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Austria: A new approach for the assessment of sustainability

What does the sustainability of human development depend upon? Can it be measured by income growth? Is it related to an ecological dimension? Does it rely on social constituents such as a more equitable income distribution? There is agreement when recognizing that what matters is not the individual progress of these elements, but their joint improvement. The study was developed in the frame of the research interests and expertise of the Ecological Economics Research Group of the Institute of Environmental Science and Technology (ICTA), and recently published in the journal *Ecological Economics*.

When evaluating the performance of a country, this multidimensionality is usually forgotten and simple indicators are used. At best composite indicators like the Human Development Index (HDI), which combines data on income, education and life expectancy, are used. Often, human well-being at the country level is thought to be strictly linked to Gross National Product (GDP), a highly contested indicator when used to this aim.

The evaluation of sustainability must take care of its multidimensional and dynamic nature. Consequently, the assessment should consider the progression of factors that can be in conflict with each other, like the reduction of polluting emissions, the evolution of the

employment, or the achievement of high levels of life satisfaction. For instance, in 2009 the GDP goes down as well as greenhouse gas emissions. Can we establish that there is a suitable progression towards sustainability without reducing all the factors to a single unit?

Fig. 1. Trend of the Human Development Index in Austria, 1975-2002

In order to answer this question, a recent study has applied a multi-criteria method to the assessment of the sustainability at the macro (country) level. Austria was chosen as a case study as data were readily available, especially on sustainability indicators.

The multi-criteria process begins with the selection of evaluating criteria for the problem at hand, in this case, the sustainability at country level. This involved a critical review of institutional sustainability agendas (UN, EU and Austrian Government) and theoretical recommendations. Up to sixteen criteria were thus chosen. Among them there are well-known indicators like GDP, income distribution and carbon dioxide emissions. Also there are indices arising from new social debates, like the material throughput of the economy, or the human appropriation of the net primary production.

Another key step is the choice of the multi-criteria method employed to systematize the process. After an assessment of MCDA methods, NAIADE (Novel Approach to Imprecise Assessment and Decision Environments) demonstrated suitable properties for sustainability assessment. This is due, over all, to its utility to get insights on the consequences of accepting compensation between criteria.

The innovation consists in the application of the multi-criteria methods to compare of periods over time, instead of comparing alternatives, as it is the current practice within this approach. Two time frames were tested: long term (1960-2003) and medium term (1995-2003). A set of suitable evaluating criteria was associated to each. Likewise, the study tested whether 'strong' or 'weak' sustainability was achieved. For the purpose of this study, strong sustainability considers all dimensions as important, whereas weak sustainability allows for a disadvantage on one indicator to be offset by an advantage on another. For example, losses in the environmental quality would be permitted, provided they are compensated for by sufficient improvements in the economic or social dimensions.

The results of the analysis indicate that there is a general move towards increased sustainability between 1960 and 2000 in Austria, particularly when weak sustainability is considered. The trend towards sustainability is less clear when strong sustainability conditions are considered. Also, the study tests the response of results to the addition of new criteria. The larger number of criteria used, the more difficult to identify clear sustainability trends. It is then when the phenomenon of incomparability appears; that is to say, it is not possible to determine if the situation of one period is better than the one of another period.

Fig. 2. Ranking of years for the medium-term assessment, Austria, 1995-2003, 16 criteria.

The authors point out that every multidimensional assessment is a unique exercise and should be reviewed on a regular basis. Since the results depend on the methodology choices, i.e. whether sustainability conditions are strong or weak and on the criteria used, the authors suggest that this should be decided upon by the stakeholders using the results. Due to the framework's flexibility, it could use different sustainability conditions, criteria and parameters depending on the situation. Although the framework must be accordingly

adjusted to the social and historical contexts, it is recommended for establishing priorities for developing and evaluating sustainability.

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References

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