



## “Green growth”: From a growing eco-industry to economic sustainability

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### HIGHLIGHTS

- ▶ “Green growth”—from a sectoral to an integrated view of the economy.
- ▶ Green investment can increase the GDP.
- ▶ “Green growth” is both, rapid growth of green sectors and “de-growth” of others.
- ▶ “Zero growth” is no solution of the environmental problem.
- ▶ Rich countries can achieve high speed of eco-innovation even with low growth rates.

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### ABSTRACT

There are many questionable assumptions in the discussion of economic growth. One of them is the idea that governments are able to achieve sustained high growth. Another one is the belief that the solution to pressing financial and social problems centers on higher growth. It is also questionable, however, to say that giving up on economic growth as a paradigm is the necessary condition to tackle the environmental crisis. In actuality, solving such problems is about radical growth in environmental and resource-saving technologies. It is also about radical “de-growth” in products and processes that undermine long-term living and production conditions. This paper describes some best practice cases of “green growth” and the conceptual generalisations given by the OECD and other established institutions in Europe and Asia. It traces the transformation of the concept of “green growth” and evaluates the strategy that accompanies it.

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### 1. Introduction

The current economic growth debate is full of questionable assumptions. This primarily involves the belief that one can retain the resource-intensive model of growth of the past with only minor modifications. The successful model of the 20th century does not only fail today because we lack the necessary inexpensive raw materials, but it also fails due to the limited capacity the earth has for emissions and waste. Another questionable assumption is the idea that the state can purposefully achieve high levels of economic growth over the long term. The European Union followed this idea in its Lisbon Strategy (2000), which aimed at a compound annual growth rate of 3%. In the end, it achieved a lower growth rate than before. The quantitative target has since been abandoned, much like the neo-liberal growth model of unleashing the “forces of growth” through deregulation, denationalization, privatization, or wage cuts. What has not yet been

abandoned is the assumption that pressing social, financial, and employment problems can be solved primarily through a higher level of growth. It is time for these issues to be addressed following their own causal logic. Another questionable assumption is the notion that one can solve ecological problems with a zero growth model. A stagnant economy, however, from which capital flees, will not bring about the necessary acceptance for the change. The ecological reality of zero growth is the conversion of raw materials into products, wastes, and pollutants, leaving them at the level of the previous year. What this is really about is shrinkage – “de-growth” – for resource-intensive processes and products and radical growth in environmental and resource-saving technologies and services.

Is the concept of “green growth” also one of the illusions of the growth discussion? The rapid expansion of literature on this topic shows how important this question has become. The environmental issue has now reached the core of global economic elites, which represents a change of paradigm that environmental scientists and environmentalists have been calling for decades.

The concept of “green growth” has undergone a remarkable development in recent years. For a long time, it only applied to the growth of “eco-industry” (Ernst and Young, 2006; EU Commission,

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2010; Jänicke and Zieschank, 2011). In recent publications, however, the usage of the term “green growth” has expanded and now applies in many cases to the growth of the entire economy. “Green growth” not only affects the quality of growth, but overall production. In this case, growth results from the investment in the upgrading of the entire production system to environmental and resource-saving processes and products. A prototype of this phenomenon is the climate-friendly “low-carbon economy.” In this broader sense, there is also discussion of sustainable “green economy,” referring to a comprehensive business innovation process.

In the following sections, empirical evidence and best practices of “green growth” will be presented. In a second step important recent studies on this topic will be discussed. These include the Organization for Economic Co-operation and Development’s (OECD) “Green Growth Strategy” (2009, 2011), the United Nations Environment Programme’s (UNEP) Report “Towards a Green Economy” (2011), the EU strategy “Europe 2020” (EU Commission, 2010), the study of European research institutes titled “A New Growth Path for Europe” (Jaeger et al., 2011), and finally, the sustainability program, “Towards a Sustainable Asia,” presented by 26 Asian Academies of Sciences (AASA, 2011; see also WBGU, 2011).

This publication will examine the specific concept of growth, the role of “environmental-innovations,” and the importance and change of the environmental sector. In addition, drivers of “green” economic growth, which have contributed to shifting the environmental debate from a “brake on growth” to a “growth engine,” will be identified. The paper will also explore the idea of whether it is realistic to expect a comeback of high growth rates in the form of “green growth” in the OECD world.

## 2. Green growth as the growth in the environmental sector

The scope and dynamic of the environmental sector have long been underestimated, in part due to insufficient data as well as demarcation problems inherent in the sector itself. The concept of “environmental industry” has long been understood as only being the economic activities that provide technical solutions for (downstream) environmental protection. This includes everything from filtration systems for air pollution to waste management. It was only later that the concept of “environmental industry” expanded to include the clearly defined and tangible renewable energies. As a next step, energy-efficient technologies and ultimately, material-saving processes and products were also included. Roland Berger estimated the German environmental sector to be 8% of gross domestic product (GDP) in 2007. For 2020, they predict a share of GDP of 14% (BMU, 2009, 3), which would be a tremendous challenge in terms of the human capital necessary to maintain the sector. The present global market for “low-carbon and environmental goods and services” is estimated in recent studies to be U.S.\$5 trillion in size (INNOVAS, 2010) Fig. 1.

For Germany, the resulting structure and dynamics of this sector, as estimated by Roland Berger, are as follows: The double-digit growth rates are consistent, and particularly high in the field of climate-friendly technologies. At the same time, this sector has a high level of competitiveness (see Table 1).

In addition to underestimating the scope of the environmental sector, its growth has also been underestimated. Another picture of the growth dynamics in the environmental industry may be seen when the “unproductive” and slow-growing sector of the downstream or “tail pipe” technology is separated from eco-efficient products and processes. Here Ernst & Young separate environmental protection (pollution control) from the field of resource efficiency (resource management). It is useful to distinguish between these “two faces” of the environmental industry

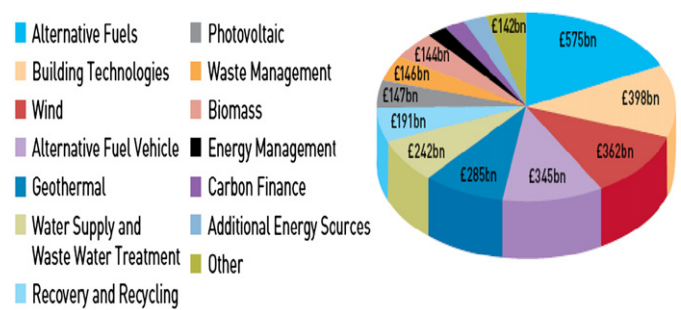


Fig. 1. Global Low-carbon and Environmental Goods and Services 2008/9–5,100 bn \$ (Innovas, 2010).

Table 1

Green Tech“ Germany: market share and annual growth rates (BMU/Roland Berger 2009).

	Global market share (in%)	Annual growth 2005–2007 (in%)	Forecasted annual growth 2008–2010 (in%)
Renewable Energy:	30	29	35
Energy Efficiency:	12	20	22
Eco-efficient Materials (bio-tech, etc.):	6	21	24
Recycling:	24	18	16
Sustainable Water Management:	10	15	14
Sustainable Mobility:	18	15	17

(Jänicke and Zieschank, 2011). While downstream environmental protection – with classic clean-up technologies – creates additional costs, resource-saving technologies can reduce costs, thus increasing productivity. This is an essential difference that is easily overlooked when evaluating rigorous and complex environmental protection measures. This fact is also part of the difference between these two varieties of environmental industry: In developed economies, like Germany, the importance of downstream environmental protection techniques is decreasing. At the same time, the importance of resource-saving technologies – renewable energy, energy efficiency, recycling, etc. – is growing dynamically. Roland Berger predicts high global growth rates for resource efficient technologies by 2020, from waste separation (15%), energy-efficient vehicles (29%), and up to 35% for bio-plastics (BMU, 2009).

Table 1 shows that in Germany the environmental sector is growing dynamically; it not only has high competitiveness, but has also developed a high pace of innovation. A growing number of industrialized and emerging countries now take part in this global market. This competition has led to intensive innovation.

Using the example of climate-friendly technologies, their dynamics may be split into phases. In the early 1990s, the focus was on the win-win effects of climate policy. As a next stepsome pioneering countries developed a clean-energy sector. Since 2004, Germany, Denmark, and some additional countries, have developed political export strategies for renewable energies. Founded in 2009 in Bonn, the International Renewable Energy Agency (IRENA) is a result of this development. In the last five years, more and more countries have proclaimed the goal of gaining a leadership role in the global market of climate-friendly technologies (see Box 1). Since 2009, efforts have also occasionally promoted the export of environmental and climate-friendly technologies, even with subsidies. South Korea, for example, invests billions to

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