

# Assessment of global megatrends — an update

## Global megatrend 5: Continued economic growth?

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Europe is bound to the rest of the world through an enormous number of systems — environmental, economic, social, political and others. Such networks enable complex flows of materials and ideas across the globe, producing uncertain feedbacks and knock-on effects over time. Greenhouse gas emissions in Europe today can affect the climate in distant locations and far into the future. Land management choices on the other side of the world can influence food and energy prices in Europe. Global communication and trade networks fuel innovation — sometimes boosting efficiency, sometimes creating new environmental pressures.

Most of these interactions are intimately linked and set to unfold over decades. All are likely to have important implications for living standards and well-being.

The European environment's status, trends and prospects have always depended in part on events outside its borders. Yet the growing importance of global networks and flows has augmented this interdependence, creating complex challenges for traditional governance systems framed within national or regional territories. To design effective ways to manage the environmental changes ahead, societies and governments need to understand the global drivers at work and their potential implications.

With this challenge in mind, the European Environment Agency in 2010 produced its first assessment of emerging global trends as part of

its five-yearly flagship report on the European environment's state and outlook (SOER 2010). The exploratory analysis summarised 11 global megatrends grouped into five clusters — social, technological, economic, environmental and governance. Introducing the issues succinctly, it sought to trigger a discussion about how Europe should monitor and assess future changes in order to better inform environmental policymaking.

In preparation for its next report on the European environment's state and outlook (SOER 2015), the EEA has initiated an update of the assessment of global megatrends, analysing each of these drivers in a little more detail than previously in terms of their impacts on the European environment and well-being. During the second half of 2013 and early-2014, the EEA is reassessing the 11 megatrends and publishing the updates separately on its website. In 2014 the chapters will be consolidated into a single EEA technical report and will provide the basis for the analysis of megatrends included in SOER 2015. The present chapter addresses megatrend 5: 'Continued economic growth?'

Again, it needs to be emphasised that the complexity of highly interconnected human and natural systems introduces considerable uncertainty into projections and forecasts. As much as anything, the assessment of megatrends aims to encourage readers to acknowledge this interdependence and uncertainty. In so doing, it may help point the way towards systems of planning and governance better adapted to meeting the challenges ahead.

# Global megatrend 5

## Continued economic growth?

The financial crisis of 2008 and 2009 significantly reduced economic output in many developed countries, particularly in Europe. While its continuing impacts are apparent in less optimistic long-term economic projections for Europe, virtually all mainstream outlook studies foresee economic expansion globally in the coming decades as Asia's huge populations continue their shift to Western patterns of production and consumption.

The implications of this enormous increase in global economic output are numerous. Several are treated as separate global megatrends in other chapters of this study, including the rebalancing of economic power, competition for resources, reduced natural capital stocks, growing climate change impacts, and increasing pollution. The present chapter focuses on the forces underpinning these trends — addressing past and projected economic output, associated drivers and uncertainties, and related changes in living standards globally.

### The financial crisis affected economic growth globally

In the period 1980–2012, the world economy grew at an average rate of 2.8 % annually and the EU economy by 1.9 %. Since 2000 the EU and US economies have expanded more slowly on average than during the previous two decades — largely as a result of the collapse in output during 2008 and 2009. The EU growth rate dropped to 1.3 % in 2000–2012 from 2.2 % in 1980–1999, while the US rate declined to 1.6 % from 3.3 % (UnctadStat, 2013).

The deceleration in Europe and the US clearly affected the world economy. Whereas global GDP increased 2.9 % annually on average in the period 1980–1999, since then the rate has declined to 2.5 % despite accelerating growth in some other major economies. The BRIICS countries (Brazil, Russia, India, Indonesia and China) all grew faster after 2000 than during the previous two decades, with China achieving the highest annual average growth rate of 10 %, followed by India with 7.2 % (UnctadStat, 2013).

While the financial crisis hit advanced economies hardest, its impacts were felt across the world. Gross domestic product (GDP) shrank by as much as 5.5 % in Italy and Japan in 2009 compared to the previous year (UnctadStat, 2013). Economic contraction also

impacted countries such as Brazil, Russia and South Africa. The other BRIICS countries — China, India and Indonesia — did not endure recession in 2009 but did face an appreciable slow-down in growth.

Since 2009, GDP growth rates have generally reverted to positive values but often at lower rates than before the crisis. The aftermath of the economic downturn is particularly apparent in some European countries, where it seems that economic recovery has not picked up — reported and projected GDP growth rates for 2012 and 2013 respectively are still negative.

The impacts of the financial crisis are also apparent in long-term projections for European output. For example, in 2009 the European Commission projected annual GDP growth of 1.7 % between 2007 and 2060, whereas in 2012 it revised the estimate downwards to 1.4 % in the period 2010–2060 (EC, 2009, 2012).

### Asia is expected to drive strong expansion of global economy in the decades ahead

Despite the continuing impacts of the financial crisis, global GDP is projected to grow hugely in coming decades. The OECD projects that it will almost triple in the years 2010–2050 <sup>(1)</sup> (Figure 5.1) alongside a

(1) The OECD projections of economic output in the section are all calculated in purchasing power parity (PPP) adjusted 2005 USD. Amending GDP data to reflect the differences in price levels between countries (i.e. adjusting to achieve purchasing power parity) results in a significantly different presentation of the balance of economic output globally. For example, whereas IMF data in current USD indicate that the US accounted for 23 % of world GDP in 2010 and China accounted for 9.3 %, according to the OECD data measured in 2005 USD PPP, the respective figures were 23 % and 16 %.

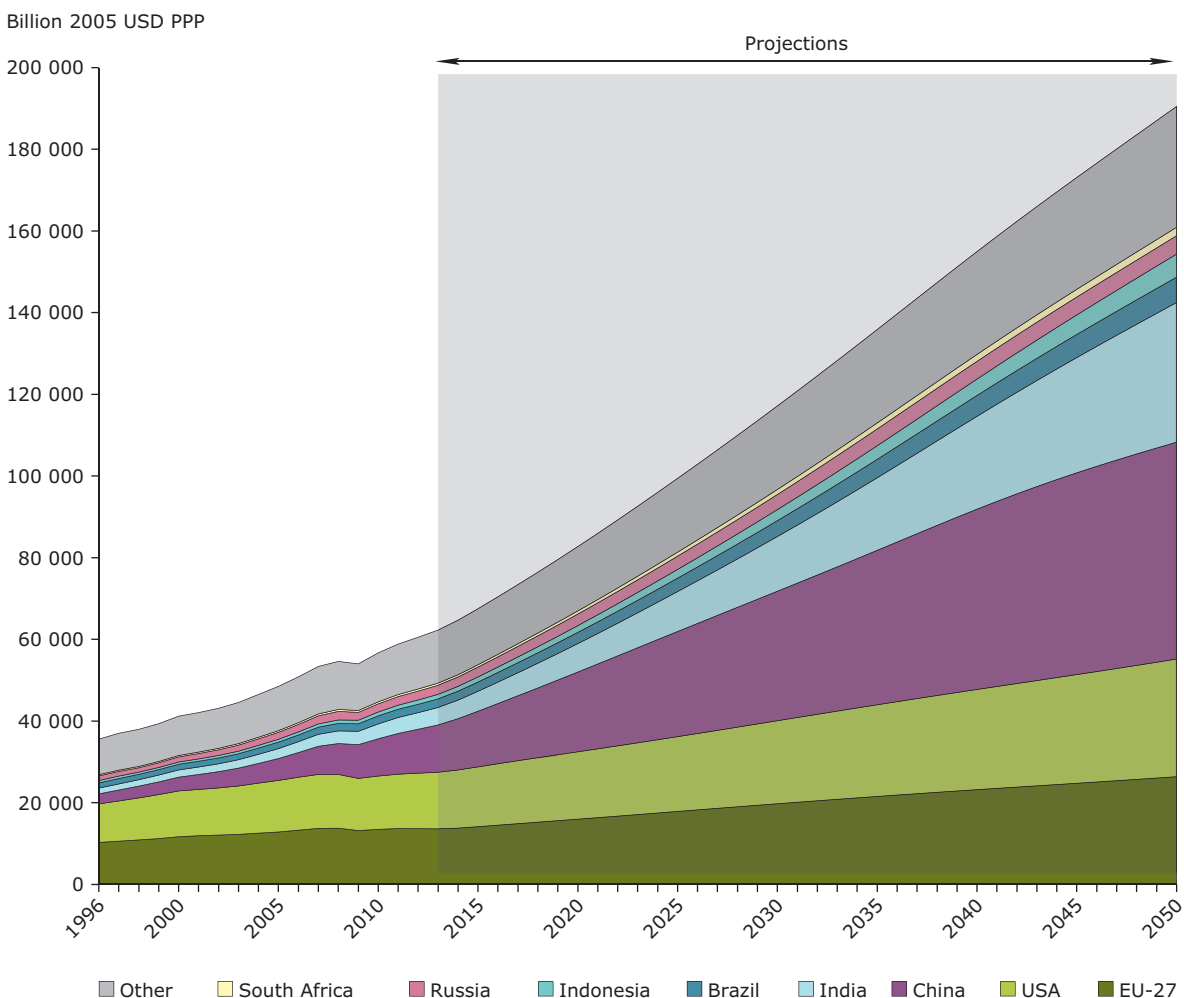
## Global megatrend 5: Continued economic growth?

40 % expansion of the global population from over 6.9 billion to almost 9.6 billion (UNDESA, 2013). China and India are expected to play a major role in this expansion, together accounting for 46 % of global economic output in 2050, up from less than 13 % today (OECD, 2013a).

Global economic growth is expected to decelerate steadily over this period, however, from a post-crisis peak of 4.3 % in 2017 to just under 2 % in 2050. Economic expansion in China is projected to slow significantly from an average rate of 7.9 % in 2010–2020 to 1.9 % in the period 2040–2050. India is forecast to become the fastest growing economy of the BRIICS countries with an average annual increase of 5.9 % in 2010–2050, although here too it is projected to slow to below 4 % (OECD, 2013a).

While the growth projections presented in Figure 5.1 are both daunting and subject to considerable uncertainties (Box 5.1), they are arguably consistent with past trends and therefore do not consider the possibility of economic or technological shocks. For example, the economic and financial crisis of 2008 and 2009 left its marks on the GDP development in several European countries for several years following the actual crisis and also lead to policies dealing with the aftermath of the crisis which may have further implications in terms of future GDP growth. It cannot be excluded that similar crises may happen again, and if at the global scale, with serious implications for economic output. The 20th century witnessed massive economic expansion in various major economies, with the highest rates of growth achieved in the countries with the largest

**Figure 5.1 Past and projected global economic output, 1996–2050**



**Note:** Gross domestic product expressed in billion 2005 USD at purchasing power parity. The EU figure comprises the aggregate economic output of EU Member States that are also members of the OECD. Those states together accounted for approximately 97 % of EU-28 GDP in 2012.

**Source:** OECD, 2013a.

**Box 5.1 Uncertainties in economic projections**

Economic projection is the process of constructing future trends of economic and environmental variables based on a variety of assumptions. Projections do not deliver forecasts of future economic output. Rather, they provide insights into how an economy may develop if the underlying assumptions hold true. Assumptions related, for example, to technological developments are subject to uncertainty as the outcome of these developments may or may not be accomplished.

Projecting future economic trends is a challenging analytical exercise, which grows more complex and uncertain as the length of the projection period expands. This is in large part because many of the important parameters underpinning such analysis are very hard or impossible to anticipate.

One key uncertainty centres on the effects of intensifying resource scarcity. This includes short-term scarcity of essential resources of the sort reflected in the food and energy price spikes of 2007–2008. But even more uncertain are the impacts of long-term scarcity, such as the expected and feared 'peak oil'. Political responses, such as national policies and bilateral agreements to monopolise natural resources, are important and hard to predict. Equally, the pace of technological innovation needed to sustain economic growth in the context of higher resource prices and possible larger disruptions to supply is not known.

The list of important but uncertain assumptions is enormous, encompassing issues such as the stability of financial markets, socio-political developments (e.g. democratisation or adaptation to ageing populations), geopolitical stability and military conflicts. Taken together, they imply that economic projections must be used with considerable caution. At most, they can help decision-makers to anticipate some of the risks and opportunities that could lie ahead by delivering broad representations of potential futures.

populations. The US economy recorded a roughly ten-fold increase in output between 1940 and 2008. China, in contrast, achieved a similar feat in half the time after 1977 (Figure 5.2).

China and India remain far below the global average in terms of economic output per capita. If those huge populations continue to shift towards the systems of consumption and production present in today's advanced economies, the growth in GDP will dwarf even that achieved by the US during the past century.

**Implications for standards of living**

As noted already, continued global economic growth has a diverse range of important implications, encompassing increased demand for resources and emissions of pollutants, rebalancing of economic power, related concerns about sustainability of growth and tensions linked to security of access to resources. The focus here is on the implications for living standards, in particular trends in poverty and global inequality (Box 5.2).

Continuously high economic growth in many Asian countries during recent decades has increased GDP per capita, cutting the gap in living standards relative to the most advanced economies. In 1980, GDP per capita in China was 2 % of the US level, while India stood at 3.4 % and Indonesia at 6 %.

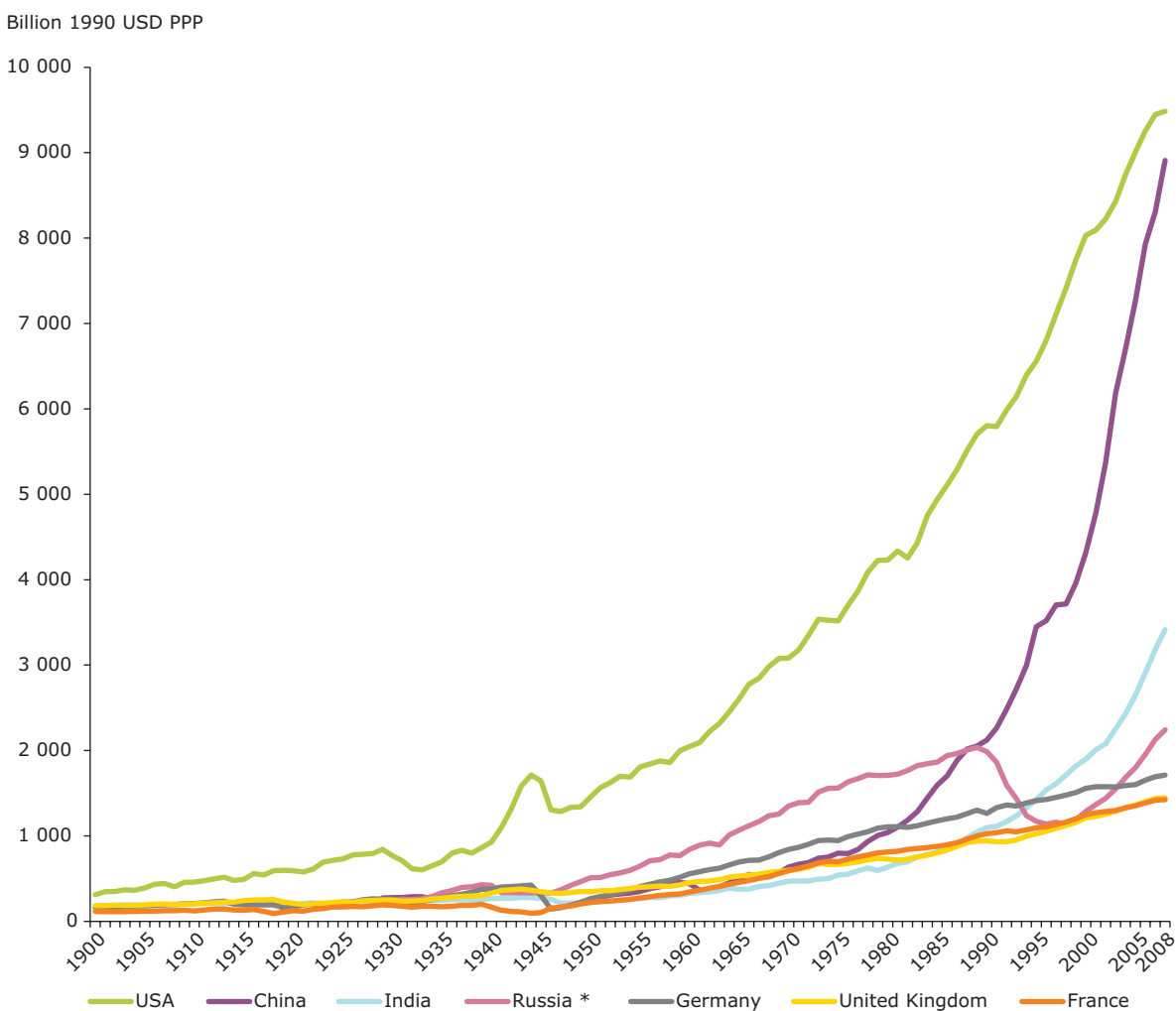
By 2011, China had reached 17 %, India 7.6 % and Indonesia 9.7 % of the US figure.

China's achievement was particularly notable. GDP per capita increased from 251 to 8 400 current international US dollars, which equalled an average annual increase of 12 %. Over the same period, the US recorded an increase from 12 300 to 48 300 — an average annual increase of 4.5 % (IMF, 2013).

The poverty gap (i.e. the share of population living below USD 1.25 a day) also fell globally, although the pace of the decline varied between regions. The fastest reduction occurred in developing countries of east Asia and the Pacific, where the gap fell from 35 % in 1981 to just 2.8 % in 2010. This performance contrasted sharply with developing countries of sub-Saharan Africa, where the poverty gap increased from 22 % in 1981 to 26 % in 1996, before falling back to 21 % in 2010 (World Bank, 2013).

Again, China's development is remarkable. Poverty declined tremendously during the last three decades, from 39 % of the population in 1981 to 2.8 % in 2009 (World Bank, 2013). This accomplishment has contributed significantly towards achieving the related 2015 Millennium Development Goals, as 2010 estimates indicate that the goal of cutting the extreme poverty rate to half its 1990 level will be achieved several years ahead of the target year 2015 (UN, 2012).

**Figure 5.2 GDP in selected major economies, 1990–2008**



**Note:** \* Data prior to 1992 refer to the Union of Soviet Socialist Republics (USSR).  
**Source:** Maddison, 2013.

Declining disparity in per capita GDP internationally may alter the global economic and political landscape, as some low- and medium-income countries shift to medium- and high-income categories. Emergence of the global middle class (discussed in GMT 6 on the shift from a unipolar to a multipolar world) clearly has important implications for consumption but is also linked to other trends such as governance.

OECD projections indicate that in 2050 world GDP per capita will be about 51 % of the US level, up from 31 % in 2012. Chinese economic output per capita is expected to rise from 19 % of the US total in 2012 to 57 % in 2050 (Figure 5.3). Because of higher growth rates and demographic developments in the EU the relative share of the EU GDP per capita are also expected to get closer to the US, from 68 % in 2012 to 75 % in 2050.

### Why is continued economic growth important for Europe?

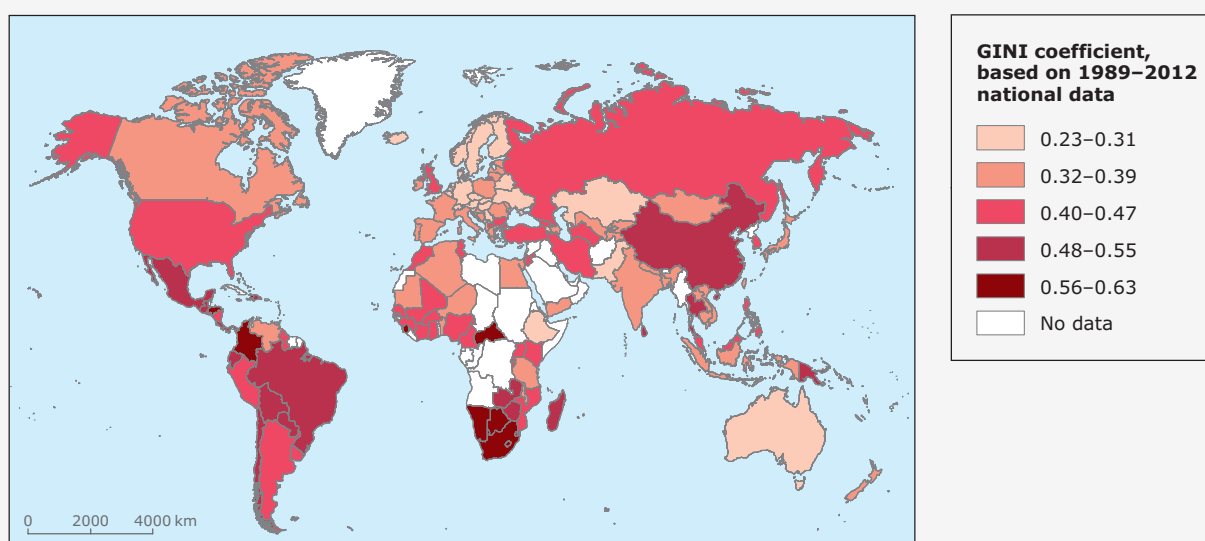
For a century or more, economic growth has served as a central policy priority for governments across the world (Box 5.3). While the link between GDP and human well-being is undoubtedly complex (Box 5.4) it is clear that economic expansion delivers a range of important benefits for society. Growth plays an important role in determining household earnings and is normally viewed as necessary to sustain employment levels. Equally, economic performance plays a central role in shaping the revenues available to governments and, correspondingly, the resources available for public services such as education, health care, policing, transport, pensions and other forms of social security. It is thus fundamental to the functioning of many aspects of modern society.



**Box 5.2 Rising or falling inequality?**

Measuring trends in inequality poses significant challenges. Much depends on the definitions used. For example the disparity between average incomes in two countries may be declining in proportional terms but increasing in absolute terms. Is inequality rising or falling in this case?

Equally, trends may vary at different scales and in contrasting contexts. In many advanced economies, the Gini coefficient (which quantifies how equally incomes or wealth are distributed across society) has risen during recent years. This indicates increased inequality, although the levels remain relatively low in most rich countries (Map 5.1). A shift away from planned economies in places such as Russia and China has also brought greater inequality. Yet other regions, such as South America, have shown the opposite trend in recent years (UNDP, 2013).

**Map 5.1 National GINI coefficient values**

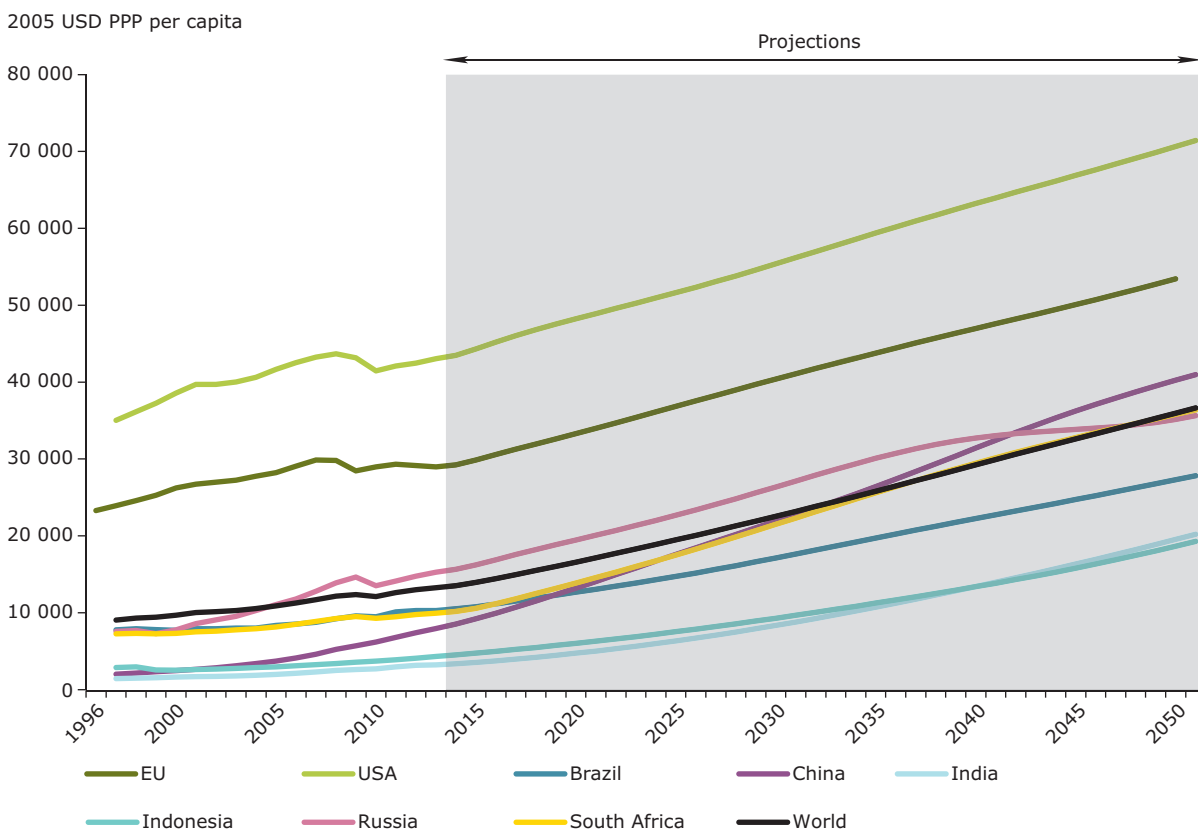
**Note:** The Gini coefficient quantifies the inequality among the values in a frequency distribution. A value of zero denotes perfect equality (e.g. all individuals in a population have the same income). A value of 1 denotes perfect inequality (e.g. all the income in a population accrues to one individual, while the remainder receive nothing).

**Source:** CIA World Factbook 2012.

At the global scale, the current and anticipated convergence of GDP per capita can be interpreted as an indicator of reduced inequality of living standards. Yet even interpreting historical data can be controversial. The United Nations *Human development report 2013* notes that: 'Virtually all studies agree that global income inequality is high, though there is no consensus on recent trends. One study that integrated the income distribution of 138 countries over 1970–2000 found that although mean income per capita has risen, inequality has not. Other studies conclude the opposite. Still others find no change at all.' (UNDP, 2013).

The same study also notes, however, that there have been much greater reductions in inequality in health and education during the last two decades, in part because measures such as life expectancy and years of schooling have upper bounds to which countries eventually converge. In general, it notes: 'Inequality reduces the pace of human development and in some cases may even prevent it entirely.'

**Figure 5.3** Historic and projected per capita GDP, 1996–2050



**Note:** The EU figure is based on data for the 21 EU Member States that are also members of the OECD. Those states accounted for approximately 97 % of EU-28 GDP in 2012 and 93 % of the EU-28 population.

**Source:** OECD, 2013a.

**Box 5.3 Drivers of growth**

Globally, societies are continually seeking ways to stimulate economic growth and this pursuit has gained new impetus following the recent financial and economic crisis. The question of what drives economic development is the focus of debate at all policy levels.

Historically, the central determinants of a nation's economic output were thought to be the size of the workforce and the physical capital at its disposal. In recent decades, however, economists have identified a variety of other important drivers. Technological innovation and worker education and skills are obvious ones, playing a central role in increasing productivity. But literature on economic growth also points to the importance of factors such as trade openness, tax structures and government spending, research and development activities, maturity of financial markets, business-friendly institutions and cultural traits (Bouis et al., 2011).

With these drivers in mind, the most recent political discussion puts particular emphasis on supporting the implementation of growth-enhancing structural reforms and policies (OECD, 2013b).

In other respects, the implications of economic growth for society are more mixed. Economic growth tends to bring changes in consumption patterns, in particular in emerging countries with rapidly growing consumer middle classes. Mobility

increases, consumers replace durable consumption goods rather than repair them and high-calorie food displaces low-calorie alternatives. Growing demand for resources and emissions of pollutants increase pressures on the environment. Although in many

**Box 5.4 Economic growth and human well being**

For more than sixty years, GDP has served as the primary indicator of national development. Its adequacy is increasingly questioned, however, on the grounds that it provides a poor measure of both current human well-being and the long-term robustness of an economy. Quality of life, it is argued, is shaped by numerous factors that are at most partially related to economic output, such as health, time with friends and family, access to resources and a pleasant living environment, education, social equity, leisure, political participation, and personal and economic security.

A number of processes have been initiated in recent years that aim to develop better indicators of progress by integrating environmental and social components. These include the EU's 'Beyond GDP' initiative (EC, 2013), the Commission on the Measurement of Economic Performance and Social Progress initiated by the French government in 2008 (CMEPSP, 2013), the UN's Human Development Index (UNDP, 2013) and the OECD Better Life Index (OECD, 2013c).

Stiglitz et al. (2009) capture the current mood when they observe that 'the time is ripe for our measurement system to shift emphasis from measuring economic production to measuring people's well-being'.

areas resource efficiency is increasing, the sheer volume of economic activity globally is pushing resource use and pollution volumes to higher absolute levels.

Economic growth can certainly entail harm to the environment but the relationship is often more complex (Everett et al., 2010). For example, slower growth may not ease environmental impacts in the long term since weak or negative growth is typical of economies with reduced efficiency and little innovation. These characteristics can increase environmental impacts, as well as reducing the funding available to maintain the environment. Conversely, recent developments in some developed countries demonstrate that absolute decoupling of economic growth from environmental pressures is possible (EEA, 2012). These trends are apparent in the EU as a whole, where greenhouse gas emissions, air pollution and material resource use have declined in recent decades despite positive economic growth.

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