGA project (IT)
Products/services: first development for ceramic tiles, later it should be applicable for all products
Environmental impact(s): multi-criteria LCA (impact categories not yet fixed)

Best Practice criteria: Instrument currently under development - not yet finalised – no documentation accessible.

Criteria that require a certain Ecolabel (Type I) or parts of its underlying criteria that include quantified LCA-based information.

Ecolabel on industrial catering – UZ 200 (AT)
Products/services: industrial catering services
Environmental impact(s): CO_2

Comparability: There is no instrument or methodology described in the ecolabel guideline on how to quantify and report the CO_2-emissions.

Effort for users: According to the tender, the contracting authority supports the contractor during the certification process. The process is complex ant the effort for the contracting authority is high because the Austrian Ecolabel 200 covers several topics, e.g. the energy efficiency of the building. The contracting authority has to offer primary data to the contractor because the reporting of CO_2 emissions includes emissions from the building. The effort to obtain the certification is high (the contract term is 10 years). The effort to record the CO_2-emissions is also high if it is done thoroughly. Due to the lack of a methodology or instrument for the quantification of the emissions, uncertain results may be produced (depending on the auditor). The contractor should also include the CO_2 emissions for food without detailed indications on the level of accuracy. This would require suppliers of the tenderer (incl. farmers) to provide emission data on their products.

Comprehensibility: CO_2 emissions have become common knowledge - verifying this information is still complex.

Potential legal risk: A criterion not well defined is the legal risk. However because it is embedded in the ecolabel and the tender does not ask for the provision of the ecolabel certification but only requires the contractor to achieve the certification (in the first months of the contract with help from the contracting authority, the risk seems to be reduced.

Transferability within EU: A clear method/instrument is missing in the ecolabel guideline.

Ecolabel on thermal insulation composite systems – UZ 79 (AT)
Products/services: thermal insulation composite systems
Environmental impact(s): GHG

Comparability: There is an actual threshold given together with the information to quantify according to EN 15804 and the use of specific background database (ecoinvent/GaBi).

Effort for users: For the construction material producers, an EPD has to be provided as means of proof for the ecolabel certification. Therefore, the effort for the contracting authority is lower, if the tenderer uses thermal insulation material with an ecolabel

certification. Verification of the equivalence to the GHG benchmark requirement is much more complex.

Comprehensibility: GHG issues itself are quite comprehensible. Accounting methods in the background and requirements in GHG quantification are complex.

Potential legal risk: Due to the complexity in verification of the equivalence. Depending on the actual use in the procurement procedures. No actual case was yet identified in Austria related to public procurement.

Transferability within EU: Theoretically transferable to other ecolabel schemes within the EU.

Ecolabel on waterproof heat-insulating materials made of fossil materials – UZ 43 (AT)
Products/services: waterproof heat-insulating materials made of fossil materials
Environmental impact(s): multi-criteria LCA impact categories according to EN 15804

Comparability: There is threshold given together with the information to quantify according to EN 15804 and the requirement to use of a specific background database (Currently only GaBi). Next revision towards ecoinvent or GaBi with a focus on a benchmark for GHG due end of 2021.

Effort for users: For the construction material producers, an EPD has to be provided as means of proof for the ecolabel certification. Therefore, the effort for the contracting authority is lower, if the tenderer uses thermal insulation material with an ecolabel certification. Verification of the equivalence to the benchmark requirement is much more complex.

Comprehensibility: In the current version, various impacts from EN 15804 are covered. GHG issues itself are quite comprehensible. Accounting methods in the background and requirements in GHG quantification are complex.

Potential legal risk: medium to high – due to the complexity in verification of the equivalence. Depending on the actual use in the procurement procedures. No actual case was yet identified in Austria for its use in public procurement.

Transferability within EU: Theoretically transferable to other ecolabel schemes within the EU.

Ecolabel on tissue paper – Nordic Swan (DK, SE)
Products/services: tissue paper
Environmental impact(s): CO_2

Comparability: Clear approach including benchmarks

Effort for users: Low to medium. Evaluation of equivalent proposals not delivering proof via ecolabel is possible due to a transparent methodology and online worksheet available via the Nordic ecolabeling scheme. Tenderer and producer most likely the same: producer/supplier has to apply for Nordic ecolabel or at least to comply with the criteria and proof equivalency. LCA-based criteria (only CO_2) not very difficult to address.

Comprehensibility: Not very complex criterion - pure focus on CO_2 - benchmark relates to energy input.

Potential legal risk: If used as technical specification low risk - if used as selection or award criterion the risk is higher.

Transferability within EU: Mostly focused on Nordic countries - but similar requirement in EU ecolabel. Documentation available in English.

Ecolabel on textile/laundry service – Nordic Swan (DK, SE)
Products/services: textile service (laundry service)
Environmental impact(s): GHG

Comparability: Clear approach including benchmarks.

Effort for users: Medium. No full transparency is given on how the benchmark is calculated. An evaluation of equivalent offers without proof via the Nordic Label is not easy to address. Service providers have to apply for Nordic ecolabel or at least to comply with the criteria and proof equivalency.

Comprehensibility: Comprehensible criterion related to climate impact, but no full transparency on how the benchmark is calculated.

Potential legal risk: If used as technical specification low risk - if used as selection or award criterion the risk is higher.

Transferability within EU: Mostly focused on Nordic countries - but similar requirement in EU ecolabel. Documentation available in English.

Criteria that require an Environmental Product Declaration (EPD) as proof that the tendered products, services or works meet certain limit values for environmental impact(s).

EPD according to ISO 14025 (IT)
Products/services: several products - identified example on hygienic products (incontinence aids)
Environmental impact(s): multi-criteria LCA

Comparability: The criteria set for incontinency aids is available under the international EPD scheme (environdec). Nevertheless, not clearly specified how to model the LCA (scope, assumptions, meta data etc.) and what LCA database should be used (results may vary depending on the actual LCA). This leads to increased uncertainty of results on environmental impacts.

Effort for users: Quite high effort for evaluation of different offers - comparing results and interpreting the uncertainty levels. The producer/supplier has to assess all information according to criteria set by the environdec EPD scheme (incl. LCA-based requirements) and apply for the certification or deliver proof of equivalent fulfilment of the criteria.

Comprehensibility: The content of the EPD information is quite complex. Without clear benchmarks, there is a lack of comprehensibility from the perspective of the contracting authority.

Potential legal risk: Uncertainty level of results leads to incomparability and therefore bares a high legal risk for the direct use in procurement procedures.

Transferability within EU: International EPD scheme, documentation available in English, no limitations or access restrictions.

Criteria that require a certain level of a Building Certification Scheme, which is based on EPD-results according to EN 15804 or another LCA-based instrument.

DGNB/BNB (AT, DE, DK)
Products/services: buildings
Environmental impact(s): GWP, ODP, POCP, EP, AP, PE, ADP, FW

Comparability: Clear system boundary and requirements for quantification of environmental impacts according to the method.

Effort for users: Contracting authority normally obtains support via a separate project coordinator - mostly external project manager. Tenderer has to collect/process LCA/EPD information. Means of proof (LCA/EPD) has to be provided by the producer of construction materials. However, the national data systems/tools and databases have to be used for the LCA calculation. If there is no product-specific data, generic data can be used for the LCA-calculation in the planning stage

Comprehensibility: – The instrument itself is complex, but contextual support by coordinator is already part of the tendering.

Potential legal risk: The instrument is mostly used in the planning stage. If used in tendering, it is implemented as technical specification but not in awarding procedures.

Transferability within EU: The DGNB system is used in several countries. The potential for replication seems to be high but background data (EPD-database) has to be adapted per each country. All information is available in English.

Klimaaktiv (AT)
Products/services: buildings
Environmental impact(s): OI3: GHG, primary energy demand, acidification potential

Comparability: Clear method and comprehensive meta-data available (in Austrian database).

Effort for users: For contracting authorities the effort is small. Some of the software tools to calculate the energy performance certificate of buildings also calculate the Oekoindex (OI3) without any additional effort. The instrument is used in the planning stage with data from a database. The tenderer (planner) has to provide no additional data (only the design). The bigger effort lies with the producers as the means of proof (LCA/EPD) has to be provided by the producer of the construction materials.

Comprehensibility: The instrument itself is less complex than conducting a full LCA with ~15 impact categories. Nevertheless, the methodology behind OI3 is complex. However, there are several tools that are easy to apply and the single score indicator is easy to comprehend.

Potential legal risk: The tool is mostly used in the planning stage. If used in tendering, it is implemented as technical specification but not in awarding procedures.

Transferability within EU: –A national database and tools are necessary, the methodology itself could be replicated in other countries. Method/scheme documentation available only in German – some general information is available in English.

Minergy Eco (CH)
Products/services: buildings
Environmental impact(s): Primary Energy (non-renewable) and GHG

Comparability: Clear system boundary and requirements for quantification of the impacts.

Effort for users: Software for the calculation of grey GHG-emissions is available. Therefore, the effort should be small. Generic data is available. However, it is possible, that EPD-information is directly provided for construction material.

Comprehensibility: Method itself is complex, but practical software tool is available to support the quantification.

Potential legal risk: The tool is mostly used in the planning stage. If used in tendering, it is implemented as technical specification but not in awarding procedures.

Transferability within EU: A replication seems to be possible. Background data would need adaptation for other countries. Documentation and information is available in several languages.

Other instruments

CO_2 Pulp/paper (paper profile or equivalent) (AT)
Products/services: pulp and paper products
Environmental impact(s): CO_2

Comparability: Benchmark for CO2 for paper and methodology transparent, according to EU Ecolabel requirements for pulp and paper.

Effort for users: Transparent benchmark to compare with. Means of proof (paper profile) has to be delivered by pulp/paper producer. Verification of proof of equivalence might be complex for the contracting authority.

Comprehensibility: The CO_2 value is easily comprehensible. However, it might not be clear to the contracting authority what the calculation includes.

Potential legal risk: The quantification of the benchmark is not standardized. It is a self-declaration. Not mandatory verification by 3rd party required (only optional).

Transferability within EU: Instrument is used by paper producers all over the EU. It is accessible all over the EU and beyond.

GHG distance (AT)
Products/services: construction (civil engineering), rental textiles
Environmental impact(s): GHG

Comparability: Default Emission factors are provided, only the distance has to be provided by the tenderer.

Effort for users: The contracting authority should verify the information. However, because the calculation is only applied for civil engineering works and rental textiles, the data from the tenderers can be easily verified. The tenderers just have to provide the transport distances.

Comprehensibility: Easy to comprehend. All emission factors and the calculation method are available transparently.

Potential legal risk: Used as award criterion, but with much transparency on the method (including the information on formula etc.).

Transferability within EU: Easy to replicate. Maybe certain emission factors have to be adapted for different countries. The method consists of an easy formula, which will be accessible in the Austrian Action Plan (currently under revision).

Sustainability criteria in state-subsidized municipal building construction in Baden-Württemberg (DE)
Products/services: construction
Environmental impact(s): multi-criteria LCA

Comparability: Clear method and requirements on system boundary and quantification, as well as a tool are available.

Effort for users: The impact assessment has to be done for the building materials and for the energy consumption (heat and electricity in the use phase). The calculation itself, also with support of a tool, is complex. Contracting authorities cannot always count on an LCA expert for the calculation and interpretation.

Comprehensibility: The LCA results as information according to 7 impact categories is not simple and clear to comprehend without LCA expertise.

Potential legal risk: The use of the LCA-based information in the planning stage is without risk. Furthermore, there seems to be no risk to ask for a building material with certain functionalities in the tendering stage.

Transferability within EU: The method might be replicable to other countries. Documentation is only available in German.

4.2 Conclusion on best practice

All of these instruments entail several benefits and limits and none of them can be seen as applicable in all EEA countries right away. Nevertheless, in the perspective of the authors, the following characteristics would have to be met by an instrument for being described as "Best Practice":

Comprehensiveness of the instrument: An instrument dealing with environmental aspects in a comprehensive manner ("beyond GHG") has also to address the possible «shifting of burdens» between different environmental areas.

Practicability within the procurement procedures: An easy process for comparing results from the instruments is crucial. Instruments should be built upon clear methods and (product category) rules, accompanied by transparent documentation and published suitable default data (e.g. emission factors for climate impact assessment) and, in the best case, by even free accessible and validated tools for the actual quantification.

Additionally, the effort (personnel and financial resources) for procurers, tenderers and data providers (producers) is a limiting factor. The lower the effort, the higher the practicability of the instrument.

Responsibility and influence of procurers: It is important for procurers to comprehend the requirements and criteria they put in their tenders. Due to the related personal responsibility for the evaluation of offers, the overall comprehensibility of the instruments' methods is important for any instrument's success in public procurement. A key point is also the assessment of a potential legal risk when applying LCA-based criteria to procurement procedures. There is a low potential risk, if the instrument is used within the planning stage of procurement. When the instrument is applied to the actual tendering, the risk is lower if the requirements based on LCA-results are phrased in the technical specifications. The legal risk is higher if the LCA-based criteria are used within the selection or award criteria. Matters of dispute around environmental criteria in case law examples mostly contain issues on proper justification or phrasing of selection or awarding approaches. This finding is underpinned by the findings in chapter 2.5. (Description of court cases related to the inclusion of environmental or LCA-based criteria in public contracts). Potentially, there is a lower legal risk, when the LCA-based information is applied only to the control mechanism during the contracting, normally phrased as contract performance clause. Generally, the legal risk is lower if the LCA-based instrument is simple, results are verifiable, comprehensible and comparable.

Transferability within EU: The easier an instrument could be used in various countries, the higher its transferability among countries. Many instruments are available in full to specific contracting authorities without public accessibility. Some of them are built on

specific national LCA-databases. For certain instruments the documentation is not available in English. As this hinders the transferability to other countries and contracting authorities, the optimal instrument should address all these issues and find viable solutions.

5 CONCLUSIONS

➔ LCA-based instruments work well in principle in the "pre-tendering" phase (planning of tender processes) when there is in-house staff at contracting authorities with LCA-expertise.

Direct carbon footprint or multi-criterial LCA studies can provide valuable information in the market analysis and specific tender planning on which environmental aspects and which processes and life cycle phases of a product/service are to be specified in the tender documents.

Since the practical application of LCA-based instruments is also complex in the pre-tendering stage, it can be concluded that the application is only useful where there are (yet) no recognized GPP criteria, or if there is doubt that these GPP criteria address the causes of the essential environmental impacts. The LCA-based tools in the area of railway infrastructure are likely to be advantageous due, for example, to the fact that GPP criteria for this area do not exist so far.

In the construction sector (buildings and civil engineering), the essential provisions are already included in the planning stage and are often not apparent in the tender itself. Here, building certification schemes can provide more suitable access than GPP criteria, which focus mainly on the tendering stage.

➔ The construction sector is the sector mostly addressed in the actual application of LCA-based instruments in public procurement procedures due to its vast experience in using LCA information from Environmental Product Declarations of construction materials. Therefore, it is not surprising that this study also identified the broadest field of application in this sector. There is by far the most extensive LCA data available (also via certain national databases), experience in the application and, ultimately, many different instruments, tools and schemes in place supporting public procurers.

➔ The application of LCA-based criteria in Construction and Civil Engineering is well advanced due to the fact that these projects (usually about new construction or basic renovation) involve high order values.

The same applies to an identified catering tender issued by the Austrian Parliament. A corresponding ecolabel or proof of fulfilment of underlying requirements was requested. The costs for the bidder would hardly be worthwhile for a 2-3 years contract. The Parliament's contract was tendered for 10 years. In other words, the application of the LCA criteria is more likely to apply to cost-intensive projects or to the corresponding long term of contracts.

➔ The inclusion of LCA-based instruments will be an uphill battle due their limits. Usually, LCA-based instruments increase the costs, the workload, the duration of the procurement procedure, the risks of litigation and lead to a comparatively higher burden on SMEs. All of these are highly relevant for contracting authorities. It is therefore important to define cases where these instruments are suitable and cases where other instruments are more beneficial.

➔ LCA tools have good opportunities of being used by procurement managers who need to evaluate transport distances effectively. This aspect meets the desire of many buyers to contribute to local/regional or at least national value creation and enables tenderers to move within the possibilities offered by the legally compliant framework. This is the case, for example, for the wood calculator and textile calculator in Switzerland or several other LCC Tools.

➔ The use of LCA-based criteria might also offer good opportunities to public procurement of innovation: To ensure that the purchased innovation offers environmental benefits and that a benefit in one impact category (e.g. climate change) does not lead to a burden in others, the use of LCA-based criteria appears to be particularly suitable for the procurement of innovative solutions. That is why many of the LCA-based criteria presented in this study, are used in civil engineering and building construction. Most of these construction projects have at least the potential of being innovative.

➔ The LCA-based criteria are particularly useful and find acceptance among buyers if the market also offers solutions that differ greatly in their environmental impacts. If there is little heterogeneity in product selection, or if the selection according to strict environmental criteria favours products that may not meet other quality requirements of technical specifications, then an LCA-based instrument may not be the best choice. The same applies to environmental aspects in the award or selection criteria, which can be met by virtually any supplier and which no longer lead to environmentally relevant "quality distinctions" between different offers. The same applies to cases in which, due to technical limitations, there is no longer any potential for improvement.

An example is the use of the CO2 performance ladder within procurement criteria. After several years of application of the instrument, almost all suppliers have reached the highest level, so the application as award criterion has lost the desired effect of comparing and awarding "superior" tenderers.

➔ A promising approach for integrating environmental impact assessment into public procurement can be found through a broader consideration of external environmental costs (environmental externalities), as procurers are used to manage costs. However, before purchasers can integrate environmental aspects in the LCC meaningfully and with the lowest possible legal risk, there is still a high need for development work in order to produce uniform and robust methodology. Ultimately, low-threshold access to robust background data and a transparent description of the procedure is also necessary. In the worst case, when LCC includes costs for environmental externalities, the uncertainties behind some LCA methods are increased by further conversion of these externalities into costs. This is due to the additional uncertainty in the translation of environmental aspects into consequential environmental costs.

In any case, there is a need for research. Several interview partners in various countries explicitly mentioned the desire for a clear, robust and legally secure methodology. In France for example, where the law EGAlim of 2018 (see 2.3.6), imposes minimum thresholds for quality and/or sustainable products from January 1, 2022 some contracting authorities are currently expressing the need for such instruments. This applies for example to public entities purchasing catering services. Several contracting authorities in some countries highlighted experiences implementing this, mainly by addressing external costs for CO_2/GHG emissions stemming from vehicles. Currently multi-criteria external environmental costs are only addressed in the Netherlands with the tool DuboCalc (containing the Environmental Cost Indicator - ECI). In Italy a similar LCC-approach is currently under development (Mettiamoci in RIGA project).

6 ANNEX I: SOURCES

I.1 Sources – Literature Review

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I.2 Sources of Identified Documents

AUSTRIA (incl. Lower Austria, Upper Austria, Vienna)					
Name of the document	English name of the document (translation)	Type of document	Date of Publication	Link to document	Integrated if direct or indirect link to EF/LCA-criteria
BVergG 2018	National Procurement Law	legal act	2018	https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20010295	Indirect
naBe-Aktionsplan	Austrian Action Plan for Sustainable Public Procurement	political action plan/ road map	2014	https://www.nachhaltigebeschaffung.at	Direct
Regierungsprogramm 2020	Government programme of the Austrian Government (2020-2024)	political action plan/ road map	2020	https://www.dieneuevolkspartei.at/Download/Regierungsprogramm_2020.pdf	Direct/Indirect
NÖ Energieeffizienzgesetz 2012, StF: LGBl. 7830-0	Law on energy efficiency	legal act	2012	https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=LrNO&Gesetzesnummer=20000631	Indirect
Pflichtenheft Energieeffizienz und Nachhaltigkeit für NÖ Landesgebäude, Version 3.0, Ausgabe September 2014	List of requirements on energy efficiency and sustainability of the buildings owned by the provincial government	sectoral agreement/ guideline	2014	http://www.noe.gv.at/noe/Energie/Pflichtenheft_Energieeffizienz-Nachhaltigkeit_Sept_2014_V31.pdf	Indirect
Niederösterreichisches Klima- und Energieprogramm 2020, Überarbeitete 2. Auflage	Climate and Energy programme of Lower Austria	political action plan/ road map	2017	http://www.noe.gv.at/noe/Klima/NOE_Klima-_und_Energieprogramm_2020_2._Auflage.pdf	Indirect
Niederösterreichischer Fahrplan nachhaltige Beschaffung, Version 1.0, Ausgabe 2015	Schedule on sustainable public procurement in Lower Austria	political action plan/ road map	2015	https://www.noe.gv.at/noe/Gemeindeservice/Beschaffungsfahrplan_10-2015.pdf	Indirect
Mindestanforderungen für eine nachhaltige Beschaffung in Niederösterreich,	Minimum requirements for sustainable procurement in lower austria -	political action plan/ road map	2016	https://www.beschaffungsservice.at/uploads/documents/47-NOMindestkriterienVersion1.pdf	Indirect

Beilage zum Fahrplan nachhaltige Beschaffung, Version 1.2, Ausgabe 2016	supplement of the Schedule on sustainable public procurement				
Nachhaltigkeits-Mindestmaßnahmen der Bundesimmobiliengesellschaft	Minimum requirements for sustainability of the federal real estate company	sectoral agreement/ guideline	2019	https://hbp.big.at/	Direct/Indirect
Baubook - ökologisch ausschreiben	Baubook - tender green solutions	Other (database)		https://www.baubook.info/oea/	Direct
Bundesgesetz über die Steigerung der Energieeffizienz bei Unternehmen und dem Bund (Bundes-Energieeffizienzgesetz – EEffG)	National Law on the increase of energy efficiency in companies and the federal level	legal act	2014	https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20008914	No
OIB-Richtlinie 6 (national implementation of the directive on energy efficiency of buildings)	National rules for construction and renovation of buildings: reduction of energy and heat insulation	sectoral agreement/ guideline	2019	https://www.oib.or.at/sites/default/files/richtlinie_6_12.04.19_1.pdf	No
NÖ Bauordnung 2014	Buildings regulations	legal act	2014	https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=LrNO&Gesetzesnummer=20001079	No
Umweltmanagement: Umwelterklärung Land OÖ	Environmental Management System: Environmental Statement	Other (Report)		https://www.land-oberoesterreich.gv.at/Mediendateien/Formulare/Dokumente%20PraesD%20Abt_GBM/gbm_EMAS_Umwelterklaerung_2018_Allgemeiner_Teil.pdf	No
Ökoleitfaden des Landes OÖ	Green Guideline of Upper Austria	guidance		http://www.pro-ee.eu/fileadmin/pro_ee/inhalte/dokumente/oekoleitfaden_Stand20100531.pdf	No (ecolabels are mentioned but only as verification tool)
ÖkoKauf Wien - Programm für die ökologische Beschaffung der Stadt Wien	ÖkoKauf Wien - Program for green public procurement of the city of Vienna	Other (Webseite with criteria)		https://www.wien.gv.at/umweltschutz/oekokauf/	No

BELGIUM (incl. Flanders/Wallonia - Brussels, Antwerp, Ghent, Hainaut)					
Name of the document	English name of the document (translation)	Type of document	Date of Publication	Link to document	Integrated if direct or indirect link to EF/LCA-criteria
Vlaams Plan Overheidsopdrachten	Flammish Plan Public Procurement	political action plan/ road map	2016	https://overheid.vlaanderen.be/sites/default/files/media/documenten/overheidsopdrachten/20160129_plan%20overheidsopdrachten.pdf	Indirect
Wet Overheidsopdracht 2016	Government Projects Law 2016	legal act	07.04.2019	https://www.publicprocurement.be/sites/default/files/documents/2016_06_17_loi_marches_publics_wet_overheidsopdrachten_v_2019_0.pdf	Indirect
Waardering van kantoorgebouwen	Assessment of office buildings	guidance	26.09.2013	https://www.provincieantwerpen.be/content/dam/provant/dlm/dmn/duurzame-provincie/aankopen/L_ALG_Bouw_Nieuwbouw_tg.pdf	Direct
Wet Overheidsopdrachten voor werken, leveringen en diensten op Defensie- en Veiligheidsgebied	Law Government Projects for jobs, supplies and services in the defense and safety area	legal act	23.09.2018	https://www.publicprocurement.be/sites/default/files/documents/ar_kb_def_v_2020_2.pdf	Indirect
Duurzame ontwikkeling bij overheidsopdrachten, deel 1: Opname van ecologisch criteria	Sustainable development in public procurement, part 1: Implementation of environmental criteria	guidance	2013	https://www.publicprocurement.be/nl/duurzame-overheidopdrachten	Indirect
Omzendbrief - Integratie van duurzame ontwikkeling, met inbegrip van sociale clausules en maartregelen ten voordele van kleine en middelgrote ondernemeningen, in het kader van overheidsopdrachten geplaatst door de federale	Circulaire - Integration of sustainable development, including social clauses and measures in favour of small and medium size enterprises, in the context of public procurement by the federal state	secondary legislation	2014	https://gidsvoorduurzameaankopen.be/sites/default/files/content/download/files/omzendbrief_16_mei_2014_bs_21_mei_2014.pdf	Indirect

aanbestende instanties					
Handleiding duurzaamheidsoverwegingen bij overheidsopdrachten	Guidelines on sustainability considerations for public procurement	guidance	2018	https://overheid.vlaanderen.be/sites/default/files/media/Overheidsopdrachten%20en%20raamcontracten/handleiding%20DOO%20Definitief.docx?timestamp=1542813449	Indirect
Handleiding voor de toepassing van de levenscycluskost bij (duurzame) overheidsopdrachten - Programmatorische federale overheidsdienst duurzame ontwikkeling	Handbook for the application of life cycle costing in (green) public procurement	guidance	2012	https://biblio.ugent.be/publication/3051418/file/6780646.pdf	Indirect
Omzendbrief Verwerving en vervreemding, gebruik en beheer van dienstvoertuigen	Circulaire - Procurement, use and maintenance of service vehicles	secondary legislation	2017	https://overheid.vlaanderen.be/omzendbrief-kb/bz/2017/4	Indirect
Loi relative aux marchés publics	Procurement Law Act	legal act	2019	https://marchespublics.wallonie.be/home/reglementation/reglementation-actuelle/lois.html	indirect
Plan d`actions achats publics responsables 2017-2019	Action Plan for GPP 2017-2019	political action plan/ road map		http://developpementdurable.wallonie.be/sites/default/files/2017-10/plan_apr_complet.pdf	Direct (see the circular below)
Pierres Wallones & Marché Publics	Stones from Wallonia and public markets	guidance	2014	http://www.pierresetmarbres.be/fileadmin/files/pdf/PMW-circulaire_marches_publics.pdf	Direct (see the link in the action plan above)
L'echelle de performance CO2	CO2-performance ladder	other (pilot testing of a tool)	2019	http://developpementdurable.wallonie.be/lechelle-de-performance-co2	Direct
Rondzendbrief betreffende de opname van ecologische criteria en duurzame ontwikkelingscriteria in de overheidsopdrachten voor leveringen en diensten	Circulaire concerning the incorporation of environmental criteria and sustainable development criteria in public procurement	legal act	2009	https://leefmilieu.brussels/sites/default/files/circulaire_apd_nl.pdf	Indirect
Gids duurzame aankopen Nieuwbouw	Guidance Green Procurement new buildings	Guidance	2013	https://www.provincieantwerpen.be/content/dam/provant/dlm/dmn/duurzame-	Direct

				provincie/aankopen/L_ALG_Bouw_Nieuwbouw_tg.pdf	
Gids duurzame aankopen Schoonmaakmiddelen	Guidance Green Procurement Detergents	Guidance	2013	https://www.provincieantwerpen.be/content/dam/provant/dlm/dmn/duurzame-provincie/aankopen/L_ALG_Gevaarlijkeprod_Schoonmaakmiddelen_tg.pdf	Indirect
Gids duurzame aankopen Dienst: Schoonmaak	Guidance Green Procurement Service: cleaning	Guidance	2013	https://www.provincieantwerpen.be/content/dam/provant/dlm/dmn/duurzame-provincie/aankopen/L_ALG_Dienst_Schoonmaak_tg.pdf	Indirect
Gids duurzame aankopen Dienst: Reiniging Ruiten	Guidance Green Procurement Cleaning windows	Guidance	2013	https://www.provincieantwerpen.be/content/dam/provant/dlm/dmn/duurzame-provincie/aankopen/L_ALG_Dienst_ReinigenRuiten_tg.pdf	Indirect
Gids duurzame aankopen Verven en vernissen	Guidance Green Procurement Coatings and paints	Guidance	2013	https://www.provincieantwerpen.be/content/dam/provant/dlm/dmn/duurzame-provincie/aankopen/W_ALG_GidsDuurzameAankopen_VervenVernissen.pdf	Indirect
Gids duurzame aankopen Papier	Guidance Green Procurement Paper	Guidance	2018	https://www.provincieantwerpen.be/content/dam/provant/dlm/dmn/duurzame-provincie/aankopen/W_ALG_GidsDuurzameAankopen_Papier.pdf	Indirect
Gids duurzame aankopen Personal Computers	Guidance Green Procurement Personal Computers	Guidance	2013	https://www.provincieantwerpen.be/content/dam/provant/dlm/dmn/duurzame-provincie/aankopen/L_ALG_ToestellenKantoor_PersonalComputers_tg.pdf	Indirect
Gids duurzame aankopen (Verschillende onderwerpen)	Guidance Green Procurement (various topics)	Guidance	2013	https://www.provincieantwerpen.be/aanbod/dlm/duurzame-organisatie/duurzaam-aankopen0.html	No
Toolbox Sociaal verantwoorde werkkledij	Toobox, social responsible work clothing	Guidance	2018	https://stad.gent/sites/default/files/article/documents/20180412_PU_ToolboxSocVerWerkkledij_1204.pdf	Indirect
Les marchés public, guide a destination entreprises	Public markets, guide for businesses	guidance	2017	https://www.marchespublics-pme.be/documents/GUIDE-MP-ENT-revu-nouveaux-seuils-2020.pdf	Indirect
Wet betreffende concessieovereen komsten	Law concerning concession contracts	legal act	2019	https://www.publicprocurement.be/sites/default/files/documents/2016_loi_concessions_wet_concessies_vers_2019_2.pdf	No link, but general finding GPP

Sectoraal akkoord over detergenten	Sectoral agreement on detergents	sectoral agreement	06.01. 2011	https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/19100836/accord%20sectoriel%20d%C3%A9tergent_final%20NL.pdf	No
Federaal Actieplan Duurzame Overheidsopdrachten	Federal Action Plan Green Public Procurement	political action plan/ road map	06.02. 2009	https://www.duurzameontwikkeling.be/sites/default/files/document/files/federaal_actieplan_duurzame_overheidsopdrachten_2009_2011_nl_1.pdf	No
Koninklijk besluit energie-efficiëntie eisen in het kader van bepaalde overheidsopdrachten betreffende de verwerving van producten, diesnten en gebouwen	Royal decree energy-efficiency requirements in public procurement of the acquisition of products, services and buildings	legal act	13.07. 2014	https://gidsvoorduurzameaankopen.be/sites/default/files/content/download/files/kb_ee_2013072014.pdf	No
Omzendbrief — Aanschaffen van personenvoertuig en bestemd voor de Staatsdiensten en sommige instellingen van openbaar nut	Circulaire - Purchase of vehicles for State services and some public organizations	legal act	21.04. 2017	https://gidsvoorduurzameaankopen.be/sites/default/files/content/download/files/20170511_307sexies.pdf	No
Implementatie van het duurzame ontwikkelingsbeleid bij de overheidsopdrach - ten van leveringen gelanceerd door aanbestedende overheden van de federale overheid die behoren tot de klassieke sectore	Implementation of sustainable development policies in public procurement of the supply by the federal government belonging to the classical sectors	legal act	27.01. 2005	https://leefmilieu.brussels/sites/default/files/user_files/circ_20050127_marchespublicsdurables_federal_bil.pdf	No
Wet betreffende concessieovereen komsten	Law concerning concession contracts	legal act	2016	https://www.publicprocurement.be/sites/default/files/documents/2016_loi_concessions_wet_concessies_vers_2019_2.pdf	No (General GPP)

DENMARK					
Name of the document	English name of the document (translation)	Type of document	Date of Publication	Link to document	Integrated if direct or indirect link to EF/LCA-criteria
Udbudsloven	The Public Procurement Act	legal act	2015	https://www.kfst.dk/media/54435/the-public-procurement-act.pdf	Indirect
Green Procurement - Business Cases	Green Procurement - Business Cases	other	2013	https://www.oneplanetnetwork.org/sites/default/files/green_procurement_and_green_products_generate_growth_-_busines.pdf	Indirect
Strategi for intelligent offentligt indkøb	Strategy for intelligent public procurement	political action plan/ road map	2013	https://oes.dk/media/15000/strategi-for-intelligent-offentligt-indkoeb.pdf	Indirect
Danmark uden affald II	Denmark without waste II	political action plan/ road map	2015	https://eng.mst.dk/media/164923/denmark-without-waste-ii_wasteprevention.pdf	Direct
Guide til grønne indkøb	Guide to green procurement	guidance	-	https://mst.dk/media/135197/gronne-indkob_210x210_online.pdf	Indirect
Den frivillige bæredygtighedsklasse - Livscyklusvurdering	The voluntary sustainability class - LCA	guidance	2020	https://baeredygtighedsklasse.dk/5-Krav-og-vejledning/Livscyklusvurdering---bygningens-samlede-klimapaavirkning#beregningsmetode	Direct
Fælleskommunal Indkøbsstrategi 2020-2024	Joint Municipal Procurement Strategy 2020-2024	guidance	2020	https://www.kl.dk/media/23572/faelleskommunal-indkoebsstrategi-2020-2024.pdf	Indirect
LCAByg	LCABuild	other	2015	https://iopscience.iop.org/article/10.1088/1755-1315/290/1/012039/pdf	Direct
Grønne Indkøb	Green Procurement	other	-	https://mst.dk/erhverv/groen-virksomhed/groenne-offentlige-myndigheder/groenne-indkoeb/	No (General GPP)
Analyse af metoder til monitorering af samfundsansvar i offentlige indkøb	Analysis of methods for monitoring corporate social responsibility in public procurement	other	2014	https://www2.mst.dk/Udgiv/publikationer/2014/08/978-87-93178-86-1.pdf	No (General GPP)

Statens Indkøbspolitik	State Procurement Policy	political action plan/ road map	2010	https://oes.dk/media/15001/statens_indkoebspolitik.pdf	No (General GPP)
Markedsføringsloven	Marketing Act	legal act	2017	https://danskelove.dk/markedsf%C3%B8ringsloven	No (General GPP)
Partnerskab for offentlige grønne indkøb - Indkøbsmål	Partnership for public green procurement - Procurement goals	other	-	https://ansvarligeindkob.dk/partnerskab/indkoebsmaal/	No (General GPP)
Grønne Offentlige Indkøb	Green Public Procurement	other	-	https://concito.dk/sites/concito.dk/files/dokumenter/artikler/groenne_indkoeb_brief_endelig_181016.pdf	No
Cirkulære om indkøb i staten	Side letter on procurement in the state	legal act	-	https://www.retsinformation.dk/eli/retsinfo/2017/9453	No
Analyse af metoder til monitorering af samfundsansvar i offentlige indkøb	Analysis of methods for monitoring corporate social responsibility in public procurement	other	-	https://www2.mst.dk/Udgiv/publikationer/2014/08/978-87-93178-86-1.pdf	No
Statens Indkøbspolitik	State Procurement Policy	political action plan/ road map	-	https://oes.dk/media/15001/statens_indkoebspolitik.pdf	No
Sociale hensyn ved indkøb	Social considerations in procurement	other	-	https://ansvarligeindkob.dk/wp-content/uploads/2018/09/pdf_sociale_hensyn_ved_indkoeb.pdf	No
Miljømærkning Danmark	Ecolabelling Denmark	other	-	https://www.ecolabel.dk/da/	No
Bekendtgørelse om fremgangsmåderne ved indgåelse af kontrakter inden for vand- og energiforsyning, transport samt posttjenester	Notice on the procedures for awarding contracts for water and energy supply, transport and postal services	secondary legislation	-	http://europam.eu/data/mechanisms/PP/PP%20Laws/Denmark/Denmark_Law_1624_of_15_December%202015_DK.pdf	No
Produktsikkerhedsloven	Product safety act	legal act	-	https://www.elov.dk/produktsikkerhedsloven/	No
Ecodesignloven	The Eco design law	legal act	-	https://www.elov.dk/ecodesignloven/	No
Miljøstyrelsen	Environmental Protection Agency	other	-	https://www2.mst.dk/Udgiv/publikationer/2016/04/978-87-93435-63-6.pdf	No

Trafik-, Bygge- og Boligstyrelsen	Danish Transport, Construction and Housing Agency.	other	-	https://lccbyg.dk/	No
Statens Byggeforskningsinstitut	National Building Research Institute	other	-	https://www.lcabyg.dk/download-program	No
Klimakompasset: CO2 beregneren	Climate compass: CO2 calculator	other	-	http://www.klimakompasset.dk/beregner/	No
CSR Kompasset	The CSR compass	other	-	https://www.csrkompasset.dk/retningslinjer	No
Livscyklus-screening af affalds-forebyggelse	Lifecycle screening of waste prevention	other	-	https://www2.mst.dk/Udgiv/publikationer/2016/04/978-87-93435-63-6.pdf	No
Indkøb og verdensmål	Procurement and sustainable business goals	other	-	https://ansvarligeindkob.dk/wp-content/uploads/2019/11/Indk%C3%B8b_og_verdensm%C3%A5l.pdf	No
Energistyrelsens indkøbsanbefalinger	The Danish Energy Agency's procurement recommendations	other	-	https://sparenergi.dk/offentlig/vaerktoejer/indkoebsanbefalinger	No
Cirkulær indkøbsguide 2017	Circular procurement guide 2017	other	-	https://ansvarligeindkob.dk/wp-content/uploads/2018/09/pdf_cirkulaer_indkoebsguide.pdf	No
EU Country Report, Denmark 2018	EU Country Report, Denmark 2018	Other (Report)	-	https://ec.europa.eu/docsroom/documents/34717/attachments/1/translations/en/renditions/native	No

FRANCE					
Name of the document	English name of the document (translation)	Type of document	Date of Publication	Link to document	Integrated if direct or indirect link to EF/LCA-criteria
Code de la commande publique	Procurement Law Act	legal act	2019	https://www.legifrance.gouv.fr/affichCode.do?cidTexte=LEGITEXT000037701019&idSectionTA=&dateTexte=20190401	Direct/Indirect

Services Publics écoresponsables - L'état accélère la transition écologique de ses services	Public Services ecoresponsibles - state accelerating the environmental transition of public services	guidance	2019	https://www.ecologique-solidaire.gouv.fr/sites/default/files/20023_fiche-SPE-3.pdf	Direct
NOTICE INTRODUCTIVE : PRISE EN COMPTE DU COÛT DU CYCLE DE VIE DANS UNE CONSULTATIONG ROUPE D'ETUDE DES MARCHES DEVELOPPEMENT DURABLE (GEM-DD)	Introductory Notice: Consideration of Life-Cycle Costs in a Consultation - Sustainable Procurement Development Study Group (GEM-DD)	guidance	March 2016	https://www.economie.gouv.fr/files/files/directions_services/daj/marches_publics/oeap/gem/cout-cycle-vie-consultation/cout-cycle-vie-consultation.pdf	Indirect
COMMANDE PUBLIQUE DURABLE 2016 - Auvergne - RhoneAlpes Guide méthodologique et fiches pratiques	SUSTAINABLE PUBLIC PROCUREMENT 2016 - Auvergne -RhoneAlpes Methodological Guide and Practical Sheets	guidance	Apr.16	https://www.eclaira.org/articles/h/commande-publique-durable--guide-methodologique-et-fiches-pratiques-2016.html	Indirect
Plan national d'action pour les Achats Publics Durables 2015-2020	National Actionplan for the SUSTAINABLE PUBLIC PROCUREMENT 2015-2020	political action plan/ road map	July 2014	https://www.actu-environnement.com/media/pdf/news-24434-pnaapd-2015-2020.pdf	Indirect
Arrêté du 22 mars 2019 relatif aux modalités de prise en compte des incidences énergétiques et environnementales des véhicules à moteur dans la passation des marchés publics	Decree of 22 March 2019 on the arrangements for taking into account the energy and environmental impacts of motor vehicles in the award of public contracts	legal act	March 2019	https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000038318601	No (General GPP)
LOI n° 2009-967 du 3 août 2009 de programmation relative à la mise en œuvre du Grenelle de l'environnement (1) NOR: DEVX0811607L Version	Act No. 2009-967 of 3 August 2009 on programming relating to the implementation of the Grenelle de l'environnement (1) NOR:	legal act	2020	https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000020949548&dateTexte=20200807	No

consolidée au 07 août 2020	DEVX0811607L Consolidated version as at 07 August 2020				
Grenelle de l'Environnement Convention sur la mise en œuvre de l'Eco-prêt à taux zéro pour la rénovation thermique des logements	Grenelle de l'Environnement Convention on the implementation of Eco-loan at zero rates for the thermal renovation of dwellings	sectoral agreement	-	https://www.ecologique-solidaire.gouv.fr/sites/default/files/Convention%20sur%20la%20mise%20en%20oeuvre%20de%20l%E2%80%99Eco-pr%C3%AAt%20%C3%A0%20taux%20z%C3%A9ro%20pour%20la%20r%C3%A9novation%20thermique%20des%20logements.pdf	No
LE PLAN MINISTERIEL «ADMINISTRATIONEXEMPLAIRE» DU MEDDE/MLETR2015-2020 (Juin 2015)	THE "EXEMPLARY ADMINISTRATION" MINISTERIAL PLAN OF THE MEDDE/MLETR 2015-2020 (June 2015)	political action plan/ road map	2015	https://www.ecologique-solidaire.gouv.fr/sites/default/files/PMAE%202015-2020.pdf	No
Rapport à la Commission européenne relatif à l'application de la réglementation en matière de marchés publicspour la période 2014-2016	Report to the European Commission on the application of public procurement regulations for the period 2014-2016	other (report)	-	https://ec.europa.eu/growth/single-market/public-procurement/country-reports_en	No

GERMANY (incl. North Rhine-Westphalia, Bavaria, Baden-Württemberg)					
Name of the document	English name of the document (translation)	Type of document	Date of Publication	Link to document	Integrated if direct or indirect link to EF/LCA-criteria
Leitfaden nachhaltiges Bauen	Guideline to sustainable construction	sectoral agreement	2019	https://www.bmi.bund.de/SharedDocs/downloads/DE/publikationen/themen/bauen/leitfaden-nachhaltiges-bauen.html	Direct
Unterschwellen-vergabeordnung (UVgO)	Sub-threshold regulation	legal act	02.02.2017	https://www.bmwi.de/Redaktion/DE/Downloads/U/unterschwellenvergabeordnung-uvgo.pdf?__blob=publicationFile&v=8	Indirect

Vergabeverordnung (VgV)	Procurement regulation	legal act	25.03.2020	https://www.gesetze-im-internet.de/vgv_2016/	Indirect
Sektorenverordnung, Verordnung über die Vergabe von Aufträgen im Bereich des Verkehrs, der Trinkwasserversorgung und der Energieversorgung	Sector regulation, regulation on the awarding of contracts in the field of transport, drinking water supply and energy supply	legal act	25.03.2020	https://www.gesetze-im-internet.de/sektvo_2016/	Indirect
Allgemeine Verwaltungsvorschrift zur Beschaffung energieeffizienter Leistungen (AVV EnEff)	General administrative regulation for the procurement of energy-efficient services	legal act	18.05.2020	http://www.verwaltungsvorschriften-im-internet.de/bsvwvbund_18052020_IB3.htm	Indirect
Umweltfreundliche Beschaffung: Schulungsskript 2 - Einführung in die Berechnung von Lebenszykluskosten und deren Nutzung im Beschaffungsprozess	Environmentally friendly procurement: Training script 2 - Introduction to the calculation of life cycle costs and their use in the procurement process	guidance	2019	https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/190827_uba_schulungsskript_2_bf.pdf	Indirect
Rechtsgutachten umweltfreundliche öffentliche Beschaffung	Legal opinion environmentally friendly public procurement	guidance	01.02.2019	https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/texte_30-2019_rechtsgutachten-umweltfreundliche-beschaffung_bf.pdf	Indirect
Bewertungssystem Nachhaltiges Bauen für Bundesgebäude	Evaluation system for sustainable construction of federal buildings	sectoral agreement	n/a	https://www.bnb-nachhaltigesbauen.de/bewertungssystem.html	Direct
NRW: Verordnung zur Regelung von Verfahrensanforderungen in den Bereichen umweltfreundliche und energieeffiziente Beschaffung, Berücksichtigung sozialer Kriterien und Frauenförderung sowie Förderung der Vereinbarkeit von Beruf und Familie bei der	Regulation for the procedural requirements in the areas of environmentally friendly and energy-efficient procurement, taking into account social criteria and promoting women and promoting the compatibility of work and family	legal act	14.05.2013	https://recht.nrw.de/lmi/owa/br_bes_text?sg=0&menu=0&bes_id=23804&aufgehoben=J&anw_nr=2	Indirect

Anwendung des TVgG – NRW	when applying the TVgG - NRW				
BAY: Umweltrichtlinien öffentliches Auftragswesen	Environmental public procurement	legal act	28.04. 2009	https://www.lfu.bayern.de/abfall/recycling_neue_produkte/doc/umweltgesichtspunkte.pdf	Indirect
BW: Verwaltungsvorschrift der Landesregierungüber die Vergabe öffentlicher Aufträge	Administrative regulation of the state government regarding the award of public contracts	legal act	24.07. 2018	https://wm.baden-wuerttemberg.de/fileadmin/redaktion/m-wm/intern/Dateien_Downloads/Wirtschaftsstandort/Beschaffung-Land/VwV_Beschaffung_vom_24_07_2018_01.pdf	Indirect
BW: Verwaltungsvorschrift der Landesregierungüber die Vergabe öffentlicher Aufträge	Administrative regulation of the state government regarding the award of public contracts	legal act	24.07. 2018	https://wm.baden-wuerttemberg.de/fileadmin/redaktion/m-wm/intern/Dateien_Downloads/Wirtschaftsstandort/Beschaffung-Land/VwV_Beschaffung_vom_24_07_2018_01.pdf	Indirect
A-2036/5 Zentrale Dienstvorschrift des Bundesministeriums für Verteidigung "Nachhaltige Entwicklung"	A-2036/5 Central regulation of the Federal Ministry of Defense "Sustainable Development"	secondary legislation	07.04. 2016	http://docplayer.org/44921573-Nachhaltige-entwicklung.html	Indirect
Monitoring-Bericht der Bundesregierung zur Anwendung des Vergaberechts 2017	Report to the European Commission on the application of public procurement regulations	Other (Report)	2017	https://ec.europa.eu/growth/single-market/public-procurement/country-reports_en	No
Gesetz gegen Wettbewerbsbeschränkung (GWB)	Restriction of Competition Act	legal act	19.06. 2020	https://www.gesetze-im-internet.de/gwb/BJNR252110998.html	No
Kreislaufwirtschaftsgesetz	Circular Economy Act	legal act	20.07. 2017	https://www.gesetze-im-internet.de/krwg/	No
Vergabe- und Vertragsverordnungen für Bauleistungen, Teil A	Procurement and contract regulations for construction work, part A	legal act/sectoral agreement	19.02. 2019	http://www.verwaltungsvorschriften-im-internet.de/bsvwvbund_20022019_BWI770421.htm	No
Allgemeine Vertragsbedingungen für die Ausführung von Bauleistungen (VOB/B Ausgabe 2016)	General Contractual Conditions for the Execution of Construction Work (VOB / B Edition 2016)	legal act/sectoral agreement	07.01. 2016	http://www.verwaltungsvorschriften-im-internet.de/bsvwvbund_26062012_B15816361.htm	No

Klimaschutzgesetz	Climate Protection Law	legal act	12.12.2019	https://www.gesetze-im-internet.de/ksg/BJNR251310019.html	No
Maßnahmenprogramm Nachhaltigkeit der Bundesregierung	Federal Government sustainability program	political action plan/ road map	24.04.2017	https://www.bundesregierung.de/resource/blob/975274/426424/ce303cc4bf64c43e7775dc20f031fb2b/2015-03-30-massnahmenprogramm-nachhaltigkeit-data.pdf?download=1	No
Klimaschutzprogramm 2030 der Bundesregierung zur Umsetzung des Klimaschutzplans 2050	Federal Government's 2030 climate protection program to implement the 2050 climate protection plan	political action plan/ road map	2019	https://www.bundesregierung.de/resource/blob/975226/1679914/e01d6bd855f09bf05cf7498e06d0a3ff/2019-10-09-klima-massnahmen-data.pdf?download=1	No
Umweltfreundliche Beschaffung: Schulungsskript 1	Green Procurement: Training Script 1	guidance	2019	https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/190827_uba_schulungsskript_1_bf.pdf	No
Umweltfreundliche Beschaffung: Schulungsskript 4 - Aktive und passive Marktbeobachtung und -analyse	Environmentally friendly procurement: Training script 4 - active and passive market observation and analysis	guidance	2019	https://www.umweltbundesamt.de/sites/default/files/medien/377/publikationen/170127_uba_ratgeber_schulungsskript4_bf.pdf	No
Umweltfreundliche Beschaffung: Schulungsskript 6 - Hemmnisanalyse für eine umweltfreundliche Beschaffung mittels Selbstevaluations-Tool	Environmentally friendly procurement: Training script 6 - obstacle analysis for one environmentally friendly procurement using the self-evaluation tool	guidance	2010	https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/umweltfreundliche_beschaffung_script_6.pdf	No
Leitfaden zur umweltfreundlichen öffentlichen Beschaffung: Baumaschinen	Guide to environmentally friendly public procurement: construction machinery	guidance	2017	https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/leitfaden_zur_umweltfreundlichen_oeffentlichen_beschaffung_baumaschinen_0.pdf	No
NRW: Abfallgesetz NRW	Waste Act NRW	legal act	07.04.2017	http://www.lexsoft.de/cgi-bin/lexsoft/justizportal_nrw.cgi?t=15934564053877224&sessionID=19373932621323058807&templateID=document&source=context&chosenIndex=Dummy_nv_68&xid=167077,1	No

NRW: Klimaschutzgesetz NRW	Climate Protection Act	legal act	2013	https://www.landtag.nrw.de/portal/WWW/dokumentenarchiv/Dokument/MMG16-29.pdf?von=1&bis=0	No
BAY: Umweltrichtlinien öffentliches Auftragswesen	Environmental public procurement	legal act	2009	https://www.lfu.bayern.de/abfall/recycling_neue_produkte/doc/umweltgesichtspunkte.pdf	No (LCC mentioned, but only to TCO)
BAY: Bayrische Nachhaltigkeitsstrategie	Bavarian Sustainability Strategy	political action plan/ road map		https://www.nachhaltigkeit.bayern.de/	No
BAY: Bayerische Abfallwirtschaftsgesetz	Bavarian Waste law	legal act	10.12. 2019	https://www.gesetze-bayern.de/Content/Document/BayAbfAlG/true	No
BAY: Leitfaden "Umweltschutz in Behörden"	Guide "Environmental Protection in Authorities"	guidance	2014	https://www.lfu.bayern.de/umweltkommunal/beschaffung/index.htm	No
BAY: Mehr Bio in Kommunen. Ein Praxisleitfaden des Netzwerks deutscher Biostädte	More organic in municipalities. A practical guide from the network of German bio-cities	guidance	2017	http://www.nachhaltige-beschaffung.info/DE/DokumentAnzeigen/dokument-anzeigen_node.html?idDocument=1768&view=knbdownload	No
BAY: Vergabe von Verpflegungsleistungen	Awarding of catering services	secondary legislation	2019	http://www.nachhaltige-beschaffung.info/DE/DokumentAnzeigen/dokument-anzeigen_node.html?idDocument=1970&view=knbdownload	No
BAY: Das wirtschaftlichste Angebot. Hinweise zur richtigen Gestaltung und Wertung im Vergabeverfahren Wertung im Vergabeverfahren	The most economical offer. Advice on correct design and evaluation in the award procedure Evaluation in the award procedure	guidance	2019	https://www.stmwi.bayern.de/fileadmin/user_upload/stmwi/Publikationen/2014/Das_Wirtschaftlichste_Angebot.pdf	No
BW: Landesabfallgesetz (LAbfG) von Baden-Württemberg	State Waste Act of Baden-Württemberg	legal act	17.12. 2009	http://www.landesrecht-bw.de/jportal/?quelle=jlink&query=AbfG+BW&psml=bsbawueprod.psml&max=true&aiz=true	No
BW: Saubere Sachen. Wegweiser für nachhaltige Reinigungsdienstleistungen	Clean things. Guide to sustainable cleaning services	guidance	2015	http://www.nachhaltige-beschaffung.info/DE/DokumentAnzeigen/dokument-anzeigen_node.html?idDocument=1488&view=knbdownload	No

ITALY (incl. Lombardy, Trento Alto Adige (Trentino, South Tyrol))					
Name of the document	English name of the document (translation)	Type of document	Date of Publication	Link to document	Integrated if direct or indirect link to EF/LCA-criteria
Affidamento di servizi di progettazione e lavori per la nuova costruzione, ristrutturazione e manutenzione di edifici pubblici (approvato con DM 11 ottobre 2017, in G.U. Serie Generale n. 259 del 6 novembre 2017)	Reliance on design and construction services for the new construction, renovation and maintenance of public buildings	legal act	06.11.2017	https://www.minambiente.it/sites/default/files/archivio/allegati/GPP/allegato_tec_CAMedilizia.pdf	Direct/indirect
Legge 28 dicembre 2015, n. 221. Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali" (c.d. "collegato ambientale" Art 16	Regulations on GPP, mandatory	legal act	28.11.2015	https://www.minambiente.it/sites/default/files/archivio/allegati/GPP/legge_28_12_2015_221.pdf	Direct/indirect
decreto correttivo n. 56/2017		legal act	09.07.2005	https://www.gazzettaufficiale.it/eli/id/2017/05/5/17G00078/sg	indirect
DECRETO LEGISLATIVO 18 aprile 2016, n. 50 Art. 34, comma 1, D. Lgs. 50/2016		legal act	2016	https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2016-04-19&atto.codiceRedazionale=16G00062	indirect
CRITERI AMBIENTALI MINIMI PER l'acquisizione di SORGENTI LUMINOSE PER ILLUMINAZIONE PUBBLICA l'acquisizione di APPARECCHI PER ILLUMINAZIONE	GPP criteria for public lightning (service)	legal act	2017	https://www.minambiente.it/sites/default/files/archivio/allegati/GPP/CAM_IP.pdf	indirect

PUBBLICA l'affidamento del servizio di PROGETTAZIONE DI IMPIANTI PER ILLUMINAZIONE PUBBLICA AGGIORNAMENTO dei CAM adottati con DM 23 dicembre 2013 (in G.U. n.18 del 23 gennaio 2014)					
RELAZIONE ACCOMPAGNAMENTO CAM Servizio di ristorazione collettiva e fornitura derrate alimentari (DM n.65/2020)	ACCOMPANIMENT REPORT CAM Collective restaurant service and food supply (DM n.65 / 2020)	guidance	2020	https://www.minambiente.it/sites/default/files/archivio/allegati/GPP/2020/relazione_accompagnamento_cam_ristorazione_aprile2020.pdf	direct
DECRETO 21 marzo 2018, n. 56 Regolamento per l'attuazione dello schema nazionale volontario per la valutazione e la comunicazione dell'impronta ambientale dei prodotti, denominato «Made Green in Italy», di cui all'articolo 21, comma 1, della legge 28 dicembre 2015, n. 221. (18G00078) (GU Serie Generale n.123 del 29-05-2018) note: Entrata in vigore del provvedimento: 13/06/2018	Decree on the "Made green in Italy"	legal act	2018	https://www.gazzettaufficiale.it/eli/id/2018/05/29/18G00078/sg	direct
i) Legge provinciale 17 dicembre 2015, n. 16 1) Disposizioni sugli appalti pubblici	Provincial law on public procurement (South Tyrol)	legal act	2019	https://www.ausschreibungen-suedtirol.it/pleiade/comune/bolzano/documenti/LP_16_2015_aggiornata_LP_3_2019.pdf	indirect
"Piano d'Azione per la sostenibilità dei consumi nel settore della Pubblica	PAN GPP	legal act	10.04.2013	https://www.minambiente.it/pagina/faq-1	No (General GPP)

Amministrazione (PAN GPP)" D.M. 10 aprile 2013.					
Affidamento servizi energetici per gli edifici, servizio di illuminazione e forza motrice, servizio di riscaldamento/raffrescamento (approvato con DM 7 marzo 2012, in G.U. n.74 del 28 marzo 2012)	GPP criteria for public lightning, heating and cooling of public buildings (service)	legal act	2012	https://www.minambiente.it/sites/default/files/archivio/allegati/GPP/GU_74_Servizi_energetici_compl_AllTec.pdf	No (General GPP)
Servizio di ristorazione collettiva e fornitura di derrate alimentari (approvato con DM n. 65 del 10 marzo 2020, in G.U. n.90 del 4 aprile 2020)	Collective catering service and supply of foodstuffs (approved with Ministerial Decree 65 of 10 March 2020, in Official Gazette 90 of 4 April 2020)	legal act	2020	https://www.gazzettaufficiale.it/eli/gu/2020/04/04/90/sg/pdf	No (General GPP)
Relazione accompagnamento Forniture di prodotti tessili (approvato con DM 11 gennaio 2017, in G.U. n. 23 del 28 gennaio 2017)	ACCOMPANIMENT REPORT Supply of textile products (approved with Ministerial Decree of 11 January 2017, in Official Gazette n.23 of 28 January 2017)	guidance	2017	https://www.minambiente.it/sites/default/files/archivio/allegati/GPP/2017/allegato_tecnico_tessili_2017.pdf	No (General GPP)
Protocollo di intesa per assicurare la sostenibilità ambientale degli acquisti delle Pubbliche Amministrazioni	Memorandum of understanding to ensure env sustainability in GPP	political action plan/ road map	2019	https://www.minambiente.it/comunicati/galletti-e-cantone-firmano-protocollo-di-intesa-minambiente-anac-sul-monitoraggio-degli	No (General GPP)
Relazione die Controllo ai sensi dell'articolo 212, comma 3, del Codice dei contratti pubblici	Report to the European Commission on the application of public procurement regulations	other (Report)	-		No

Regione Lombardia – contratti pubblici	Regione Lombardia – Public Procurement	other (Website)	-	https://www.regione.lombardia.it/wps/portal/istituzionale/HP/contratti-pubblici	No
Regione Lombardia: la Centrale Acquisti attua il GPP per fotocopiatori, gestione del Centro Stampa e carta in risme	Regione Lombardia: Central Procurement and GPP for photocopiers	other (Website)	-	http://www.acquistiverdi.it/news/regione_lombardia_la_centrale_acquisti_attua_il_gpp_per_fotocopiatori_gestione_del_centro_stamp	No
Sistema Informativo Contratti Pubblici (Bolzano/Alto Adige)	Information System (Platform) for public contracts (Bozen/Alto Adige)	other (Website)	-	https://www.bandi-altoadige.it/	No
REGOLE TECNICHE DI FUNZIONAMENTO DELLE PROCEDURE TELEMATICHE DI ACQUISTO DELL' ALTO ADIGE	TECHNICAL RULES FOR THE OPERATION OF THE TELEMATIC PROCEDURES FOR THE PURCHASE OF SOUTH TYROL	secondary legislation	04.2020	https://www.bandi-altoadige.it/pleiade/comune/bolzano/documenti/Regole_tecniche_aprile_2020.pdf	No

SWEDEN					
Name of the document	English name of the document (translation)	Type of document	Date of Publication	Link to document	Integrated if direct or indirect link to EF/LCA-criteria
Lag (2016:1145) om offentlig upphandling	The law on public procurement	legal act	2019	https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-20161145-om-offentlig-upphandling_sfs-2016-1145	Indirect
Nationella upphandlingsstrategin	National procurement strategy	political action plan/ road map	30.06.2016	https://www.regeringen.se/informationsmaterial/2016/06/nationella-upphandlingsstrategin/	Direct
Uppdrag att främja minskad klimatpåverkan vid offentlig upphandling av bygg-, anläggnings- och	Assignment to promote reduced climate impact in public procurement of construction, civil engineering	political action plan/ road map	19.03.2020	https://www.regeringen.se/regeringsuppdrag/2020/03/uppdrag-att-framja-minskad-klimatpaverkan-vid-offentlig-upphandling-av-bygg--	Direct

fastighetsentreprenader	and real estate contracts			anlaggnings--och-fastighetsentreprenader/	
Uppdrag att förbereda införandet av krav på redovisning av en klimatdeklaration vid uppförande av byggnader	Assignment to prepare the introduction of requirements for reporting of a climate declaration in the construction of buildings	political action plan/ road map	19.06. 2019	https://www.regeringen.se/regeringsuppdrag/2019/06/uppdrag-att-forbereda-inforandet-av-krav-pa-redovisning-av-en-klimatdeklaration-vid-uppforande-av-byggnader/	Direct
Användning av märkning	Use of environmental labels (in public procurement)	guidance	2020	https://www.upphandlingsmyndigheten.se/hallbarhet/stall-hallbarhetskrav/Anvandning-av-markning/	Indirect
Ställ hållbarhetskrav	Set sustainability requirements	guidance	2020	https://www.upphandlingsmyndigheten.se/hallbarhet/stall-hallbarhetskrav/	Indirect
Klimatkalkyl-infrastrukturhållningens energianvändning och klimatpåverkan i ett livscykelperspektiv	Climate calculation- the infrastructure use's energy use and climate impact in a life cycle perspective	sectoral agreement	31.10. 2018	http://trvdokument.trafikverket.se/Versioner.aspx?spid=3742&dokumentId=TDOK%202015%3A0007	Direct
Byggsektorns miljöberäkningsverktyg	Construction sector's environmental calculation tool	other	2020	https://www.ivl.se/sidor/vara-omraden/miljodata/byggsektorns-miljoberakningsverktyg.html	Direct
Produktens klimatpåverkan	The product's (Disposable gloves in healthcare) climate impact	guidance	05.06. 2018	https://www.upphandlingsmyndigheten.se/hallbarhet/stall-hallbarhetskrav/sjukvard-och-omsorg/medicintekniska-forbrukningsartiklar/engangshandskar-inom-vard-och-omsorg2/produktens-klimatpaverkan/	Direct
LCC och externa miljöeffekter	LCC and external environmental effects	guidance	03.07. 2017	https://www.upphandlingsmyndigheten.se/omraden/lcc/lcc-och-externa-miljoeffekter/	Indirect
Anivator	Anivator LCA tool for the construction sector	other		http://www.anavitor.se/Anavitor	Direct
Lag (2016:1145) om offentlig upphandling	The law on public procurement	legal act	2019	https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-20161145-om-offentlig-upphandling_sfs-2016-1145	No (General GPP)

Miljöspendanalys - Beskrivning av en metod för att integrera klimatpåverkan i allmänna inköpsanalyser RAPPORT 2019:4	Environmental spending analysis - Description of a method for integrating climate impact into general purchasing analyzes REPORT 2019: 4	guidance	16.12.2019	https://www.upphandlingsmyndigheten.se/globalassets/publikationer/rapporter/miljospendanalys-rapport_2019_4.pdf	No (General GPP)
Statistik på upphandlingsområdet Prop. 2018/19:142	Statistics in the procurement area Prop. 2018/19: 142	legal act	19.06.2019	https://www.regeringen.se/rattsliga-dokument/proposition/2019/06/prop.-201819142/	No
Promemoria - Ändringar i upphandlingsförordningen och förordningen om kollektivtrafik med anledning av regleringen om upphandlingsstatistik	Promemoria - Changes in the procurement regulation and the regulation on public transport due to the regulation on procurement statistics	political action plan/ road map	01.02.2020	https://www.regeringen.se/490cf7/contentassets/12c06fad2b744911b5a04b20248d0448/andringar-i-upphandlingsforordningen-och-forordningen-om-kollektivtrafik-med-anledning-av-regleringen-om-upphandlingsstatistik.pdf	No
En livsmedelsstrategi för Sverige – fler jobb och hållbar tillväxt i hela landet Regeringens handlingsplan	A food strategy for Sweden - more jobs and sustainable growth throughout the country Government Action Plan	political action plan/ road map	06.02.2017	https://www.regeringen.se/491922/contentassets/13f0fe3575964442bc51816493165632/handlingsplan_lms_1702072.pdf	No
Regeringens handlingsplan del 2: En livsmedelsstrategi för Sverige – fler jobb och hållbar tillväxt i hela landet	Government's action plan part 2: A food strategy for Sweden - more jobs and sustainable growth throughout the country	political action plan/ road map	20.12.2019	https://www.regeringen.se/4afc72/contentassets/dcc1c725f4574ce98bab61eb3ccbffbb/191219-hp-del-2-liten-strl.pdf	No
En livsmedelsstrategi för Sverige – fler jobb och hållbar tillväxt i hela landet Prop. 2016/17:104	A food strategy for Sweden - more jobs and sustainable growth throughout the country Prop. 2016/17: 104	political action plan/ road map	26.01.2017	https://www.regeringen.se/490897/contentassets/256cc25ab5a84db7a76730abb9cc3773/en-livsmedelsstrategi-for-sverige-fler-jobb-och-hallbar-tillvaxt-i-hela-landet-prop-2016-17-104.pdf	No
Uppförandekod för leverantörer	Code of conduct for suppliers	sectoral agreement/ guideline	20.09.2016	http://www.hållbarupphandling.se/component/phocadownload/file/51-uppfoerandekod-foer-leverantoerer	No

Bedömningsmall - Hållbara leveranskedjor	Assessment template - Sustainable supply chains	sectoral agreement/ guideline	08.04. 2020	http://www.hållbarupphandling.se/component/phocadownload/file/156-bedoemningsmall-hallbara-leveranskedjor	No
The Swedish procurement monitoring report 2018	The Swedish procurement monitoring report 2018	other	2018	https://ec.europa.eu/growth/single-market/public-procurement/country-reports_en	No

SWITZERLAND (incl. Zurich, Bern, Vaud)					
Name of the document	English name of the document (translation)	Type of document	Date of Public ation	Link to document	Integrated if direct or indirect link to EF/LCA-criteria
Bundesgesetz über das öffentliche Beschaffungswesen	Federal law on public procurement	legal act	21.06. 2019	https://www.admin.ch/opc/de/official-compilation/2020/641.pdf	indirect
Beschaffungskonferenz des Bundes (BKB): Leitsätze für eine nachhaltige öffentliche Beschaffung (Güter und Dienstleistungen)	Federal procurement conference (BKB): Guiding principles for sustainable public procurement (goods and services)	secondary legislation	2018	https://www.bkb.admin.ch/dam/bkb/de/dokumente/Oeffentliches_Beschaffungswesen/BKB_Leitsaetze_de_def.pdf.download.pdf/BKB_Leitsaetze_de_def.pdf	Indirect
Die Verordnung über das Immobilienmanagement und die Logistik des Bundes (VILB)	The Federal Real Estate Management and Logistics Ordinance	legal act	01.01. 2016	https://www.admin.ch/opc/de/classified-compilation/20082537/index.html	Indirect
eco-bau - Nachhaltigkeit im öffentlichen Bau	ecobau - Sustainability in public construction	guidance		https://www.eco-bau.ch/index.cfm?Nav=14	Direct
SIA 2032 (2009) Graue Energie	SIA 2032 (2009) Grey energy	sectoral agreement	2009	http://shop.sia.ch/normenwerk/architekt/sia%202032/d/D/Product http://www.umweltchemie.ch/wp-	Direct

				content/uploads/Graue_Energie_im_Fokus.pdf	
SIA 2039 (2016) Mobilität in Abhängigkeit vom Gebäudestandort	SIA 2039 (2016) Mobility depending on the location of the building	sectoral agreement	2016	Report about the methodology: https://ppdb.hslu.ch/inf2/rm/f_protected.php?f=20170620123339_5948fa035ccd6.pdf&n=Methodenbericht_SIAMB2039_Vdef.pdf	Direct
Gebäudezertifizierungssysteme/Gebäudestandard	Building Certification Schemes/Standard	Other: Standard	2018	https://www.minergie.ch/media/1004-1_08_80731_berechnung_graue_energie_online_2018_v2-2.pdf	Direct
Betonsortenrechner für Planende	Concrete Type Calculator for the planning stage	Other (Tool)	Jun.20	https://treeze.ch/fileadmin/user_upload/calculators/Betonsortenrechner_Planer_DE/Betonsortenrechner_Planer.htm	Direct
Aktionsplan Grüne Wirtschaft bzw. Bericht an den Bundesrat vom 20. April 2016 und vom 19. Juni 2020 "Maßnahmen des Bundes für eine ressourcenschonende zukunftsfähige Schweiz"	Action plan green economy resp. Reports to the Federal Council (April 20, 2016 and June 19, 2020) "Federal measures for a resource-efficient, sustainable Switzerland"	political action plan/ road map	Apr. 16	https://www.bafu.admin.ch/dam/bafu/de/dokumente/wirtschaft-konsum/fachinfo-daten/bericht_an_den_bundesratgruenewirtschaft.pdf.download.pdf/bericht_an_den_bundesratgruenewirtschaft.pdf	No
Verordnung über das öffentliche Beschaffungswesen (VöB)	Regulation on public procurement	legal act	12.02. 2020	https://www.admin.ch/opc/de/official-compilation/2020/691.pdf	No
Verordnung über die Organisation des öffentlichen Beschaffungswesens der Bundesverwaltung	Regulation on how Public Procurement of the Federal Administration is organised	legal act	01.07. 2018	https://www.admin.ch/opc/de/classified-compilation/20120667/201807010000/172.056.15.pdf	No
Strategie nachhaltige Entwicklung des Bundesrates	Sustainable Development Strategy of the Federal Council	political action plan/road map	2016	https://www.are.admin.ch/dam/are/de/dokumente/nachhaltige_entwicklung/publikationen/strategie_nachhaltigeentwicklung2016-2019.pdf.download.pdf/strategie_nachhaltigeentwicklung2016-2019.pdf	No
Nachhaltige Beschaffung:		guidance	Jun.18		No

Empfehlungen für die Beschaffungsstellen des Bundes			
Kompass Nachhaltigkeit - Öffentliche Beschaffung	guidance	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/	There are many guidance-documents and tools on the platform and the ones checked have not link to LCA/EF - with exception of construction.
Die Rolle von Nachhaltigkeitin der Beschaffung von Flachwäsche in Schweizer Spitälern (Kompass Nachhaltigkeit)	guidance	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/fileadmin/kundendaten/praxisbeispiele/Bericht-NachhaltigkeitSpitaeler_Service_Final.pdf	No
Reinigung - Merkblatt nachhaltige Beschaffung (Kompass Nachhaltigkeit)	guidance	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/fileadmin/kundendaten/produkte-labels/Reingungsmittel/Merkblatt_Reinigung_01.pdf	No, the leaflet refers to the eco-label
Beschaffungsleitfaden Schule (Kompass Nachhaltigkeit)	guidance	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/fileadmin/kundendaten/produkte-labels/Schulmaterial/Beschaffungsleitfaden_fuer_Schulen_und_Kitas.pdf	No, the leaflet refers to the eco-label
Merkblatt Forst- und Gartenbaugeräte (Kompass Nachhaltigkeit)	guidance	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/fileadmin/kundendaten/produkte-labels/Geraete/Merkblatt_forstgartenbaugeraete.pdf	No (the leaflet is based on the results of an LCA)
IT Merkblatt nachhaltige Beschaffung (Kompass Nachhaltigkeit)	guidance	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/fileadmin/kundendaten/produkte-labels/IT/Merkblatt_IT.pdf	No, the leaflet refers to the eco-label
Lebensmittel Merkblatt nachhaltige Beschaffung (Kompass Nachhaltigkeit)	guidance	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/fileadmin/kundendaten/produkte-labels/Ernaehrung/Merkblatt_Lebensmittel.pdf	No
Büromöbel Merkblatt nachhaltige Beschaffung (Kompass Nachhaltigkeit)	guidance	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/fileadmin/kundendaten/produkte-labels/Bueromoebel/Merkblatt_Moebel.pdf	No, the leaflet refers to the eco-label

Nachhaltiges Bauen: Nachhaltiges Immobilienmanagement		guidance	09.01.2018	https://www.kbob.admin.ch/dam/kbob/de/dokumente/Themen%20und%20Trends/Nachhaltiges%20Immobilienmanagement/Empfehlung_2017-3_Nachhaltiges_Immobilienmanagement.pdf.download.pdf/Empfehlung_2017-3_Nachhaltiges_Immobilienmanagement.pdf	No
Nachhaltiges Bauen: Nachhaltiges Bauen in Planer- und Werkverträgen		guidance	09.11.2017	https://www.kbob.admin.ch/dam/kbob/de/dokumente/Publikationen/Nachhaltiges%20Bauen/Archiv_2015-2019/2008-1_2017%20Nachhaltiges%20Bauen%20in%20Planer%20und%20Werkvertraegen.pdf.download.pdf/2008-1_2017%20Nachhaltiges%20Bauen%20in%20Planer%20und%20Werkvertraegen.pdf	No
Nachhaltiges Bauen: Bedingungen für Planerleistungen		guidance	09.11.2017	https://www.kbob.admin.ch/dam/kbob/de/dokumente/Publikationen/Nachhaltiges%20Bauen/Archiv_2015-2019/2008-1_2017%20Nachhaltiges%20Bauen%20Bedingungen%20fuer%20Planungsleistungen%20-%20Hochbau.pdf.download.pdf/2008-1_2017%20Nachhaltiges%20Bauen%20Bedingungen%20fuer%20Planungsleistungen%20-%20Hochbau.pdf	No
Nachhaltiges Bauen: Bedingungen für Werkleistungen		guidance	09.11.2017	https://www.kbob.admin.ch/dam/kbob/de/dokumente/Publikationen/Nachhaltiges%20Bauen/Archiv_2015-2019/2008-1_2017%20Nachhaltiges%20Bauen%20Bedingungen%20fuer%20Werkleistungen%20-%20Hochbau.pdf.download.pdf/2008-1_2017%20Nachhaltiges%20Bauen%20Bedingungen%20fuer%20Werkleistungen%20-%20Hochbau.pdf	No
Einsatz von mineralischen Recyclinbaustoffen		guidance	2016	https://umwelt.tg.ch/public/upload/assets/13641/Einsatz-von-mineralischen-Recyclingbaustoffen.pdf	No
Zurich: Richtlinie Ökologische Anforderungen im Beschaffungsprozess	Guideline Environmental Requirements in the Procurement Process	legal act	2014	https://www.stadt-zuerich.ch/portal/de/index/politik_u_recht/stadtrat/geschaefte-des-stadtrates/stadtratsbeschluesse/2014/Nov/StZH_STRB_2014_0976.html	No
Zurich: Ökobilanzen bei Tiefbauarbeiten von Hochbauten	Life cycle assessments for civil engineering work in buildings	other	2014	https://www.stadt-zuerich.ch/hbd/de/index/hochbau/bauen-fuer-2000-watt/grundlagen-studienergebnisse/archiv-	No (the criteria may have a link to the results of the LCA)

				studien/2014/2014-12-nb-oekobilanzen-tiefbau.html	
Zurich: Nachhaltige Beschaffung von Berufsbekleidung in der Stadt Zürich	Sustainable procurement of workwear in the city of Zurich	other	2019	https://www.stadt-zuerich.ch/gud/de/index/departement/aktuell/news/vbz-kleidung.html	No (Based on the results of life cycle assessments, organically grown cotton was required because its environmental impact is significantly lower)
Bern: Leitbild nachhaltige Beschaffung		political action plan/ road map	2013	https://www.bern.ch/politik-und-verwaltung/stadtverwaltung/sue/amt-fur-umweltschutz/umwelt-und-energie/umweltmanagement/nachhaltige-beschaffung/leitbild-nachhaltige-beschaffung-in-der.pdf/at_download/file	No
Bern: Artikel: Bern auf dem Weg zu einer bewussten Mobilität		other	2018	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/fileadmin/kundendaten/praxisbeispiele/tu181_haruksteiner_3.pdf	No
Vaud: Westschweizer Leitfaden für die Vergabe öffentlicher Aufträge		guidance	01.05. 2020	https://www.vd.ch/themes/etat-droit-finances/marches-publics/guide-romand/westschweizer-leitfaden-fuer-die-vergabe-oeffentlicher-auftraege/	No
Vaud: Artikel: Von der Ausschreibung bis zur Leistungsüberwachung		other	2018	https://oeffentlichebeschaffung.kompass-nachhaltigkeit.ch/praxisbeispiele/von-der-ausschreibung-bis-zur-leistungsueberwachung	No

THE NETHERLANDS					
Name of the document	English name of the document (translation)	Type of document	Date of Publication	Link to document	Integrated if direct or indirect link to EF/LCA-criteria
Aanbestedingswet 2012	Public Procurement Law 2012	legal act	18.04. 2019	https://wetten.overheid.nl/BWBR0032203/2019-04-18	indirect
Rijksoverheid Plan van aanpak MVI 2015-2020	National government GPP Action plan 2015-2020	political action plan/ road map	11.09. 2015	https://www.rijksoverheid.nl/onderwerpen/zakendoen-met-het-rijk/documenten/kamerstukken/2015/09/11/plan-van-aanpak-maatschappelijk-verantwoord-inkopen-2015-2020	indirect

Aanbestedingswet op defensie- en veiligheidsgebied	Public Procurement law in the defense and safety area	legal act	17.04. 2019	https://wetten.overheid.nl/BWBR0032898/2019-04-18	indirect
Bepalingsmethode Milieuprestatie Gebouwen en GWW-werken	Environmental Assessment Method for buildings and civil engineering works	guidance	01.01. 2019	https://milieudatabase.nl/wp-content/uploads/2019/05/SBK-Bepalingsmethode-versie-3.0-1-januari-2019.pdf	direct
Green Deal Duurzaam GWW (Grond- Weg- en Waterbouw)	Green deal sustainable ground-, road-, rail- and waterconstruction (civil engineering works)	sectoral agreement	2012	https://www.greendeals.nl/green-deals/duurzame-aanpak-grond-weg-en-waterbouw-gww	direct/ indirect
Gemeente Rotterdam Actieplan Maatschappelijk Verantwoord Inkopen	Municipality of Rotterdam Action plan Societal Responsible Procurement	political action plan/ road map	-	https://www.pianoo.nl/sites/default/files/documents/documents/manifest-mvi-actieplan-gemeente-rotterdam.pdf	direct
Vereniging van Nederlandse Gemeenten (VNG) Model Inkoop- en aanbestedingsbeleid	Association of Dutch Municipalities (VNG) Model for Procurement and Tendering Policy	guidance	2019	https://vng.nl/nieuws/geactualiseerd-model-inkoop-en-aanbestedingsbeleid	indirect
Aanbestedingsbesluit	Public procurement directive	legal act	18.04. 2019	https://wetten.overheid.nl/BWBR0032919/2019-04-18	No (General GPP)
Rijksoverheid Manifest MVI 2016-2020	National government GPP Manifesto 2016-2020	political action plan/ road map	08.12. 2016	https://www.rijksoverheid.nl/onderwerpen/zakendoen-met-het-rijk/documenten/rapporten/2016/12/08/rapport-manifest-maatschappelijk-verantwoord-inkopen-2016-2020	no link
Rijksoverheid Inkopen met impact	National government Procurement with impact	political action plan/ road map	28.10. 2019	https://www.rijksoverheid.nl/documenten/rapporten/2019/10/28/inkopen-met-impact	no link
PIANOo	Dutch Public Procurement Expertise Centre	other (Website)		https://www.pianoo.nl/nl/themas/maatschappelijk-verantwoord-inkopen-mvi-duurzaam-inkopen	General Information
Stichting Klimaatvriendelijk Aanbesteden en Ondernemen (SKAO)	CO2 prestatieladder	other (Website)		https://www.skao.nl/	General Information
Nationale wet- en regelgeving		other (Website)		https://wetten.overheid.nl/zoeken	General Information
Lokale wet- en regelreving		other (Website)		https://www.overheid.nl/lokale-wet-en-regelgeving	General Information

Procurement Monitoring Report of the Netherlands	Procurement Monitoring Report of the Netherlands	other (Report)	04.2018	https://ec.europa.eu/growth/single-market/public-procurement/country-reports_en	No

7 ANNEX II – FINDINGS: BASIS FOR LEGAL REVIEW

Screening of Documents - Basis for Legal Review						Direct link to EF-/LCA-criteria	Indirect link to EF-/LCA-criteria		Information on the direct	
Country	Name of the document	English translation	1st Version	Latest Revision	direct or indirect link to EF/LCA-criteria?	Description of the direct link	Description of the indirect link	Description of the link to EF-/LCA-criteria	Mandatory/voluntary	Limited to c au
AT	BVergG 2018	National Procurement Law	2018	2018	Indirect	n/a	Possibility to calculate life cycle costs incl. external costs (§92)	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA.	Voluntary	
AT	BVergG 2018	National Procurement Law	2018	2018	Indirect	n/a	Possibility to use labels (§108)	The possibility to use labels also includes the possibility that these labels include the requirement to carry out a LCA.	Voluntary	
AT - LA	NÖ Energieeffizienzgesetz 2012, StF: LGBl. 7830-0	Law on energy efficiency	2012	2012	Indirect	n/a	In §10, LCC are mentioned	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA.	Voluntary	
BE - FL	Wet Overheidsopdracht 2016	Government Projects Law 2016	2016	2019	Indirect	n/a	article 81 and 82 Use of life cycle costing, including costs assigned to external environmental of the product or service, in the award criteria	n/a	Voluntary	The federa governme non-comm organizat gov
BE-FL	Wet Overheidsopdrachten voor werken, leveringen en diensten op Defensie- en Veiligheidsgebied	Law Government Projects for jobs, supplies and services in the defense and safety area	2012	2018	Indirect	n/a	article 7, § 4 Possibility to include factors related to the environment in the technical specifications	Environmental label(s) can be required in the tender as part of the technical specification. The topic of these label(s) is not further described, but some criteria for what label(s) can qualify are given.	Voluntary	Governm co

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Country	Name of the document	English translation	1st Version	Latest Revision	direct or indirect link to EF/LCA-criteria?	Description of the direct link	Description of the indirect link	Description of the link to EF-/LCA-criteria	Mandatory/voluntary	Limited to au
BE - BRU	Rondzendbrief betreffende de opname van ecologische criteria en duurzame ontwikkelingscriteria in de overheidsopdrachten voor leveringen en diensten	Circulaire concerning the incorporation of environmental criteria and sustainable development criteria in public procurement	2009	n/a	Indirect	n/a	p.4) Requirement to include environmental aspects in procurement, suggestion to use ecolabels	EU Ecolabel requires a LCA on the products.	Mandatory to include environmental aspects, voluntary to use ecolabels	
BE-WA	Loi relative aux marchés publics	Procurement Law Act	2016	2019	indirect	n/a	Art. 82.) Life-cycle costing cover parts or all of the following costs over the life cycle of a product, service or works	The Article of the Wallonian public procurement law describes the life cycle costs. According to the Article, life cycle costs may also include the costs of externalities resp. the external costs of environmental impact. These external costs can be linked to EF-/LCA-calculations.	voluntary	
BE-WA	Loi relative aux marchés publics	Procurement Law Act	2016	2019	indirect	n/a	Art. 54. § 1er) The contracting authorities may require labels as means of proof . This is the article about labels that comes from the implementation of the EU directive in national law.	The Article of the Wallonian public procurement law describes use of labels in public procurement. Labels might include the requirement to use LCA.	voluntary	
CH	Bundesgesetz über das öffentliche Beschaffungswesen	Federal law on public procurement	1994	2019	indirect	n/a	In Art. 29 it is mentioned that LCC can be used as award criteria.	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA.	Voluntary	
CH	Die Verordnung über das Immobilienmanagement und die Logistik des Bundes (VILB)	The Federal Real Estate Management and Logistics Ordinance	2008	2016	Indirect	n/a	Art.2) LCC are mentioned in the document	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA.	Voluntary	
DE	Unterschwellenvergabeord-nung (UVgO)	Sub-threshold regulation	2017	2017	indirect	n/a	According to one paragraph, the public procurer can determine, that the costs of the bid are calculated based on the life cycle costs.	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA.	voluntary	

Screening of Documents - Basis for Legal Review						Direct link to EF-/LCA-criteria	Indirect link to EF-/LCA-criteria		Information on the direct	
Country	Name of the document	English translation	1st Version	Latest Revision	direct or indirect link to EF/LCA-criteria?	Description of the direct link	Description of the indirect link	Description of the link to EF-/LCA-criteria	Mandatory/voluntary	Limited to au
DE	Vergabeverordnung (VgV)	Procurement regulation	2016	2020	indirect	n/a	§59 describes the use of LCC including the costs of externalities.	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA.	voluntary	
DE	Vergabeverordnung (VgV)	Procurement regulation	2016	2020	indirect	n/a	§34 describes the use of labels	The possibility to use labels also includes the possibility that these labels include the requirement to carry out a LCA.	voluntary	
DE	Sektorenverordnung, Verordnung über die Vergabe von Aufträgen im Bereich des Verkehrs, der Trinkwasserversorgung und der Energieversorgung	Sector regulation, regulation on the awarding of contracts in the field of transport, drinking water supply and energy supply	2016	2020	indirect	n/a	§53 describes the use of LCC including the costs of externalities.	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA.	voluntary	
DE	Sektorenverordnung, Verordnung über die Vergabe von Aufträgen im Bereich des Verkehrs, der Trinkwasserversorgung und der Energieversorgung	Sector regulation, regulation on the awarding of contracts in the field of transport, drinking water supply and energy supply	2016	2020	indirect	n/a	§32 describes the use of labels	The possibility to use labels also includes the possibility that these labels include the requirement to carry out a LCA.	voluntary	
DE	Allgemeine Verwaltungsvorschrift zur Beschaffung energieeffizienter Leistungen (AVV EnEff)	General administrative regulation for the procurement of energy-efficient services	2020	2020	Indirect	n/a	§2 refers to the use of ecolabels and LCC	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA. The possibility to use labels also includes the possibility that these labels include the requirement to carry out a LCA.	voluntary	

Screening of Documents - Basis for Legal Review						Direct link to EF-/LCA-criteria	Indirect link to EF-/LCA-criteria		Information on the direct	
Country	Name of the document	English translation	1st Version	Latest Revision	direct or indirect link to EF/LCA-criteria?	Description of the direct link	Description of the indirect link	Description of the link to EF-/LCA-criteria	Mandatory/voluntary	Limited to au
DE-NRW	NRW: Verordnung zur Regelung von Verfahrensanforderungen in den Bereichen umweltfreundliche und energieeffiziente Beschaffung, Berücksichtigung sozialer Kriterien und Frauenförderung sowie Förderung der Vereinbarkeit von Beruf und Familie bei der Anwendung des TVgG – NRW	Regulation for the procedural requirements in the areas of environmentally friendly and energy-efficient procurement, taking into account social criteria and promoting women and promoting the compatibility of work and family when applying the TVgG - NRW	2013	n/a	Indirect	n/a	§7 describes the use of LCC	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA.	voluntary	
DE-BV	BAY: Umweltrichtlinien öffentliches Auftragswesen	Environmental public procurement	2009	n/a	Indirect	n/a	p. 2) Reference to Ecolabels in chapter 2. (Leistungsbeschreibung)	The possibility to use labels also includes the possibility that these labels include the requirement to carry out a LCA.	voluntary	
DE-BW	BW: Verwaltungsvorschrift der Landesregierung über die Vergabe öffentlicher Aufträge	Administrative regulation of the state government regarding the award of public contracts	.2018	n/a	Indirect	n/a	p. 509) Reference to LCC under 13.1.4. "Award Criteria"	The possibility to use LCC includes the possibility to use the external costs. The calculation of external costs might be linked to LCA.	voluntary	
DE-BW	BW: Verwaltungsvorschrift der Landesregierung über die Vergabe öffentlicher Aufträge	Administrative regulation of the state government regarding the award of public contracts	2018	n/a	Indirect	n/a	p. 504) Reference to the use of labels under 10.8	The possibility to use labels also includes the possibility that these labels include the requirement to carry out a LCA.	voluntary	
DK	Udbudsloven	The Public Procurement Act	n/a	Dez.15	Indirect	n/a	Page 43-44, Section 166. Description of life cycle cost criteria	Using award criteria costs and best price-quality ratio as the basis for life cycle costs.	Mandatory	

Screening of Documents - Basis for Legal Review						Direct link to EF-/LCA-criteria	Indirect link to EF-/LCA-criteria		Information on the direct	
Country	Name of the document	English translation	1st Version	Latest Revision	direct or indirect link to EF/LCA-criteria?	Description of the direct link	Description of the indirect link	Description of the link to EF-/LCA-criteria	Mandatory/voluntary	Limited to au
DK	Udbudsloven	The Public Procurement Act	n/a	Dez.15	Indirect	n/a	Page 14, Section 47. Criteria for public procurement, with voluntary green requirements	Authorities may requeset criteria such as labels (eco or otherwise). The use of Total cost of ownership TCO.	Voluntary	
FR	Code de la commande publique	Procurement Law Act	2019 (ordonnance n° 2018-1074 and décret n° 2018-1075)	2019 (décret n° 2018-1225)	indirect	n/a	Art. R2152-9) Life-cycle costing cover parts or all of the following costs over the life cycle of a product, service or works	n/a	voluntary	
FR	Code de la commande publique	Procurement Law Act	2019 (ordonnance n° 2018-1074 and décret n° 2018-1075)	2019 (décret n° 2018-1225)	indirect	n/a	Art. R2111-13) The contracting authorities may require labels as means of proof .	n/a	voluntary	

Screening of Documents - Basis for Legal Review						Direct link to EF-/LCA-criteria	Indirect link to EF-/LCA-criteria		Information on the direct	
Country	Name of the document	English translation	1st Version	Latest Revision	direct or indirect link to EF/LCA-criteria?	Description of the direct link	Description of the indirect link	Description of the link to EF-/LCA-criteria	Mandatory/voluntary	Limited to c au
FR	Code de la commande publique	Procurement Law Act	2019 (ordonnance n° 2018-1074 and décret n° 2018-1075)	2019 (décret n° 2018-1225)	indirect	n/a	Art. R2311-8) The contracting authorities may require a specific Green label as means of proof .	n/a	voluntary	contracting fields of de
IT	Affidamento di servizi di progettazione e lavori per la nuova costruzione, ristrutturazione e manutenzione di edifici pubblici (approvato con DM 11 ottobre 2017, in G.U. Serie Generale n. 259 del 6 novembre 2017)	Reliance on design and construction services for the new construction, renovation and maintenance of public buildings	n/a	2017	direct	LCA based environmental information as minimum criteria for the tendering in public procurement of new public buildings and constructions	n/a	n/a	mandatory	
IT	Affidamento di servizi di progettazione e lavori per la nuova costruzione, ristrutturazione e manutenzione di edifici pubblici (approvato con DM 11 ottobre 2017, in G.U. Serie Generale n. 259 del 6 novembre 2017)	Reliance on design and construction services for the new construction, renovation and maintenance of public buildings	n/a	2017	indirect	n/a	(chapter 1.4 and chapter 2.1.1. pag 29) direct mentioning of environmental external costs	savings in future years, reduction of the costs of environmental impacts, including indirect impacts, which are passed on to the community in terms of environmental externalities	mandatory	

Screening of Documents - Basis for Legal Review						Direct link to EF-/LCA-criteria	Indirect link to EF-/LCA-criteria		Information on the direct	
Country	Name of the document	English translation	1st Version	Latest Revision	direct or indirect link to EF/LCA-criteria?	Description of the direct link	Description of the indirect link	Description of the link to EF-/LCA-criteria	Mandatory/voluntary	Limited to c au
IT	Legge 28 dicembre 2015, n. 221. Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali" (c.d. "collegato ambientale" Art 16	Regulations on GPP, mandatory	n/a	2015	direct	(Art 16 pag. 6) LCA - CFP as direct criteria for the tendering in public procurement Eco-label must constitute 30% of the value of the purchased product	n/a	n/a	mandatory	
IT	Legge 28 dicembre 2015, n. 221. Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali" (c.d. "collegato ambientale" Art 17	Regulations on GPP, mandatory	n/a	2015	indirect	n/a	(Art 17 pag. 7) Promotion of the adoption of EMAS and Ecolabel	n/a	mandatory	
IT	decreto correttivo n. 56/2017		n/a	2017	Indirect	n/a	(Art 23 , pag. n. NA) Mandatory application of minimum environmental criteria for GPP	n/a	mandatory	
IT	DECRETO LEGISLATIVO 18 aprile 2016, n. 50 Art. 96, comma 1, D. Lgs. 50/2016	Decree	n/a	2016	indirect	n/a	(Art 96, pag. N. not available) how to keep into account life cycle costs including environmental costs in the procurement and tendering process/ the article specifies what has to be intende as "Life Cycle Costs"	n/a	mandatory	
IT	DECRETO LEGISLATIVO 18 aprile 2016, n. 50 Art. 34, comma 1, D. Lgs. 50/2016	Decree	n/a	2016	indirect	n/a	(Art 34, pag. N. not available) the article expressly requires that the contracting stations contribute to the achievement of the environmental objectives set by the Action Plan through the insertion, in the project and tender documentation, of the technical specifications and contractual clauses contained in the CAM	n/a	mandatory	

Screening of Documents - Basis for Legal Review						Direct link to EF-/LCA-criteria	Indirect link to EF-/LCA-criteria		Information on the direct	
Country	Name of the document	English translation	1st Version	Latest Revision	direct or indirect link to EF/LCA-criteria?	Description of the direct link	Description of the indirect link	Description of the link to EF-/LCA-criteria	Mandatory/voluntary	Limited to c au
IT	CRITERI AMBIENTALI MINIMI PER l'acquisizione di SORGENTI LUMINOSE PER ILLUMINAZIONE PUBBLICA l'acquisizione di APPARECCHI PER ILLUMINAZIONE PUBBLICA l'affidamento del servizio di PROGETTAZIONE DI IMPIANTI PER ILLUMINAZIONE PUBBLICA AGGIORNAMENTO dei CAM adottati con DM 23 dicembre 2013 (in G.U. n.18 del 23 gennaio 2014)	GPP criteria for public lightning (service)	2013	2017	indirect	n/a	(pag. 10 chapter 3.2) LCC can be employed as a criteria in tenders for public lightning tendering process	n/a	voluntary	
IT	DECRETO 21 marzo 2018, n. 56 Regolamento per l'attuazione dello schema nazionale volontario per la valutazione e la comunicazione dell'impronta ambientale dei prodotti, denominato «Made Green in Italy», di cui all'articolo 21, comma 1, della legge 28 dicembre 2015, n. 221. (18G00078) (GU Serie Generale n.123 del 29-05-2018) note: Entrata in vigore del provvedimento: 13/06/2018	Decree on the "Made green in Italy"	n/a	2018	direct	(Art 8: pag. n. not available)1. The Ministry of the Environment recognizes the scheme "Made Green in Italy" as a tool for checking compliance with technical specifications for the old and the new adopted GPP minimum criteria – if relevant for the life cycle of the product or service, also according to the Decree, 18 aprile 2016, n. 50. (see above).	n/a	n/a	voluntary	

Screening of Documents - Basis for Legal Review						Direct link to EF-/LCA-criteria	Indirect link to EF-/LCA-criteria		Information on the direct	
Country	Name of the document	English translation	1st Version	Latest Revision	direct or indirect link to EF/LCA-criteria?	Description of the direct link	Description of the indirect link	Description of the link to EF-/LCA-criteria	Mandatory/voluntary	Limited to au
IT - South Tyrol	i) Legge provinciale 17 dicembre 2015, n. 16 1) Disposizioni sugli appalti pubblici	Provincial law on public procurement	2015	2019	indirect	n/a	LCC must be considered in the procurement process	n/a	mandatory	
NL	Aanbestedingswet 2012	Public Procurement Law 2012	2012	2019	Indirect	n/a	Article 2.115a Use of life cycle costing, including costs assigned to external environmental effects of the product or service, in the award criteria	n/a	voluntary	
NL	Aanbestedingswet 2012	Public Procurement Law 2012	2012	2019	Indirect	n/a	Article 2a.50 & Article 2.76 & Article 2.78a Possibility to include factors related to the environment in the technical specifications and/or award criteria and/or contract	Environmental label(s) can be required in the tender, though this is not further described. These labels can include a link to LCA.	voluntary	
NL	Aanbestedingswet op defensie- en veiligheidsgebied	Public Procurement law in the defense and safety area	2013	2019	Indirect	n/a	Article 2.59 Possibility to include factors related to the environment in the technical specifications	Environmental label(s) can be required in the tender as part of the technical specification. The topic of these label(s) is not further described, but some criteria for what label(s) can qualify are given. These labels can include a link to LCA.	voluntary (only mandatory if in tender)	Defen
SE	Lag (2016:1145) om offentlig upphandling	The law on public procurement	2016	2019	Indirect	n/a	(Chapter 4) Regulate when/how it's possible to include EF-/LCA criteria in public procurement.	n/a	Mandatory	

8 ANNEX III – OVERVIEW ON FINDINGS PER COUNTRY, DOCUMENT TYPE AND NATURE OF THE IDENTIFIED LINK

Direct Links – Red letters; Indirect Links – Orange letters

Findings related to main contracting authorities - Blue letters

Country	Legal acts	Secondary legislation	Sectoral agreements	Political action plans/ road maps	Guidance
The Netherlands (incl. main contracting authorities)	Public Procurement Law 2012		**GWW**: Green deal sustainable ground-, road-, rail- and waterconstruction	National government GPP Action plan 2015-2020	Association of Dutch Municipalities Model for Procurement and Tendering Policy
	LCC & Ecolabel		**Ambitionweb, CO2-performance-ladder, Dubocalc**	**LCC (indirect costs)**	**LCC (no indirect costs)**
	Public Procurement law in the defense and safety area			**Municipality of Rotterdam**: Action plan Societal Responsible Procurement	Environmental Assessment Method for buildings and civil engineering works
	Ecolabel			**Dubocalc**	**LCA**
Denmark	The Public Procurement Act			Denmark without waste II	The voluntary sustainability class - LCA
	LCC & Ecolabel			**LCA, LCC (no indirect costs)**	**LCA**
				Strategy for intelligent public procurement	**Joint Municipal** Procurement Strategy 2020-2024
				LCC (no indirect costs)	**LCC (no indirect costs)**
					Guide to green procurement (Link TCO-Tools)
					LCC (no indirect costs)
Sweden	The law on public procurement		Climate calculation - the infrastructure energy use and climate impact in a life cycle perspective	National procurement strategy	Use of environmental labels (in public procurement)

Country	Legal acts	Secondary legislation	Sectoral agreements	Political action plans/ road maps	Guidance
	LCC & Ecolabel		**Climate impact**	**LCA**	**Ecolabel**
				Assignment to promote reduced climate impact in public procurement of construction, civil engineering and real estate contracts	Set sustainability requirements
				LCA in construction	**Ecolabel**
				Assignment to prepare the introduction of requirements for reporting of a climate declaration in the construction of buildings	The product's (Disposable gloves in healthcare) climate impact
				Climate declaration buildings (LCA)	**LCA/EF/EPDs mentioned**
					LCC and external environmental effects
					LCC (indirect costs)
Italy	Reliance on design and construction services for the new construction, renovation and maintenance of public buildings				Accompaniment Report: CAM Collective restaurant service and food supply (DM n.65/2020)
	LCA (construction), LCC (ind. Costs)				**Environmental impact**
	Regulations on GPP, mandatory (Legge 28 dicembre 2015, n. 221)				
	Carbon Footprint, Ecolabel				
	Decreto correttivo n. 56/2017, Art. 23				
	LCC (indirect costs), Ecolabel				
	Decreto Legislativo 18 aprile 2016, n. 50				
	LCC (indirect costs)				

Country	Legal acts	Secondary legislation	Sectoral agreements	Political action plans/ road maps	Guidance
	GPP criteria for public lightning (service)				
	LCC (indirect costs)				
	Decree on the "Made green in Italy"				
	LCA/EF				
South Tyrol	Provincial law on public procurement				
	LCC (indirect costs)				
Belgium	Government Projects Law 2016	Circulaire - Integration of sustainable development, incl. social clauses and measures in favor of SME, in the context of public procurement by the federal state		**Flammish** Plan Public Procurement	Sustainable development in public procurement, part 1: Implementation of environmental criteria
	LCC (indirect costs)	**LCC (indirect costs), Ecolabel**		**LCC (indirect costs)**	**LCC (indirect costs), Ecolabel**
	Law Government Projects for jobs, supplies and services in the defense and safety area	Circulaire - Procurement, use and maintenance of service vehicles		**Wallonian** Action Plan for GPP 2017-2019	Stones from Wallonia and public markets
	Ecolabel	**Ecoscore**		**LCA via EPD**	**LCA, LCC (indirect costs)**
	Wallonian Procurement Law Act				Guidelines on sustainability considerations for public procurement
	LCC (indirect costs); Ecolabel				**LCC (indirect costs)**
					Handbook for the application of life cycle costing in (green) public procurement
					LCC (indirect costs)
					Assessment of office buildings

Country	Legal acts	Secondary legislation	Sectoral agreements	Political action plans/ road maps	Guidance
					LCA
Brussels	Circulaire concerning the incorporation of environmental criteria and sustainable development criteria in public procurement				
	Ecolabel				
Hainaut					Public markets, guide for businesses
					LCC (indirect costs)
Antwerp					Guidance Green Procurement Detergents
					Ecolabel
					Guidance Green Procurement Service: cleaning
					Ecolabel
					Guidance Green Procurement Cleaning windows
					Ecolabel
					Guidance Green Procurement Coatings and paints
					Ecolabel
					Guidance Green Procurement Paper
					Ecolabel
					Guidance Green Procurement Personal Computers
					Ecolabel
					Guidance Green Procurement Portable Computers

Country	Legal acts	Secondary legislation	Sectoral agreements	Political action plans/ road maps	Guidance
					Ecolabel
Ghent					Toobox, social responsible work clothing
					Ecolabel, LCC (indirect), LCA-Score
Austria (incl. main contracting authorities)	National Procurement Law		Minimum requirements for sustainability of the **federal real estate company**	Austrian Action Plan for Sustainable Public Procurement	
	LCC (indirect costs), Ecolabel		**LCA (OI3-Index), Certification scheme(LCC, Ecolabel)**	**LCA, LCC, Ecolabel**	
				Government programme of the Austrian Government (2020-2024)	
				CF, Ecolabel	
Lower Austria	Law on energy efficiency		List of requirements on energy efficiency and sustainability of the buildings owned by the provincial government	Climate and Energy programme of Lower Austria	
	LCC		**LCA, LCC**	**LCC**	
				Schedule on sustainable public procurement in Lower Austria	
				LCC	
				Minimum requirements for sustainable procurement in lower austria - supplement of the Schedule on sustainable public procurement	
				LCC	
Germany (incl. main contracting authorities)	Sub-threshold regulation	A-2036/5 Central regulation of the **Federal Ministry of Defense** "Sustainable Development"	Guideline to sustainable construction		Environmentally friendly procurement: Training script 2 - Introduction to the calculation of life cycle costs and their use in the procurement process
	LCC (indirect costs)	**LCC (indirect costs), Ecolabel**	**LCA, Carbon Footprint**		**LCC (indirect costs)**

Country	Legal acts	Secondary legislation	Sectoral agreements	Political action plans/ road maps	Guidance
	Procurement regulation		Evaluation system for sustainable construction of federal buildings		Legal opinion environmentally friendly public procurement
	LCC, Ecolabel		**LCA**		**LCC (indirect costs)**
	Sector regulation, regulation on the awarding of contracts in the field of transport, drinking water supply and energy supply				
	LCC, Ecolabel				
	General administrative regulation for the procurement of energy-efficient services				
	LCC, Ecolabel				
Nordrhein-Westfalen	Regulation for the procedural requirements in the areas of environmentally friendly and energy-efficient procurement, taking into account social criteria and promoting women and promoting the compatibility of work and family when applying the TVgG - NRW				
	LCC				
Bavaria	Environmental public procurement				
	Ecolabel				
Baden-Württemberg	Administrative regulation of the state govern-ment regarding the award of public contracts				

Country	Legal acts	Secondary legislation	Sectoral agreements	Political action plans/ road maps	Guidance
	LCC, Ecolabel				
Switzerland	Federal law on public procurement	Federal procurement conference: Guiding principles for sustainable public procurement	SIA 2032 (2009) Grey energy		ecobau - Sustainability in public construction
	LCC	LCC (indirect costs)	LCA		LCA
	The Federal Real Estate Management and Logistics Ordinance		SIA 2039 (2016) Mobility depending on the location of the building		
	LCC		LCA		
Zürich					
France	Procurement Law Act			National Actionplan for the SUSTAINABLE PUBLIC PROCUREMENT 2015-2020	Introductory Notice: Consideration of Life-Cycle Costs in a Consultation - Sustainable Procurement Development Study Group (GEM-DD)
	LCC, Ecolabel			LCC (indirect), Ecolabel	LCC (indirect costs), Ecolabel
					Public Services ecoresponsibles - state accelerating the environmental transition of its services
					CFP, "Green Criteria"
					SUSTAINABLE PUBLIC PROCUREMENT 2016 - Auvergne -RhoneAlpes, Methodological Guide and Practical Sheets
					LCC (indirect), Ecolabel

9 ANNEX IV – FACT SHEETS - COUNTRY FICHES

ANNEX IV: 1. Country Fiche - Austria

ANNEX IV: 2. Country Fiche - Belgium

ANNEX IV: 3. Country Fiche – Denmark

ANNEX IV: 4. Country Fiche – France

ANNEX IV: 5. Country Fiche - Germany

ANNEX IV: 6. Country Fiche – Italy

ANNEX IV: 7. Country Fiche - Sweden

ANNEX IV: 8. Country Fiche - Switzerland

ANNEX IV: 9. Country Fiche - The Netherlands

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