GUIDANCE TO PROVIDE FOOTPRINT INFORMATION ON SUSTAINABLE ALTERNATIVES

For UNEP staff preparing recommendations for external stakeholders

WHY

When advising governments and other stakeholders to use one type of product or technology over another (e.g. renewable energy over fossil; electric vehicles over internal-combustion; reusable face masks over single-use; etc.), **UNEP should provide scientific evidence of the environmental (and socio-economic) benefits and drawbacks of the options / alternatives recommended, considering all stages of the life cycle, with a systemic view.** If the environmental (and socio-economic) benefits of the option being recommended by UNEP are not established over all life cycle stages, we run the risk of promoting alternatives that merely shift the negative impacts between life cycle stages, or replace one kind of environmental impact for another (trade-offs).

HOW

As a first step you may **check existing studies** of the International Resource Panel, and check with the UNEP Life Cycle team whether a comprehensive review at the global level has already been made for your topic (please contact el-hadji.dia@un.org). We may also help you reach out to the Life Cycle community for existing studies.

Do a **Google / Google Scholar search** for Life Cycle Assessment (LCA) studies of the topic or field you are interested in (e.g. "shopping bags"). Iteratively, add search terms including "Life Cycle Assessment" and different ways of referring to your field of research (e.g. "shopping bags"; "plastic bags"; disposable bags"; etc.). Refer to the main conclusion of the study, while being aware of the context, scope and limitations of the specific studies, as the conclusion might not be universally applied for all countries and regions.

Download and **explore what the existing studies reveal** on preference of one option over others. You may want to arrange your findings in a table with the studies identified in the rows and the alternatives covered in the columns. Tease out whether the different alternatives consistently perform better in specific impact categories, or not, whether one alternative is better overall, etc.

Extract the essential facts and note caveats to highlight when communicating (e.g. reusable shopping bags are better if/when reused effectively a certain number of times).

It is very difficult to provide general and **quantitative assertions**, although providing a number (e.g. solution A generates 30% less greenhouse gas emissions than B) is very powerful. If you want to keep such quantitative assertions (which LCA enables), always note under which **conditions and circumstances** they would hold.

WHAT

This guidance provides hints and ideas on how to substantiate that the options and alternatives you are proposing to member states are more sustainable across all life cycle stages, with a systems perspective.

IMPORTANT CONSIDERATIONS WHEN INTERPRETING LCA STUDIES:

Consider the date of publication, as references older that 5-10 years may be inadequate when assessing a new technology or a rapidly evolving field.

Consider the scope and overall quality of the publication, such as the goal of the study, inclusion / exclusion of specific life cycle stages, geographical, socio-economic and behaviour setting of the study, assumptions, data quality and representativeness. Peer reviewed studies also offer additional assurance.

Most LCA studies will describe existing systems: it is difficult to foresee what technological evolution will bring, but this needs to be considered because recommendations will be used into the future.

While LCA is the most comprehensive tool for systems analysis, it does not consider all possible environmental impacts (e.g. impacts from litter), and some impacts are only represented at a potential level to inform hotspots (e.g. impacts on biodiversity from land use; impacts related to water scarcity).

Normally, what look as the most environmentally friendly solutions are not preferable on all accounts; there are always nuances. LCA helps precisely in pointing out at the elements that need to be addressed for a specific solution to be superior.

FURTHER RESOURCES

To learn more on life cycle thinking and approaches, take one of the free on-line e-learning modules developed by UNEP's Life Cycle Initiative. For a recent example of this kind of meta-study, check the recommendations on single-use plastic bags and their alternatives from LCA studies. You can also find useful examples in the circularity platform: https://buildingcircularity.org/.

If you want the Life Cycle team to check your final communication materials based on your LCA research, get in touch and we will do our best to provide comments.

E.g. Compared to single-use plastic bags, paper shopping bags have clear benefits in the end-of-life stage (they degrade relatively quickly in the environment, thus not contributing significantly to littering); but if for instance UNEP was to propose as preferred option the use of paper bags over plastic bags, it would be necessary to prove that emissions and other impacts of paper bags throughout the whole life cycle are smaller than those of plastic bags. This tends to depend on how bags are produced, used and handled at the end of life. For instance, if the pulp for the paper was not sourced from sustainable forestry, fossil energy was used in the milling and manufacture phase, etc, then replacing single-use plastic bags with single-use paper bags would not be environmentally preferable overall (although impacts from litter may be reduced). This said, generally reusable bags of any material tend to out-perform single-use plastic bags in all environmental impacts, if they are reused enough times.

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