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Perspektywy i problemy zrównoważonego rozwoju

Perspectives and problems in sustainable development

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Abstract

Sustainable development has undergone an important evolution over recent years. It has been used not only as a tool to decide among several options in research programs but also in political decisions. However, how can we measure if something is sustainable or not? It seems that Life Cycle Assessment (LCA) is the most powerful technique to objectively describe and determine the sustainability of a new project, idea, change in established lines, etc. However, some important aspects are lacking today in LCA, for instance, experimental data on environmental impact related to emission factors.

In sustainable development, global warming is presented today as the major reason to carry out sustainability studies. Although global warming is, of course, an important reason for attaining sustainability, it is not the only reason. In this work, relevant aspects related to two important topics involved in modern sustainable development, sustainable tourism and waste management are briefly introduced.

Key words: Global warming, Life Cycle Assessment (LCA), Sustainable development, Sustainable tourism, Waste Management.

Sustainable development

It is only in relatively recent times that sustainable development has become famous all over the world. However, in this time its impact on our lives has been, to say the least, outstanding. To illustrate, a simple search in Google using "sustainable development" (exact words) as the search term generated 47,700,000 web pages (to put the matter in perspective the search terms "sex" and "money" generate ca. 487,000,000) and 1,340,000,000 hits, respectively. Unfortunately, we can not go back in time to see how many web pages existed, say, ten or twenty years ago or, (why not?), will exist in 2018 or 2028. In any case, sustainable development is a popular issue today for everybody, from ecologists to (specially) politicians. It is used as an argument to convince people, to evaluate and even to discard proposals, projects, actuations, etc. However, sustainable development ought not to be used as a "wild card" to justify anything.

What is the most powerful tool to make sustainable development a real and robust entity? The answer to this question is probably Life Cycle Assessment (LCA), a much less known term. As defined by the Society of Environmental Toxicology and Chemistry (SETAC), LCA is a process to evaluate the environmental burdens associated with a product, process, or activity by identifying and quantifying the energy and materials used and wastes released to the environment; to assess the impact of the energy and materials used and releases to the environment; and to identify and evaluate opportunities to effect environmental improvements. The assessment includes the entire life cycle of the product, process or activity, encompassing, extracting and processing raw materials; manufacturing, transportation and distribution; use, re-use, maintenance; recycling, and final disposal.

Therefore, it appears to be a way to discern between what is sustainable and what is not. However, it is evident that a rigorous LCA is still very difficult to conduct, because of the enormous amount of data required. In my opinion, this is one of the main challenges that LCA (and sustainable development) is facing now, and it must be a priority of our work as scientists, especially for those involved in environmental studies. It is crucial to make sustainable development a powerful, rigorous and reliable concept, not just an empty word.

Climatic change/Global warming - Our false friend?

With the growth in concern about sustainable development, a good friend has been, of course, climatic change and global warming. This issue has filled thousands of column inches in newspapers, novels and high-impact scientific journals and it has taken up time in congresses, high-level political summits and after-lunch discussions. It is also true that for many people, environmental awareness was born as a result of the dominance of climatic change as an everyday topic. On the other hand, I am sure that the proliferation of climatic change reporting in all its different forms has also been good business for a lot of people. I am not going to say that climatic change is not important from the sustainability point of view, because this is obvious. However, I think that global warming is now attracting so much of our attention, that a number of equally important environmental problems are not being considered by society with the necessary rigour. An example of this point is shown in some research projects submitted for financial support. It is common to say: "the results of this project will be very important for avoiding climatic change" when, in fact, the project is, for instance, nothing more than a low-impact clean technology for waste management. I wonder: it is not enough that the benefits of the project are the implementation or development of a better technology? Is climatic change the only excuse to work in environmental research?

This is, for me, another important problem in sustainable development, the wrong equivalence: sustainable development = climatic change and global warming, when it is clear that: sustainable development >>> climatic change and global warming.

Following this argument, I will finish this essay with a couple of the often forgotten environmental issues in sustainable development which are especially close to my heart.

The waste issue

This has been my main research area in recent years, and I sometimes call it the *forgotten area*. The impact of solid waste management in sustainable development is, in my opinion, enormous. Modern and well established societies should not manage their wastes the same way the Romans did. This is of special relevance for the example that is given by the "first world" to developing countries. They should not learn most of our management techniques, especially those dealing with organic wastes. I recently read a paper in which methane emissions from landfills in India were estimated (Mor et al., 2006). The huge amount of greenhouse gases emitted without control, and the equivalent amount of wasted energy was astonishing. This is a clear example of how the correct concept of sustainable development can improve the present situation, taking into account local conditions and economic considerations.,

Waste management is also a perfect field for researchers to test LCA tools, as some good recent papers have demonstrated. However, the problem of missing data appears in the construction of a robust and reliable quantification of LCA environmental impact categories.

A few words on sustainable tourism

And finally, a brief look at an aspect of critical interest for the Mediterranean area, where I live. The question of sustainable tourism has been another "forgotten" issue in sustainable development, probably because it has nothing to do (apparently) with global warming. However, although the voracity of the tourism industry has been responsible for the destruction of natural habitats, exhaustion of water resources, energy waste and collapse of waste management facilities, it has shown little interest in sustainable development. Tourism has developed into one of the world's most important economic sectors, growing faster than the world's gross domestic product for the last 30 years. Such a rapid development has been coupled with the negative impacts on the social and environmental aspects of the communities where tourism has developed.

Only in some recent papers of high merit, the issue of developing sustainable touristic enterprises has been studied in detail. Even a valuable definition of sustainable tourism development has been proposed: "A tourism product that seeks to avoid or minimize environmental irreversible impacts and preserves cultural heritage at the same time as provides learning opportunities and contributes to the maintenance or improvement of local community structures, including positive benefits for local economy" (Weaver, 2005). The results presented in these papers are, in general, overwhelming, showing the high environmental impact of mass tourism. Thus, if only simple measures of energy and water saving and adequate solid waste and wastewater strategies were applied, the results in terms of improved sustainability would be spectacular. For instance, the transformation of a classic tourism enterprise to a rural sustainable tourism model in a small hotel (10-15 persons) could save several tonnes of CO_2 per year (if the environmental improvements are to be computed in terms of global warming) (Fortuny et al., 2007). Whatever the final truth of the matter, the present trends show us that tourism, in all probability, will have important implications in terms of sustainable development in the coming years.

References

1. FORTUNY M., SOLER R., CÁNOVAS C., SÁNCHEZ A., Technical approach for a sustainable tourism development. Case study in the Balearic

Islands, Journal of Cleaner Production, doi:10.1016/j.jclepro.2007.05.003
2. MOR S., RAVINDRA K., DE VISSCHER A., DAHIYA R.P., CHANDRA A., Municipal solid waste characterization and its assessment for potential methane generation: A case study, Science of the Total Environment, 371, 1-10 (2006).
3. WEAVER D., Comprehensive and minimalist dimensions of ecotourism, Annals of Tourism Research, 32, 439-455 (2005).