

Sustainability in the Economic Sense

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Abstract: Purpose: What is the perception of sustainability in the economic sense? Human behaviour cannot continue in the actually given way as the usage of natural resources exceeds regenerating ability of the earth. The result of human behaviour is called ecological footprint of human mankind; it will have crucial impacts on national economies and the business of its companies via external diseconomies. Indicators, values and consequences get investigated.

Design/methodology/approach: Any here discussed objectives are only a small extract of all existing or potential objectives. The research method used by the author was an analysis of existing and published literature within Web of Science and elsewhere like the UNO and her organisations (in total more than 15 references), mainly from the last decade. The approach of the topic is to define and evaluate the actual status quo of sustainability regarding economics from the US American and German point of view.

Findings: Research findings are shown within a brief summary to offer an opportunity for further analysis, discussions, or results. The ecological footprint is an accepted possibility to measure effects of men on nature, based on numerical indicators and values. The incurrence of external diseconomies must be charged or taxed in full. Economy, Society and Environment have to go hand in hand and people have to be taught their current behavior cannot continue in the previous way anymore.

Research/practical implications: results and implications for practice, applications and consequences are identified as added value. Changes of sustainability and its effects can only be evaluated in the mid and long term run. Any real short term effects should not be expected. Avenues of future research should have always a focus on sustainability, if current behaviour of human mankind offers an acceptable opportunity of surviving for future generations. **Originality/value:** This paper sees sustainability from the economics point of view (a research gap so far) and is in contrast to most existing literature which has the approach from the environment (natural sciences/technique) or society/politics.

Key words: sustainability; effects on economics and business

JEL codes: Q01, Q51, Q57

1. Introduction

The whole topic is by far more difficult to define or to isolate as it is very wide and more or less everybody feels affected by it. Sustainability is usually split into three parts or goals: Economy, Society and Environment or to be more precise into economic development, social development and environmental protection. It is not finally

decided how these three goals are connected with each other. Following are two diagrams showing the interconnectedness. A single “correct” view does obviously not exist (a research gap so far).

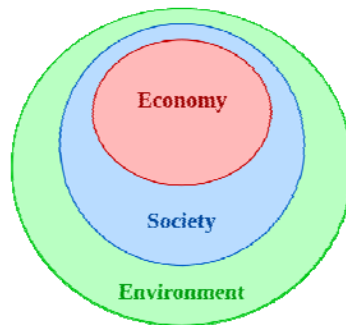


Figure 1 Three Pillars of Sustainability

Source: Scott Cao M. (2009), *Green Economics*, London

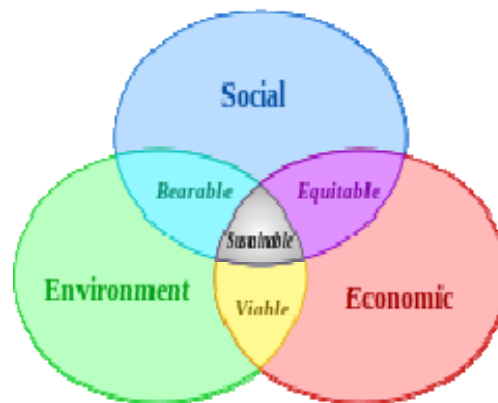


Figure 2 Sustainable Development at the Confluence of Three Constituent Parts

Source: Adams W. M. (2006), *The future of sustainability*

2. Economy and Sustainability

Under sustainably economy (short version) is understood by the United Nations goal #8: ...to support a long term, inclusive and sustainable growth, full employment and a so called “decent work” for all (UNDP, 2017). The goals are defined as Sustainable Development Goals (SDG). Literally is defined: “The SDGs promote sustained economic growth, higher levels of productivity and technological innovation. Encouraging entrepreneurship and job creation are key to this, as are effective measures to eradicate forced labour, slavery and human trafficking. With these targets in mind, the goal is to achieve full and productive employment, and decent work, for all women and men by 2030” (UNDP, 2017).

2.1 Political Economy

As the main topic sustainability is even very wide, effects have to be differentiated between single companies (business administration) and those on the whole economy (political economics) where single companies can, but need not be affected on. Important regarding this matter are also external effects which have to be carried/paid by a third party (usually the inhabitants today and in future) which has no direct or indirect advantages by the behavior of others. One of the challenges is that present persons should not diminish the prospects of future

persons to achieve a defined level of welfare, utility or consumption (Bromley, 2008).

2.2 Definitions and Goals

Definitions and goals which were set, have to be understood as results of the understanding that former behavior (using earth without taking care of environment) und maximizing growth of industry cannot be the only targets. It started 1972 by the book “The Limits to Growth” by the Club of Rome, over the Brundtland Report “Our Common Future” 1987 by the World Commission on Environment and Development (WCED, 1987) followed by the Earth Summit of the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro 1992 and following environmental conferences like Kyoto 1997, Johannesburg 2002, developing Agenda 21 (Parson et al., 1992), until finally Paris 2015. The Brundtland Commission defines sustainable development as “ability to make development sustainable — to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987).

In the scientific literature can be found the phrase of the three pillars of sustainable development as shown in the Figures 1 and 2, but there is within the description a huge variety with differences, mostly focused on the social pillar. A different way to define sustainability is to set goals and values and measure the grade of achievement via indicators. A possibility to differentiate them is the time horizon: short-term, middle-term or two-generations and long-term goals. Regarding goals other aspects have to be taken into consideration like “is the goal really achievable” or “do countries make progress into the right direction?” (UN Secretariat et al., 2017) As progress is coming obviously slowly, for many goals is used a time horizon of two generations or even the long-term goal (an UN Millenium Project). Based on these facts the UN has developed a Global Scenario Group which has the task to care about the transition of sustainability. Important seems to this group that changes can be achieved without a social revolution or a technical miracle. Nevertheless a precondition is a governmental commitment and the political will. Several key words seem to be those which will affect design of products in future like: Recycling, Repair, Reuse, Recondition, Refurbish and Remanufacture.

2.3 Indicators and Values

First has to be defined how to measure or evaluate the degree of achievement of goals. For measuring first indicators have to be set. Combining various initiatives there come a large number of efforts to define indicators which could or should be used. As the countries differ extremely around the world, they use very different criteria to measure any kind of progress. In total has to be stated that the list of items which can be sustained or developed is extremely long and is obviously influenced by many different stakeholders, who have different opinions and what is maybe even more important, different personal goals. It is a huge difference if the group of stakeholders is mainly based on social politicians, or on global acting corporations, investors and regulatory agencies. Desirable goals depend therefore essentially on the constitution of the group. Thus the range of indicators becomes very long. At the end the big number of indicators gets aggregated to a special vision how sustainability should look in this case. The second challenge is the used time horizon. Many indicators are set as mid- or long-term goals (Parris, 2003). The point of view is therefore limiting in general the value of the statement.

In general has to be stated that due to obviously too many influencers many statements became too long and therefore complicated to clearly understand or inconvertible into measurable and achievable goals. Maybe this unprecise statements are coincidence, maybe not. Here is definitely a research gap.

2.4 Causes of Depletion and Economic Costs

A long time it looked like if the majority of natural resources would be inexhaustible and without limits of capacity. Therefore they were called Public Goods which was wrong, what became obvious by time. Then it was

changed to merit goods. The challenge is that there hasn't to be paid any, or any realistic, prices for them so that a depletion is the result. Based on this development it comes to a misallocation of goods or production factors, for what the market economy has no or no acceptable solution yet. This erroneous trend is called market failure (Cansier, 1996). This means in concrete that the politics has to change the general framework, that consumers and producers stop waste of energy and material. Sustainable products have to be developed and sold. If this fails politics has failed.

Target of the neoclassic environment economics is due to environment protection operations to stop depletion of natural resources until there is achieved an optimum between the costs damaging environment and costs for environmental protection. To provide such an „optimal“ environmental protection politics needs to internalize the costs which were paid before by the public (a kind of back-shifting) so that the price would reflect the real value or costs of economics. A precondition for that would be a calculation of environmental damage or loss (Cansier, 1996).

2.5 External Costs and Sustainability

The science sees the creation of external costs which are not borne by the polluters, but by the population, one of the core problems of sustainability. Dirty or unsustainable products and production processes are too cheap and are due to the low price in the market. Ecological products, which bear their own costs, are more expensive compared to the dirty ones and therefore do not penetrate the market. The result out of that is: External costs are the main market failure. Pollution taxes and other flexible market instruments are applied to internalize external costs of atmospheric emissions. This challenge is well investigated by Streimikiene et al. (2016) about external costs and pollution taxes. This has a major impact on the spread of renewable energies. The internalization of external costs is intended to eliminate the economic relevant misallocation (market failure). The internalization of external costs leads to a balance between private and macroeconomic profitability and therefore the Pareto optimum. When such externalities exist, markets are not efficient unless their external costs are internalized and economic agents take into account these costs when making decisions. This internalization would reduce costs of renewable energies nominal as well as relative to existing polluting technologies. This price reduction would increase the competitiveness of renewable energies and reduce that of polluting energies (Streimikiene et al., 2016).

3. Sustainability in Its Development

Based on the last decades a so called “green economy” has developed. It is either called environmental economics or ecological economics; they contain concepts and approaches of cleaner production, waste hierarchy, bio-economy, industrial ecology, circular economy and nature-based solutions. Dematerialization achieved through product-servicizing, life cycle assessment and honest cost-benefit analysis can improve and support further steps in sustainability (Loiseau et al., 2016). This means in concrete: the current challenges are understood and solutions are developed.

4. Ecological Footprint

The ecological footprint measures how much nature (e.g., in ha, acres) it takes to support people, or what is needed to keep existing living standard or life style of a person on sustainable basis. This includes space required for the production of clothing and food or for the provision of energy, but also for the disposal of waste or for

binding carbon dioxide released by human activities. The values are given in global hectares per person and year. The ecological footprint is often used to point out social and individual sustainability deficits in connection with the concept of education for sustainable development — depending on whether a person converts his ecological reserve into an eco-deficit. Based on existing data (see Figure 3) the largest ecological footprint in 2010 was the average population of the United Arab Emirates with 10.68 ha/person, the inhabitants of Qatar with 10.51 ha/person and the population of Bahrain with 10.4 ha/person. The lowest was found in Bangladesh with 0.62 ha/person, East Timor with 0.44 ha/person and Puerto Rico with 0.04 ha/pers.

Human Welfare and Ecological Footprints compared

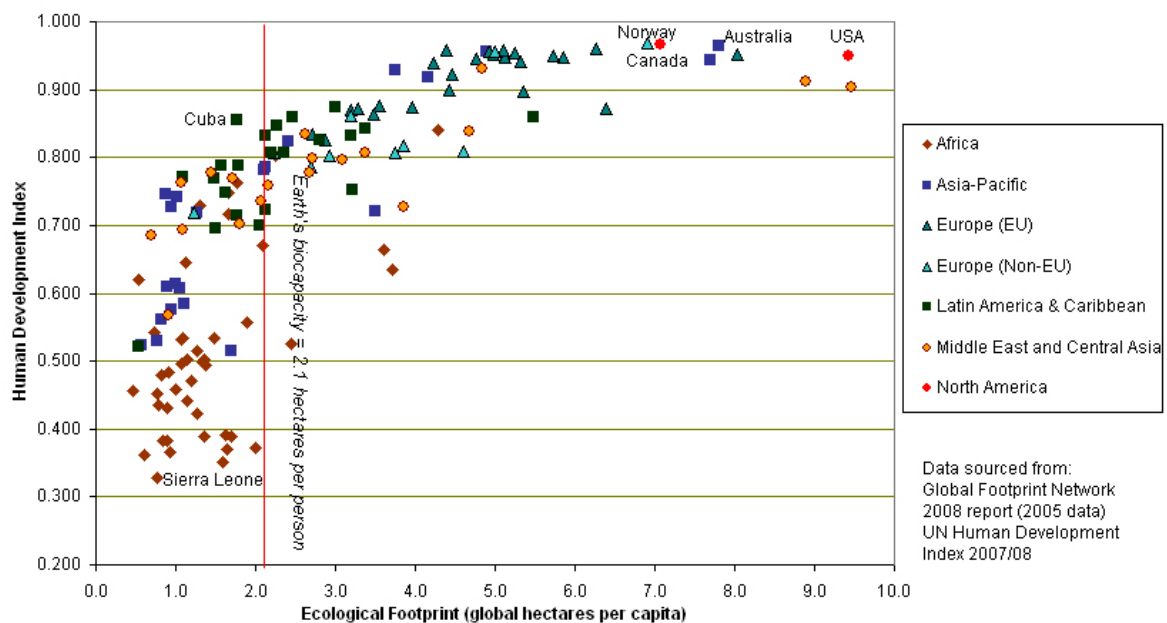


Figure 3 Human Welfare and Ecological Footprints compared

Source: Human Welfare and Ecological Footprints compared (Global Footprint Network 2008 report (2005 data), UN Human Development Index 2007/08)

It has to be stated that any final evaluation of this method cannot be done. An important statement regarding this matter is given by Fiala (2008), described below. The assumptions behind footprint calculations have been criticized. E.g., he “argues that the footprint arbitrarily assumes both zero greenhouse gas emissions and national boundaries, which makes extrapolating from the average ecological footprint problematic. The footprint also cannot take into account intensive production, and so comparisons to biocapacity are erroneous”. Example: it is obvious that an inhabitant in New York City will have a completely different footprint, than a farmer in a rural area with profitable climate conditions. “Using only the assumptions of the footprint then, one could argue that the Earth can sustain greatly increased production, though there are important limitations that the footprint cannot address, such as land degradation”. This means: if a worker in an industrial land manufactures a lot of products his footprint is of course by far higher than of a person, unemployed, in a third world country. “Finally, the lack of correlation between land degradation and the ecological footprint obscures the effects of a larger sustainability problem”.

Final deduction on this topic is done by Kissinger et al. (2011): the average world citizen has an eco-footprint of about 2.7 global average hectares; the challenge is: there are only 2.1 global hectare of bioproductive land and water per capita on earth, based on this theory. Result: humanity has already overshoot global biocapacity by 30% and it lives now unsustainable by depleting stocks of “natural capital”. The “Ecological Debt Day” or “Earth Overshoot Day”, which is also known as the “Ecological Day” or “World Day of Creation”, is an annual campaign by the Global Footprint Network organization. This indicates the calendar day of each year, from which the resources consumed by humanity exceed the capacity of the Earth to generate it. The Ecological Debt Day is calculated by dividing the world's bio capacity, i.e., the natural resources produced by the earth over a year, by the ecological footprint of mankind multiplied by the number 365. The first year it was calculated for was 1987 and the day was the 19th of December. In 2012 it was on August 22nd, in 2016 the 8th of August (Fiala, 2008). This means: the trend of the last 30 years shows a clear advance to an earlier date. The people live on the costs of their descendants.

Figure 3 shows the relation of ecological footprint and human welfare. The statement “there is a complete imbalance” is not exaggerated, especially if 2.1 in the index is seen or defined as limit from the scientific point of view.

5. Sustainability in Actual Reality

Any plans or any targets are only as good as they can be brought into force. It has to be found a big compromise between those people who are in general concerned regarding environmental protection and on the other hand those people who value economic development. The third side is the improvement of human conditions. A plan how to bring the necessary activities into force is the Local Agenda 21 which describes a local-government-led, community-wide, and participatory effort to establish a comprehensive action strategy.

Important in this connection is the understanding that the transformation into activities can be done only on local level. And this means it has to be „lived“ by all decision makers and cannot be shifted by local politicians to the federal government.

Sustainable development is often based on various social movements. Those people have a similar ideology about that how a world should look like (from their point of view) and they collaborate with many Nongovernmental Organizations (NGOs) as well as journalists. Based on that result, local movements have the target to bring activities into forces and achieve fixed targets. Therefore these targets have a strong social approach, e.g., supporting poor people, paying subsidies for agriculture or paying fair wages (Brecher et al., 2000). The Millennium Villages Project aims to achieve the Millennium Development Goals in villages across sub-Saharan Africa, through an integrated set of interventions designed to catalyze the transformation of sub-subsistence farmers' into small-scale entrepreneurs' (Wilson, 2017).

Various magazines elect every year the most sustainable companies in the world as marked by Corporate Knights and published, e.g., in Forbes magazine. For 2016 they have evaluated BMW (German car manufacturer) as leader. The ranking exclusively considers characteristics that can be measured quantitatively and does not factor in a company's exposure to risks that cannot be quantified and are thus subjective (focus on numerical indicators and values). Certain indicators are prioritized over others across industries. Goals of sustainability are seen meanwhile as necessary. An evidence can be seen the implementation of a Division of Sustainable Development within the UN (United Nations) Dept. of Economic and Social Affairs as well as on the World Bank.

Various governmental entities have been established to create and monitor very specific sustainable development strategies (Dalal-Clayton, 2017).

6. Conclusion

Let's start with a question: Can any final conclusion or findings be given? Any kind of evaluation seems here to be very challenging as the points of view between people and between nations might be very different. Nevertheless indicators and values are defined to make a rating more precise and therefore conclusions and findings are:

- An empirical cognition can be the ability to be(come) open minded for compromises between the three groups concerned about environment, value economic development and improving human/social situation. So there happen many negotiations between these three groups finding practical solutions which can be brought into force.
- Any final assessment of sustainable economy was not found in any literature (a research gap so far and limiting the statements in this paper); it was always only combined with the general approach, based on the Brundtland Report, that it is part of the "big thing" sustainability. Here are various avenues of future research to bring sustainability into daily life of people around the globe. The only five indicators about sustainability used by the German council of experts give an idea how to measure welfare and sustainability in future. Up to now they are not yet part of a bigger mathematical or reference model.
- The incurrence of external diseconomies must be charged or taxed in full. This system must apply worldwide. Pollution must be borne in full by the polluters. That will decrease the relation of the price for renewable energies to polluting ones.
- Natural resources are essential for our economics and for the life on our planet. The consumption or wasting of natural resources is still growing. This should be the approach of politics to interfere and to stop this kind of development.
- To develop economy into the needed direction, economy has therefore to implement environmental protection and human/social behavior into their daily politics and long term strategies to fulfill expectations of people or nations in general.
- Economy cannot be seen separately, or it cannot be splitted from the two other groups, as it earns the money to finance changes and is the basis of surviving to buy daily needs.
- The summary of these facts shows the avenue of future research: Economy, Society and Environment have to go hand in hand and the people have to be taught that their current or used behavior cannot continue in the previous way anymore.
- The reality proves achieving agreement on any kind of sustainable values is a very challenging task, as very different stakeholders with very different targets do exist.

A successful approach can be seen in a positive vision of a world in which basic human needs, and to this belongs also consumption, based on expending money which was earned before (economy), can be reached without destroying or degrading any kind of systems (environment) we all depend on.

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