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Measuring transformation towards a Green Economy in Germany

Extended abstract (600-1200 words)

Topic 6.3.

Indicators and modelling approaches

(may also fit to Topic 1.2 Green economy and ecological macroeconomics or 7.4 Beyond GDP: increasing the policy value of alternative measures of economic welfare)

This paper reports major results of the study „Green Economy: Measuring sustainable welfare using SEEA data“, which has been conducted for the German Federal Environmental Agency between 2011 and the end of 2014. It contributes to measurement of progress towards Green Economy and its understanding for political decision making process in Germany. Our understanding of Green Economy is not reduced to simple green growth but explicitly includes welfare. Based on a synopsis of relevant measurement concepts it identifies deficits of available concepts and develops suggestions for an adequate indicator system.

The economic and financial crisis has pushed different concepts to measure wealth and sustainable development beyond GDP. Accordingly, international literature including concepts of OECD, World Bank, EU and UNEP and research projects such as IN-STREAM has been evaluated. Most concepts still focus on growth, trying to make growth “greener”. On a national level, tests of the OECD concept in the Netherlands (Statistics Netherlands 2011) and Germany (Statistisches Bundesamt 2013) showed that a part of the discussed indicators is already available. However, concerning welfare, official statistics and sets of indicators still show gaps, which are addressed in concepts such as the National Welfare Index (NWI) for Germany (Diefenbacher, Zieschank et al. 2013). Finally, none of these concepts is currently able to adequately measure the transformation towards a Green Economy.

Between the conflicting strategies of growth-oriented policies of G20 countries on the one hand, and new alternative concepts of Zero-growth or De-growth on the other hand, the concept of a Green Economy offers some potential for establishing a new consensus. Based on the literature review and research on a sustainable welfare model (Meyer et al. 2013), we have hence developed a set of indicators for Germany to measure the transformation towards a Green Economy and the Green Economy itself. The idea is to observe in different dimensions, whether economic development in Germany moves in the direction of a Green Economy or not, to see how such an information system is usable and can be fixed in the policy debate, and finally, which policy functions the information system may have. It will help to shed some light on the impact of ambitious environmental policies, being it the shift to renewable energy or a massive increase of resource productivity, on economic development, including the rebound effect, as well as on environmental and social development.

The definition of Green Economy follows the ministry’s approach of 2012. However, based on this approach an enlarged concept is developed. It consists of six different dimensions: (A) use of natural resources and environmental damages, (B) natural capital, (C) environmental quality of life, (D) Green

Economy: economic dimension and fields of action, (E) policies: institutional framework and measures, and (F) background information on economic and social development. Each dimension contains indicators to describe several subcategories such as different kinds of natural resources etc. The two central dimensions are economy and environment. Environment should be an integral part of economic accounting, not being limited to monetary flows, but including physical stocks and flows.

The first dimension (A), use of natural resources and environmental damages, comprises indicators as energy consumption, water use, land use, water use, material consumptions and use of wood and fish. Most indicators are measured separately both for domestic and global use. At least domestic indicators and part of the global ones are already provided by the Statistical Office. However, this is not the case for monetary damages of the environment. They are taken from the National Welfare Index.

The natural environment is subject to negative changes due to production and consumption that entail the excessive removal of natural resources, the excessive pressures on the ecosystem capacity as well as the exceeding of absorption boundaries of emissions and waste. The stock of natural assets (B) and their quality change in a negative way (reduction respectively degradation) due to these flows. Natural capital explicitly includes resource stocks, biodiversity and ecosystem services.

Meanwhile, the intense use of nature and the generated pressures, in particular by emissions, do not only reduce natural stocks and potentials; they are harmful for humans whose health and life quality is negatively affected as well (C). Besides, questions of the distributional justice and social justice up to and including ethics are relevant due to the different vulnerability of social groups.

Among others, the environment serves the socio-economy as resource and sink. In addition, it delivers ecosystem services. The use of natural resources is limited by global boundaries. The concept enlarges the OECD Green Economy concept. It consists of core indicators and a wish list of needed indicators, which are not yet available in statistics.

The concept is tested regarding energy transformation (Energiewende) in Germany in the next decades. The economy-energy-environment model PANTA RHEI has been used. It builds on official statistics and can be used for consistent projections of future development. Among others it has been applied for economic evaluation of different energy scenarios that have been the basis for the German energy concept in 2010. The scenario Energy transformation contains additional quantified measures to reach the targets of the energy concept until 2030 in contrast to a current policy scenario, which will miss most of the targets.

The test shows for the year 2030 how successful implementation will change and partly improve the indicators in the direction of underlying policy targets. However, indicators not closely linked to the energy transformation will not improve significantly, some impacts, e.g. concerning resource use, are even negative. As statistics do not yet deliver all preferred indicators, gaps for future development of indicators are identified.

The concept can be enlarged in the international dimension, e.g. explicitly taking global responsibility in the form of global (carbon) footprints into account. It may be linked to attempts of international organizations such as the System of Environmental and Economic Accounts (SEEA) of United Nations. Other potentially useful concepts for linkage include Wealth Accounting and the Valuation of Ecosystem Services, pursued by the World Bank, the Global Green Growth Institute/OECD/UNEP/World Bank approach of a “Green Growth Knowledge Platform Moving towards a Common Approach on Green Growth Indicators” or methodologies for assessing green jobs or jobs related to renewable energy by ILO or IRENA/IEA.

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