GPP 2020 | procurement for a low-carbon economy

How to calculate the impact of low carbon tenders

Goal of the GPP2020 project

One of the goals of the GPP2020 project is to demonstrate the environmental relief of low carbon products and services (also called solutions below) procured by public authorities, also described as *low carbon tenders*. The environmental relief is expressed in the form of reduced ***primary energy consumption*** *and* ***emissions of CO_2 equivalents***.

What should be compared when calculating the environmental relief?

To calculate the relief, the primary energy consumption and the emissions of CO_2-equivalents of the low carbon tender have to be compared with the primary energy consumption and the emissions of CO_2-equivalents of a conventional tender. This "conventional" tender can be either a tender for an *average solution*, a tender for the *worst solution* available on the market or the *solution procured in the last tender* of the public authority. As it is difficult to define the average solution, we suggest that both the solution of the last tender and the worst solution available on the market are chosen for the calculation. The following figure shows the three solutions that should be included (if possible) for the calculation of the environmental relief of the low carbon tender.

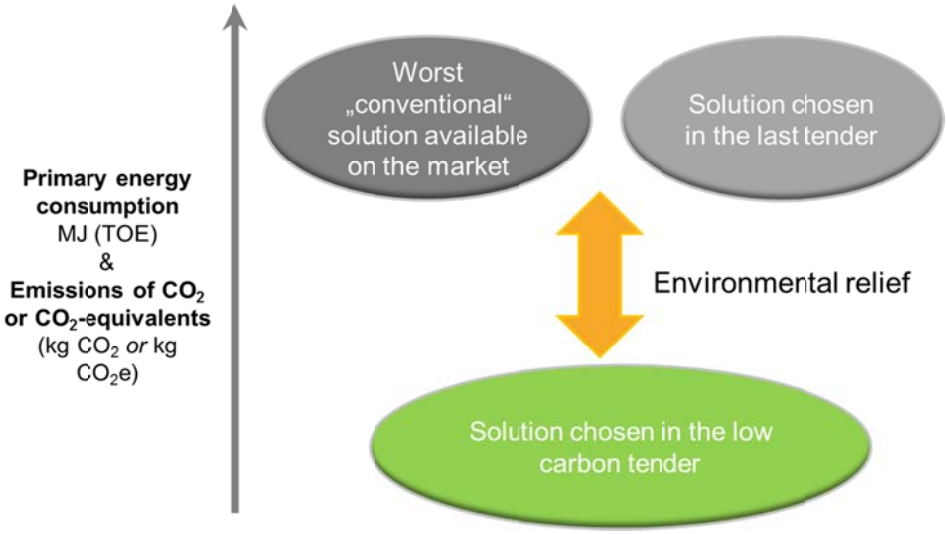

Fig. 1: The solutions that should be compared to calculate the environmental relief of low carbon tenders

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Each of the three solutions (the worst solution on the market, the solution procured in the last tender and the low carbon solution can be country-specific. There is no baseline that should be used by all project partners.

Where in the procurement process should the calculation take place?

The calculation of the environmental relief can take place at different steps of the procurement process. In the project GPP2020, we focus on two steps: the evaluation and – when indicated – the tender development (see figure 2).

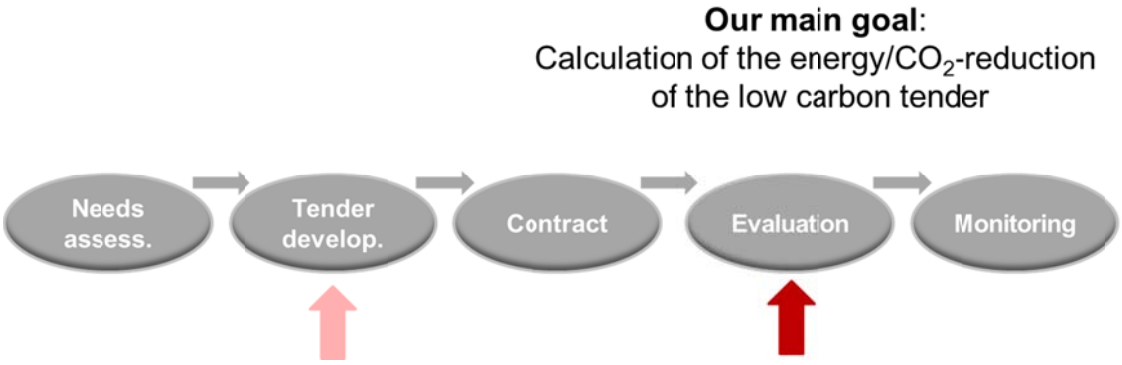

Fig. 2: The steps of the procurement process where the calculation should take place

During the development of the low carbon tenders: The tools inform decision makers and procurers about the possible reductions of **CO_2 equivalents** which can be achieved by developing a low carbon tender (or certain criteria in the tender documents). Equipped with this information, decision makers and procurers can make a decision if and how to include the criteria.

During the evaluation of the environmental impact of the low carbon tender once the tender is awarded: The tools inform procurers and the public about the calculated reductions of CO_2 equivalents achieved through the low carbon tender.

The following steps aren't addressed by the tools/methodologies developed in the project:

Although GPP 2020 tenders will include ambitious criteria on energy consumption and related topics in the technical specifications and/or award phase, **the tools aren't designed to be used during the award of the tender** due to legal difficulties. First of all, tenders shouldn't discriminate (foreign) companies. Thus, a tool that includes the transport in the supply chain could be deemed as discrimination if the transport distance has a relevant effect on the results (for example the CO_2-

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emissions or the energy impact) and thus on the tender which is chosen. Besides, if the results of a carbon calculation (without the impact from transport) were to be used in the award of the contract, the data offered by companies would have to be verified which might be time consuming. Also, if data is taken which is verified by a third party, for example the data offered in Environmental Product Declarations (EPDs), the methodology can only be applied if most of the companies are already part of this third party verification scheme (like in the case of paper profile). The "Total cost of ownership", which can be seen as an indicator for the environmental impact, is currently a more appropriate methodology for the award phase.

The tools will not be designed to identify the real environmental impact during the use stage; they are mainly designed for the calculated impact. For example, the tools only cover the difference between the stated/calculated environmental performance of three different notebook-options but not the real impact of the energy consumption during the use phase of the product. But if PBs would decide on running on-site tests on the performance of products at the same time of the contract management (e.g. while running a framework contract), the methodology will provide the possibility to include the results of this real-life data in the calculations.

Assessment of existing tools

We collected available tools and made an assessment whether they can be used in the project. An overview of the tools collected and assessed can be found in the appendix.

The collection and assessment lead us to the following conclusions:

- To calculate the emissions of CO_2-equivalents of different design options, **the right approach would be to conduct Life Cycle Assessments (LCA) for each of these design options**. Due to limitations in the project budget, we can't do the LCAs ourselves. The desire to include the whole life cycle of the tendered solution when calculating the environmental relief further contradicts the desire to offer an easy to use-tool. We suggest to lower the and to use a tool that can only offer a rough estimation. Such a rough estimation or "**quick and dirty**"-approach would only take the relevant stages of the life cycle into account. In the case of a multifunctional devise, this could be the energy demand in the use phase that could be taken out of the energy star database and multiplied with the emissions of CO_2-equivalents of the national electricity mix.

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- There isn't one existing tool for the calculation with which the variety of tenders can be captures. At least for each product group and possibly for each tender, the calculation has to be (slightly) different.

As there are not enough tools already available, we developed a plan for the partners in the project that shows how to proceed when the environmental relief of a low carbon tender should be calculated. The following figure shows this plan.

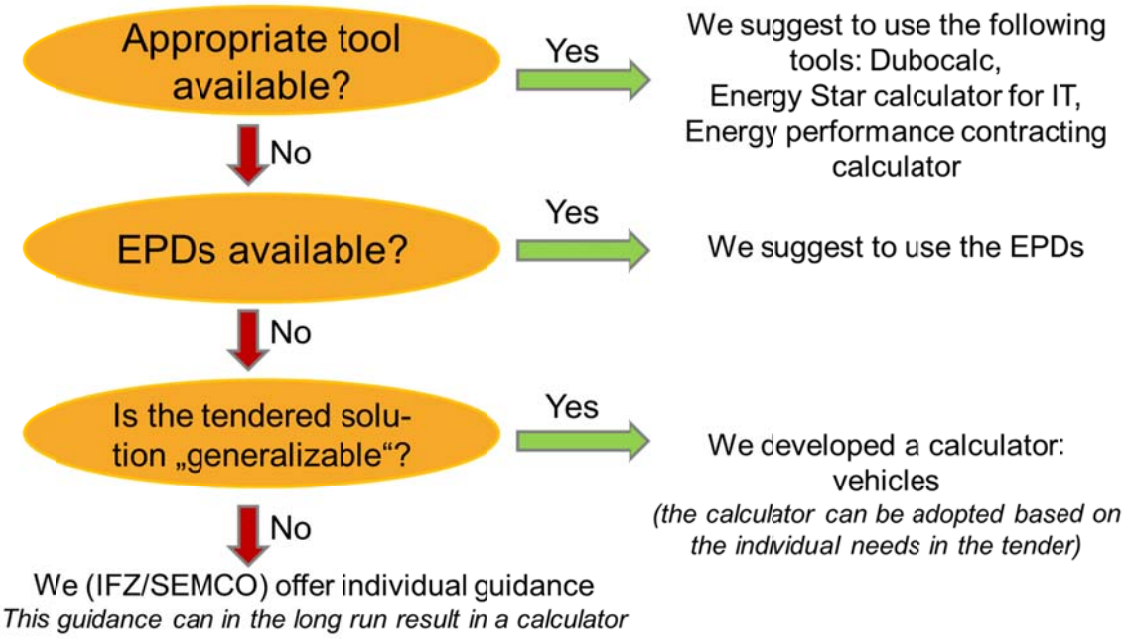

Fig. 3: The plan how to proceed when assigned with the task to calculate the environmental relief of low carbon tenders

The figure shows that there are at least four tools which can be used in the project GPP2020:

- There is a promising tool from the Netherlands – DUBOCALC – which can be used for **infrastructure** projects.
- There is another tool for **ICT-products** developed by ENERGY STAR which was adapted to the needs of the GPP2020-project and is now available to all project partners.
- There is another tool developed by the Austrian Energy Agency that was changed considerably and can now be used to calculate the environmental relief of **energy performance contracting**.
- Another tool was developed to be used when procuring **vehicles**.
- A tool for lighting is currently in the making.

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For other solutions we suggest that the partners take Environmental Product Declarations (EPD) if available. EPDs are Life Cycle Assessments for certain products. They are based on "**product category rules**" developed by a Third Party, for example SEMCO in the case of the "EPD System". For those product groups for which several EPDs are offered by the "EPD System", we suggest a calculation for different design options that already includes default figures. It has to be discussed how many EPDs are necessary to define these average default figures. And it has to be considered that there are still not many EPDs available, yet. Thus, this option might be only interesting in the future.

Otherwise, the GPP 2020 has set up an internal helpdesk (IFZ and SEMCO). They offer support for partners during the calculations of CO_2-savings.

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APPENDIX: Tools that were assessed

Name	Location	The Product group the tool is developed for	Stage of the life cycle the tool tackles	Impact categories	Short assessment
Buy Smart	http://www.buy-smart.info/downloads2/downloads3	Energy using appliances	Use	none	The tool assesses the life cycle costs, not the environmental impact
Smart-SPP	http://tool.smart-spp.eu/smartspp-tool/registration/login.php http://www.lcc-tool.eu	Energy using appliances	Use	Global warming potential: CO_2-Emissions	The tool can be used for energy using products even if it focuses only on the use stage and CO_2-Emissions (instead of CO_2-Equivalents).
DuboCalc	Not publicly available	Infrastructure	Whole life cycle	Global warming potential: CO_2-Equivalents	A license has to be bought-
CO_2-Performance Ladder	Not publicly available	Companies	None	None	The tool helps to calculate the carbon footprint of the company. Is can't be used for the calculation of the carbon footprint of products/services.
Lifetime cost calculator tool	http://www.cleanvehicle.eu/?id=427	Vehicles	Use	With the help of costs, the emissions of CO_2, NOx, PM, NMVOC can be calculated	The tool focuses on the operating costs and the external cost. Mayor changed would be necessary to use the calculator in the GPP2020-project.

Name	Location	The Product group the tool is developed for	Stage of the life cycle the tool tackles	Impact categories	Short assessment
Semco-Tools	http://www.msr.se/Miljomervarde/Nyttokalkylatorer/	White goods and vehicles	Use	Global warming potential: CO_2-Equivalents	An easy tool that also offers information about the life cycle costs.
Juhilas-Calculators	http://www.ymparisto.fi/default.asp?node=26927&lan=en	Office chairs, paper, ICT, Incontinence - products	Production and Use	Global warming potential: CO_2-Equivalents	A tool that asks for many informations and thus doesn't seem to be practicable.
Climate Office of Catalonia	Not publicly available	Companies	None	None	The tool helps to calculate the carbon footprint of the company. Is can't be used for the calculation of the carbon footprint of products/services.
GHG-protocol	http://www.ghgprotocol.org/calculation-tools	Companies	None	None	The tool helps to calculate the carbon footprint of the company. Is can't be used for the calculation of the carbon footprint of products/services.
Calculator of the US-Department of Energy	http://www1.eere.energy.gov/femp/technologies/eep_eccalculators.html	ICT-products	Use	Global warming potential: CO_2-Emissions	The tool can be used for ICT-products even if it focuses on the use stage and on CO_2-emissions.
LCA-calculator	http://www.lcacalculator.com	All kind of products	To be chosen by the user of the calculator	To be chosen by the user of the calculator	The calculator offers the environmental impact of design variants. It takes the data from the well known database Ecoinvent. A license has to be purchased to use the calculator.

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