

Sustainable economic growth literature review example

[Education](#), [Sustainability](#)



INTRODUCTION

In broad terms, the concept of sustainable economic growth is an attempt to combine growing concerns about a range of environmental issues with socio-economic issues (Bill Hopwood, Mary Mellor and Geoff O'Brien, 2005).

However, the phrase sustainable economic growth or development has many meanings attached to it. Sustainability itself (as a strategic concept originated in the Brundtland report in the year 1987) means a degree of growth which can be retained without creating other substantial economic or environmental problems for future generations. In other words, it is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environmental Science, 1987).

This essay will discuss the UK's sustainable growth agenda and how it has impacted the standards of living, unemployment and the environment in the UK. This topic has been chosen in order to shed light on the importance of sustainable economic growth and the importance of having a national agenda. It will also help the policy makers to know if the agenda is moving in the right direction or not. The motivation to conduct this research comes from my personal commitment toward sustainable economic growth.

After reviewing some basic information sustainable economic growth and its correlation will be reviewed as it is the basis of sustainable development.

Followed by this will be the relationship to Neo-classical Environmental Economics combined with a sub-section on sustainable development. Herein, the policies for sustainable development will be addressed. At this point it will be necessary to relate to see how the indicators for sustainable

development are being used and how other indicators can produce varying results. With this in mind the last section will present the UK's agenda for meeting sustainable economic growth.

Background Information and Literature Review

Sustainability or sustainable development has emerged as the dominant concept in the assessment of interactions between the biophysical environment and the economy (Mulder & Bergh 2001). In the past decade, the interest in sustainable development has soared higher than before (Mulder & Bergh, 2001). Economists' attention to the interaction between the biophysical environment and the economy dates back to the 18th Century (Aghion & Howitt 1998). In the sixties, awareness of pollution, its potential impact and implication of environmental degradation began to take shape, and led to the emergence of new areas of research. Since the emergence of the term sustainable development in the late 1980s, it has rapidly become the dominant concept in the study of the interactions between the biophysical environment and economics. Sustainable development denotes "development that meets the needs of the present without compromising the ability of future generations to meet their needs" (Allen 1988, p. 23).

Daly, Herman and Cobb (1990) denote that a sustainable development has several unique characteristics. First, it involves the use of renewable natural resources, as well as the protection of the functions and features of the ecosystem. At the same time, it preserves biological diversity and ensures the levels of emissions are kept at an assimilative level (as low as possible). Also, it prevents irreversible damage to the environment and nature as a

whole (Levin, Maler, Perings & Pimentel 1995). In line with this, non-renewable resources, such as gas and oil, are the chief obstacles of sustainable development. On this note, champions of sustainability may choose to limit the use of such resources (Levin, Maler, Perings & Pimentel 1995). This goal can be attained by investing in renewable resources and technological progress in general.

Economically sustainable development has emerged as a centre of focus of most developed and developing nations (Rosen & Kishawy 2012). Quality of life and non-material factors have become the subject of debate. As the world continues to come to terms with the effects of global warming and climatic change, it has become essential for economies to engineer sustainable development measures. One of these measures deals with the capital increases of the country and its effect on sustainability.

The accepted neo-classical theory is based on progress where the accumulation of capital, labour and population growth increases with productivity (Solow and Swan 1992). This theory grew from the Harod-Domar model (1946) with the introduction of the term 'productivity growth'. Terry Barker (2013) argued for the application of equilibrium economics when using neo-classical theory to manage the problems which have developed with the natural environment. This would appear to take into consideration the complexities of the global ecosystems. In addition pollution caused by production is socially inefficient when the costs are not calculated into the cost of production or the market price (Cordato 2005).

Economists have employed this neo-classical or applied standard theory to

environmental and economic problems when assessing the interaction between the biophysical environment and the economy (Kulhman & Farrington 2010). Such assessments include welfare or externality theory, with a focus on the optimal choice of policy instruments. Additionally, exogenous or endogenous growth theory that focuses on deterministic dynamic optimization models with continuous equilibrium and processes are often employed (Kulhman & Farrington 2010). Again, it is evident these other theories are considering the additional costs in association with what may be both indirect and direct ways of which production is decreasing the true GDP's calculations.

The sustainability of the applied standard theory must take into consideration the well of non-renewable resources and technology. This area has grown with regards to pollution and ecology and how it ties in with this theory with regards to its rising costs in the economy (Toman, Krautkraemer & Pezzey 1995). The neoclassical theory is based only on prices and events directly linked to production and technological advancements. However, it leaves out the [sometimes] direct and indirect consequences of ecological pollution at multiple levels. While there is an imbalance between these computations both are necessary to understand the true drivers and paths the economy is taking.

In order to drive the economic system towards sustainable development, it is essential to understand standard environmental economics and this must be complemented by an evolutionary approach. Such an evolutionary approach concentrates on irreversible, path-dependent change, as well as long-run

mutual selection of economic and environmental processes and systems (Kulhman & Farrington 2010).

Theoretical Basis: Neo-Classical Environmental Economics and Sustainable Development

Environmental, economic analysis always focuses on optimal welfare, relative scarcity and allocation of scarce resources (Mulder & Bergh 2001; Pezzoli 1997; Visser 2007). In neo-classical analyses, environmental degradation is perceived as an allocation problem. Under neo-classical analysis, there is an emphasis on investment in capital, optimal growth, the optimal allocation of resources, and optimal welfare and externalities. In line with this, environmental challenges are assessed on the basis of market equilibrium and externalities. Neo-classical economists however lack the prowess to comprehend development paths towards a sustainable economy (Pezzoli 1997; Visser 2007); Neo-classical analyses compare different equilibriums. Most importantly, environmental economists are concerned with the environment-growth debate.

With that said, the neo-classical theory of growth has also found a new use in the evaluation of climatic change (Mulder & Bergh 2001). The application of this theory in the assessment of climatic change is under the general integrated assessment. The costs and benefits of climate change are incorporated into an inter-temporal social utility. It's clear that the basis of neo-classical theory was designed primarily on the economic basis, but as time passed other theorists developed various pathways that would be addressed later.

For the time period of neoclassical theory the use was beneficial for the time

period with the then current production system. However, as time passed more economists founded additional pathways with more inclusive information. While this was beneficial it also became evident that path dependence was in constant use with the neoclassical approach. Some of the considerations related to path evidence is the lack of calculating the differences between countries of the North and South without considering social and environmental costs incurred Joan Martinez-Alier (2002).

The direct implication of specific industries and their sustainability are questionable when it becomes clear that species are becoming extinct and the depletion of resources which were not considered in base neo-classical theory on its acceptance. The idea of companies seeking maximum profit has driven production rates faster than renewable rates or advancements of technology. Again, path development has introduced other factors into the equation.

It has been mentioned many times information is missing in the GDP of events that are directly connected through the pathways of production. A few examples are the overall standard of living, the distribution of wealth and the general state of health of the people (Gallo 2002). When connected with production pathways are directly connected to all of these statuses. On this note, this paper will employ the neo-classical approach in the analysis of the benefits of sustainability in the manufacturing processes. Neo-classical economists are concerned with the environment-growth debate; neo-classical growth theory equates sustainable development to sustainable growth. Therefore, the growth of manufacturing firms is evaluated on the basis of sustainability (Mulder & Bergh 2001).

Sustainable Development

In order to change current consumption patterns into an ecologically sustainable direction, it is vital to ask relevant questions and most importantly, engineer the right concepts (WCED 1987; Hawken 2007). The Meadows report (1972), critiqued by Wilfred Beckerman brought to light the direct connection with pollution and growth. While evidence proved the economy was still growing the levels of pollution were declining. Other theorists have expanded on the environmental side presenting other situations. Neo-classical growth theory equates sustainable development to sustainable growth. One limit addressed is what happens when the growth has reached its limit known as the stationary state. This is when the population has ceased to grow and capital accumulation reached its ceiling and cannot progress any further (Smith 1776, p. 82). These issues all present a situation relative to path dependency. This is where past decisions have been made and are still in use but this information is now irrelevant.

In recent times the environment has brought about three major issues. First are increased outputs producing more emissions, second are changes leading to policy changes effecting production and emissions and lastly, the economic structure changing the environment (Tsurumi and Managi 2010). This direct connection took another pathway when Gene Grossman and Alan Krueger (1993, 1995) established a connection between GDP and economic growth which became known as the Kuznets Curve and directly dealt with pollution. This curve revealed both economic growth as well as increases in SO₂ pollution. While the economy continued to grow the pollution began to decrease. This reflected a type of sustainability. Here the past system of the

curve did not take into consideration the current situations that are having to be dealt with regarding pollution and its cost. However, back then it was useful in showing that production must reach a point of per capita incomes of \$4,000 to \$5,000 for the curve to make its downward turn. Many other events happening now were not considered with regards to their outcome.

Policies for Sustainable Development

The most significant insight of evolutionary thinking for policy is that current systems are not necessarily optimal from the efficiency point of view, even if prices are correct from a neo-classical point of view (Costanza 1991). In other words, what has been deemed by economists as the “internalization of externalities”, describes how an economy applies a monetary amount to natural resources determined by the market. This has been challenged by the importance of pollutants and their reactions on the environment.

(Kenneth Arrow et al. (1995: 520) However, policy suggestions based on economic equilibrium analysis prioritize efficiency and have no exit points from these systems.

Secondly, non-marginal structure of desired changes limits equilibrium analysis. Current inefficient technologies could be locked-in because of network externalities and network costs. Thirdly, evolutionary economics helps in evaluating the stability and effectiveness of environmental policies.

The Idea of the Kuznets Curve showed in the 1970's that pollution was falling and later was questioned when other relationships that may have affected the equation were introduced. (G. Grossman and A. Krueger 1995: 353).

Making sustainable development is not only challenging, but also a complex

undertaking (Sarkis 1998). It involves many factors such as engineering and technology, economics, as well as environmental stewardship among other factors. The Kyoto Protocol, Article 3 is one such agreement designating how pollutants are assigned a designated amount. The agreement has since been ratified but still dictates how pollutants are economically assigned. For this goal to be attained, it is paramount to have some trade-offs, given the ever-widening interests of manufacturers and the society at large. Part of the balance with this agreement is the stronger more advanced countries having to help the developing countries. On top of that, relevant information on sustainable manufacturing must be available and employed by organizations and managers if there has to be sustainable manufacturing. Sustainability has three parts: social, economic and environmental (Hanley, Ian, Robin & Mike 1999).

Indicators of Sustainable development

Sustainable indicators are essential in the measurement and assessment of sustainability efforts (Hayes 1979). Such indicators are vital in the identification of the status of sustainability, the challenges facing sustainability, and progress made towards this objective (Sarkis 2001). It is however important to note that the indicators of sustainability differ from the traditional economic, environmental and social progress. Traditionally, GDP is often used to measure a country's economic prowess (Graedel & Allenby 2010). On the other hand, many companies often publish their profitability by documenting their revenue generations at any given time (Hart, 1997). Many economists have argued that the GDP does not give a true picture of

the economic situation as is leaves out many other factors as to the nation's growth. The GDP is produced using only goods and services produced domestically along with the net of imports versus exports. However, this net can have either a negative or positive effect on the GDP. In addition, personal lifestyle and where money is being spent also has impact. For example, natives of a country traveling to foreign countries, spending their money there and bringing home purchases. This can happen with corporations as well.

It has been argued by many that the GDP system does not give a clear picture of the real standard of living. One mention is the 'threshold effect' where the GDP are offset in costs by income inequality, loss of leisure time and capital depletion (Max-Neef 1995; Talbert, Cobb et al. 2007). It has been suggested that the GDP should include an index of sustainable economic welfare, green GDP's, genuine wealth, and a genuine progress indicator. These will still have limitations but create more realistic templates of the countries sustainability (Costanza, Hart, Posner, and Talberth 2009).

Companies that have implemented sustainability in their operation must be able to gauge the progress of that practice, as well as identify the challenges that are encountered. Most importantly, manufacturing firms must be able to quantify the economic gains made as a result of sustainable manufacturing or processes (MacAvoy 1990; Beaver 2000).

Effective indicators for sustainability are relevant, understandable, realistic and assessable. Most countries and organizations have begun recognizing the impact manufacturing, and associated processes have on the environment. Environmental Impact (EI) on society is an assessment tool

that gauges the impact of manufacturing strategies on the environment. EI can be computed as follows (Rosen & Kishawy 2012):

EI: Population (p) X Affluence (A) X Technology (T) (Rosen & Kishawy, 2012).

It is hard to constrain population. Besides, affluence is increasingly sought by people. On this note, technology is the only factor that can be improved in order to attain sustainable development. Technology that is tied to manufacturing and the environment has several features (Rosen & Kishawy 2012):

(a) Product. In this case, the manufacturing of products takes into consideration the impact a product will have on the environment over its half-life. In this case, life cycle analysis (LCA) and design for environment (DFE) are emphasized. Environmentally flexible products allow for future improvements while at the same time maintaining the competitiveness.

(b) Process: in this case, environmentally-friendly processes allow for re-manufacturing, re-use, recycling and reduction.

(c) Practices: ISO 14000 certification provides the guidelines of sustainable development.

The above factors are not only interdependent and synergistic, but also overlap in some areas. Technological advances often emanate from within an organization, but environmental strategies are born out of multi-organizational efforts.

UK Sustainable Economic Growth Strategy

Agenda 21 was coined in Rio de Janeiro, in 1992, by the United at the Earth Summit (Ross 2005). This agenda was agreed upon by many governments worldwide including the UK. This agenda calls for the championship of sustainable development by all signatories. In line with this, the UK has made huge strides in the championship of sustainable development. The UK's agenda on sustainable economic growth is anchored on four objectives (Ross 2005).

- (1) Social progress; it prioritizes the success of everyone.
- (2) Powerful protection of the environment.
- (3) Effective use of natural resources
- (4) Encouragement and maintenance of solid levels of economic growth and employment.

The UK government has taken steps by, “ for central government departments and their agencies to significantly reduce waste, water usage and carbon emissions by 2015.” According to the UK government website. In what areas they are taking steps is unclear as it could be at the level of its citizens or at the production level. But the UK sustainable development strategists opine that the UK must have a skilled workforce if these goals are to be attained (Ross 2005).

This strategy takes into account the significance of having new, as well as environmentally safe approaches to development. Key areas are waste management, energy and transport (Ross 2005). This addresses what is discussed on the government website, but not in the action it is taking. The UK government is determined to grow its economy, but at a sustainable rate.

In other words, the costs of growth must not cause social injustice or environmental deterioration.

On this note, the UK's sustainable development strategy has been outlined in a ten-point guide.

1. The polluter must be compelled to pay (fined).
2. Scientific knowledge must guide sustainability.
3. It is essential to respect environmental limits.
4. People ought to be at the focal point.
5. Long-term perspectives ought to be championed rather than short-term ones.
6. Social exclusion and poverty ought to be combated.
7. Cost and benefits analysis must be taken into consideration.
8. It is paramount to create a supportive and open system.
9. It is essential to utilize the precautionary principle.