2.
STATE OF THE FUTURE INDEX

Assessing the impact and the interplay of the different potential developments affecting the future is a difficult and controversial task, but it is nevertheless valuable and necessary for coherent policymaking. Quantitative assessment of the factors of change helps us understand the system and supports the setting of priorities.

The State of the Future Index is an indication of the 10-year outlook for the future based on 20 years of historical data for a selected group of variables that in combination can depict potential systemic change. It is constructed with key indicators that are individually forecast and then aggregated to indicate the potential direction and intensity of change. It shows a potential trend; it is not a projection. Its role is solely to help understand the system and the relationships among its items—how changes to individual or several variables ripple throughout the system.

Combining many variables into a single index can lead to loss of detail, hide certain aspects by compensating losses in some areas with progress in the others, and mask variations among sectors, regions, or nations. The apparent precision of an index should not be mistaken for accuracy.

Nevertheless, the SOFI can be useful for assessing the consequences of different policies and for showing the combined potential outcomes in an easy-to-understand fashion. It has been produced by The Millennium Project since 2000. For the methodology, see "State of the Future Index" in the Futures Research Methodology section of GFIS (http.themp.org).

The variables included in the SOFI, as well as their respective weights (importance to the system) and the "best" and "worst" values in the next decade have been decided through RTD studies and updated by The Millennium Project staff. The sources of data have been carefully considered, are deemed to be reliable, and have good historical data records.

SOFI is in continuous evolution and adapted to global changes. Box 2.1 presents the variables included in the computation of the 2017 SOFI. The most important changes to the computation of the 2017 SOFI compared with earlier SOFIs include:

New variables were added and some variables were replaced with new ones (e.g., "Social unrest indicator" has been added; "Fossil fuel and cement production emissions" has been replaced with "CO_2-equivalent mixing ratio (ppm)").

Historical data were updated, and new series were inserted when old series were discontinued.

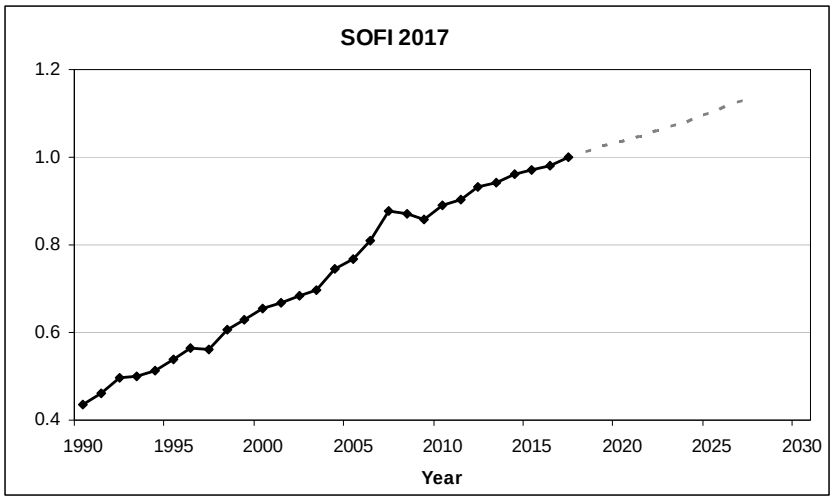
New curve fit equations were derived, and new interpolations were made for missing data.

The baseline SOFI that resulted from the use of the new data sets for the variables is shown in Figure 2.1. The data and their sources, extrapolations, and equations for forecasting are available in the State of the Future Index section in GFIS (http://themp.org) under "Research."

Box 2.1 Variables included in the computation of 2017 SOFI

1. GNI per capita, PPP (constant 2011 international $) (world)
2. Economic income inequality (income share held by highest 10%)
3. Unemployment, total (% of world labor force)
4. Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)
5. CPIA transparency, accountability, and corruption in the public sector rating (1=low; 6=high)
6. Foreign direct investment, net inflows (BoP, current $, billions)
7. R&D expenditures (% of GDP) (world)
8. Population growth (annual %)
9. Life expectancy at birth (years)
10. Mortality rate, infant (per 1,000 live births)
11. Prevalence of undernourishment (% of population)
12. Health expenditure per capita (current $)
13. Physicians (per 1,000 people)
14. Improved water source (% of population with access)
15. Renewable internal freshwater resources per capita (cubic meters)
16. Biocapacity per capita (gha)
17. Forest area (% of land area)
18. CO_2-equivalent mixing ratio (ppm)
19. Energy efficiency (GDP per unit of energy use)
20. Electricity production from renewable sources, excl. hydro (% of total)
21. Literacy rate, adult total (% of people aged 15 and above)
22. School enrollment, secondary (% gross)
23. Share of high-skilled employment (%)
24. Number of wars and armed conflicts
25. Terrorism incidents
26. Social unrest indicator (number of protest events/ total events) (%)
27. Freedom rights (number of countries rated "free")
28. Proportion of seats held by women in national parliaments (%)
29. Internet users (per 100 people)

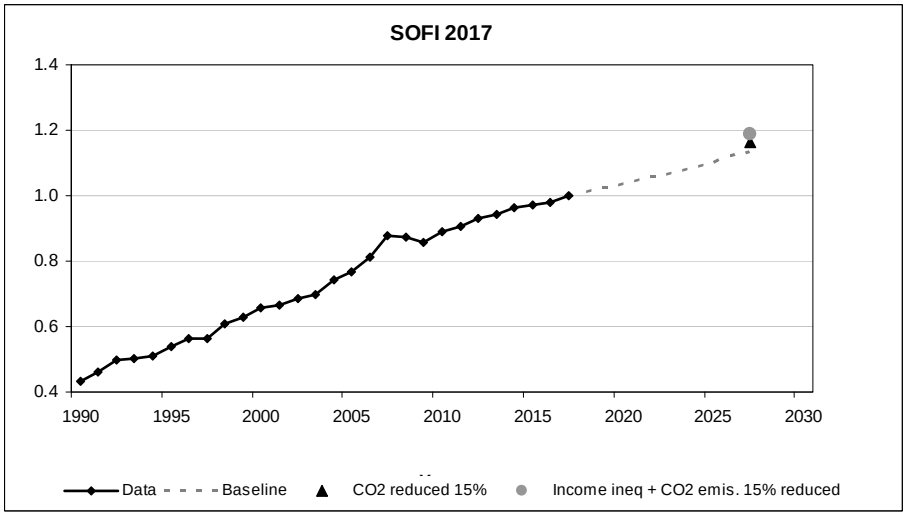
Figure 2.1 State of the Future Index 2017



A one-to-one comparison with the SOFIs prepared in earlier years would be misleading, since some of the variables have changed. Overall, however, the shape of this year's SOFI is similar to earlier ones. The growth rate for the coming decade will be 1.14%, considerably slower than 3.14% for the period 1990–2017. This is mostly due to the slow recovery after the 2008 economic turmoil and because many of the hindering factors are aggravating problems. For instance, one of the variables that has a large impact on the 2017 SOFI projection is the number of terrorist attacks, which is highly unknowable. If terrorism could be contained, the world's outlook and the rate of growth would appear to be considerably better.

SOFI can be used to test the potential impact of various policies on the entire system. As an example, the graph in Figure 2.2 indicates the potential impact of improving two variables by 2027: reducing by 15% GHG emissions (in CO_2-equivalent) and a combined effect by adding to it a 15% reduction of income inequality.

Figure 2.2 State of the Future Index 2017 with sensitivity analysis



A sensitivity analysis shows that other variables with relatively significant potential impact on the overall SOFI are electricity production from renewable sources and energy efficiency (GDP per unit of energy use).

One of the advantages of computing the SOFI is the identification of the areas where we are winning, losing, or stagnating—thereby helping set priorities. Figures 2.3 and 2.4 show where humanity is making progress and where more political attention and efforts are needed.

Figure 2.3 Where we are winning

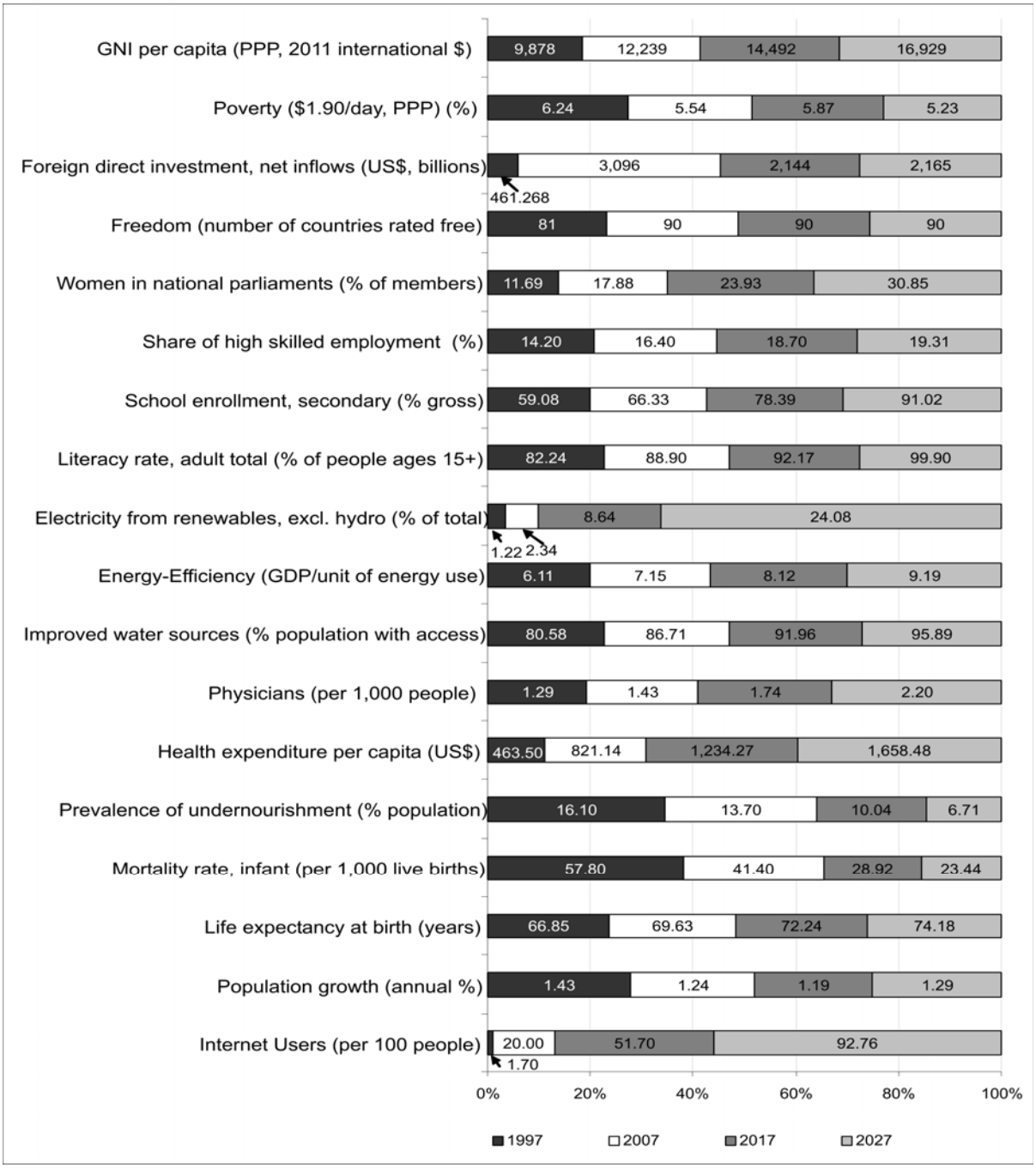
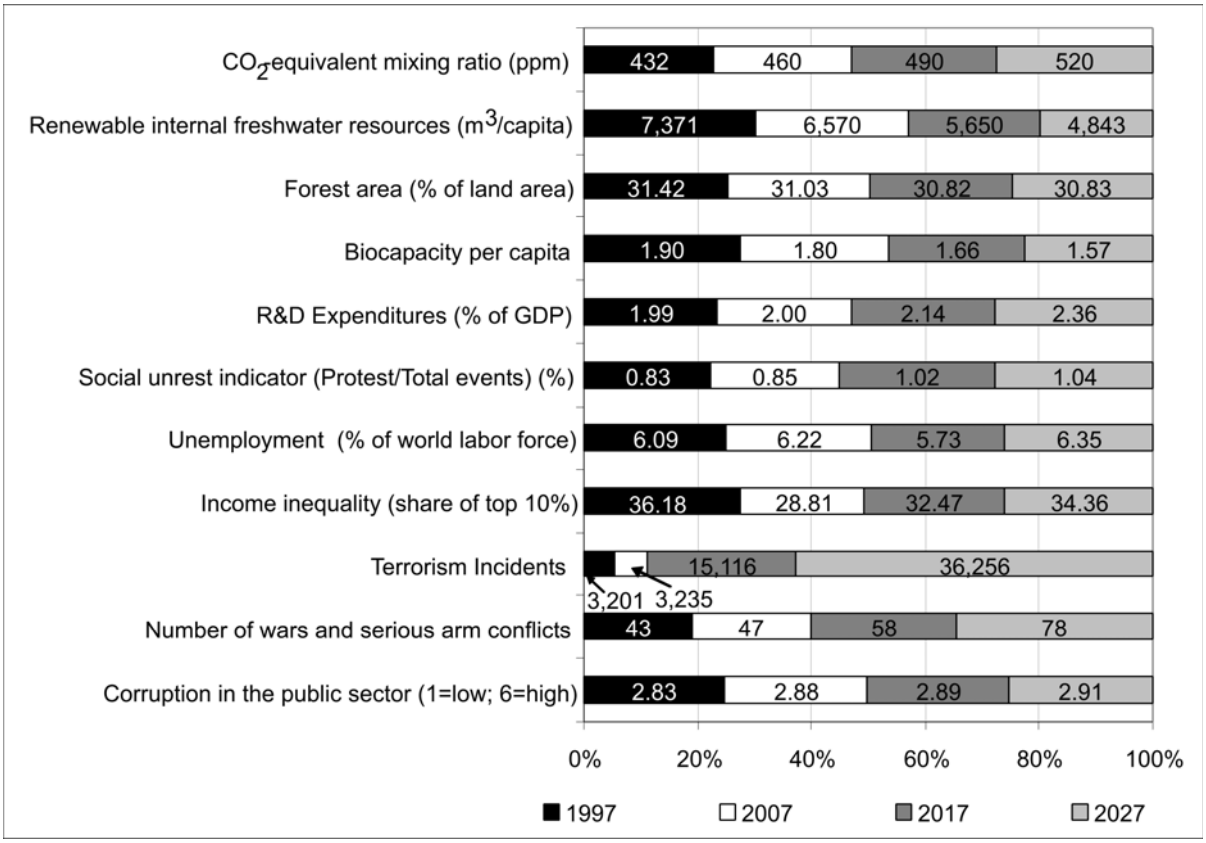


Figure 2.4 Where we are losing or there is no progress



The world seems to be making progress in more areas than it is regressing or stagnating in, but since the areas of stagnation or regress are crucially important for human and planetary survival, addressing them should be a top priority.

This can be further analyzed by assessing the individual variables and their potential trajectories. (Figures 2.6 to 2.34 at the end of this section show the graphs of the individual variables with their respective extrapolations.)

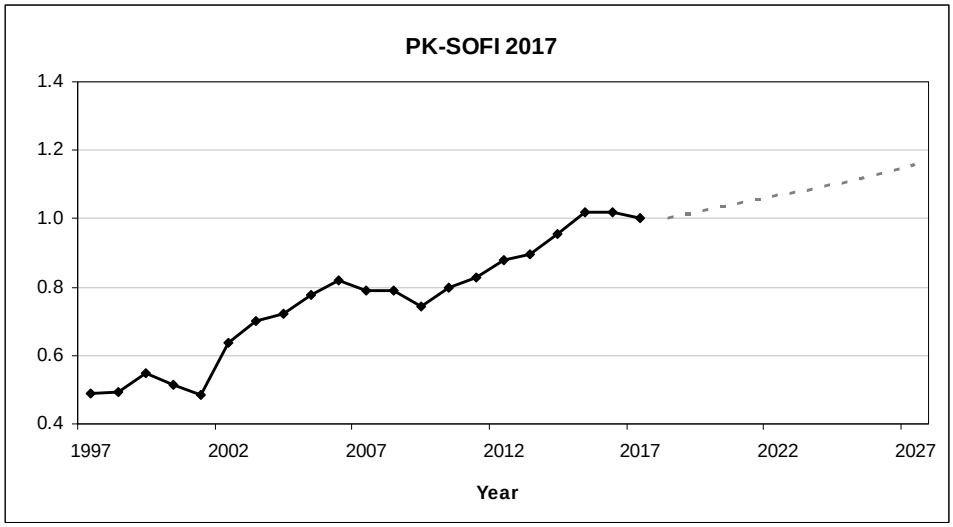
NATIONAL SOFI

SOFI can be—and has been—computed for nation-states. SOFIs could also be constructed for different domains (e.g., a SOFI for artificial intelligence or a SOFI for the knowledge economy). The national SOFIs that have been computed over the years are available in the State of the Future Index section in GFIS, under "Research." This year, the featured national SOFI is that computed by Pakistan. The set of variables included in the Pakistan 2017 SOFI is presented in Box 2.2, while Figure 2.5 shows the graph.

Box 2.2 Variables included in the Pakistan SOFI 2017

1. Population, total
2. CO_2 emissions (kt)
3. Energy produced from non-fission, non-fossil sources (% of total primary national energy supply)
4. Food production index
5. Forestlands (% of national land area)
6. Freedom level
7. GDP per capita (constant 2010 US$)
8. GDP per unit of energy use (constant 2011 PPP $ per kg of oil equivalent)
9. Intentional homicides (per 100,000 people)
10. Mortality rate, infant (per 1,000 live births)
11. Internet users (% of population)
12. CPIA transparency, accountability, and corruption in the public sector
13. Life expectancy at birth, total (years)
14. Youth literacy rate, population 15-24 years, both sexes (%)
15. Percent of refugees displaced from and within the country
16. People killed in terrorist attacks
17. People voting in elections (% of national population of voting age)
18. Physicians (per 10,000 people)
19. Population growth (annual %)
20. Improved water source (% of population with access)
21. Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)
22. Malaria—number of cases confirmed with microscopy
23. Research and development expenditure (% of GDP)
24. Tertiary education (University)
25. Seats held by women in national parliament (% of members)
26. Total debt service (percent of GNI)
27. Unemployment, total (% of total national labor force)
28. Imports (million $)
29. Exports (million $)
30. Federal taxes (total) (million $)
31. Inflation, consumer prices (annual %)

Figure 2.5 Pakistan SOFI 2017

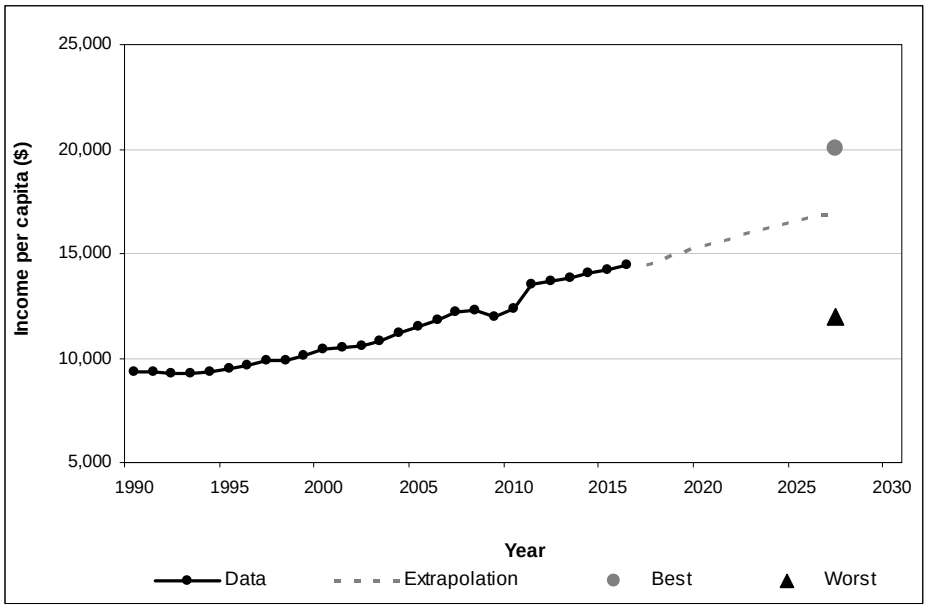


SOFI's computation at global, national, and regional or sectoral levels is being continuously improved in methodology, set of variables, and computation technique. The Millennium Project is also working on developing an automated computation, to make it easier for anyone to construct SOFIs tailored to their specific objectives.

VARIABLES INCLUDED IN THE GLOBAL 2017 SOFI

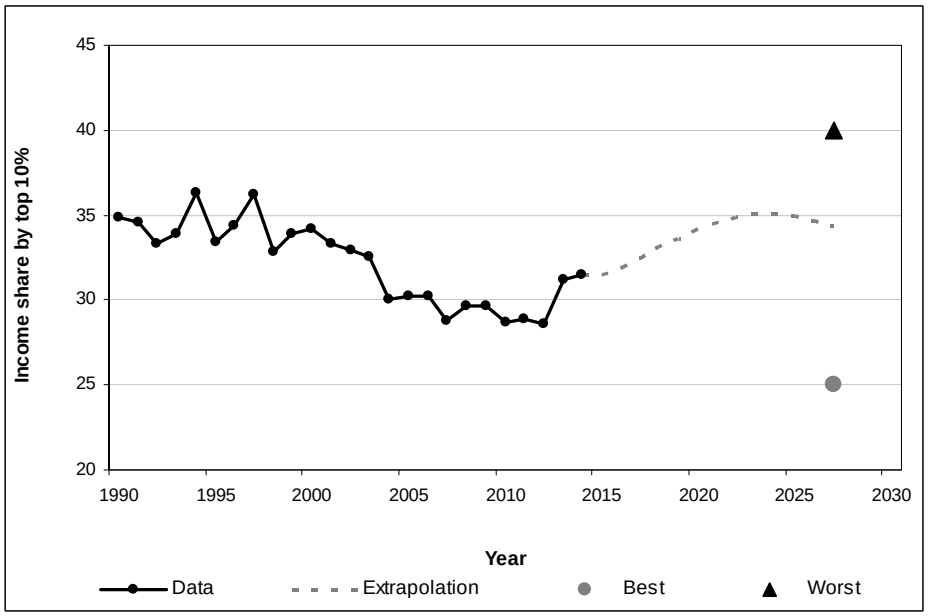
For the 10-year estimates, the best fit curve has been selected, using the CurveExpert Professional software. Hence, they are mathematical extrapolations and cannot be considered projections or professional forecasts.

Figure 2.6 GNI per capita, PPP (constant 2011 international $)



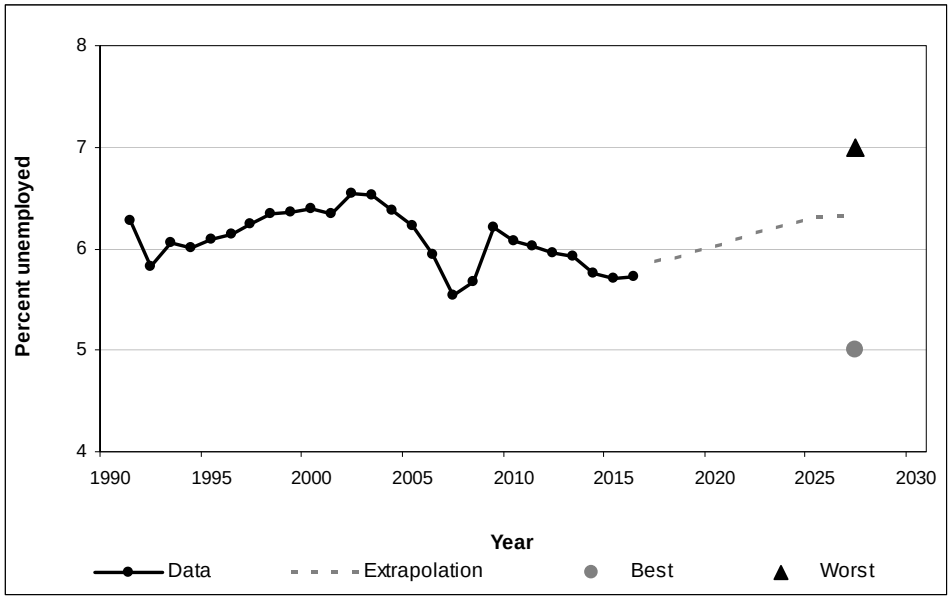
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.7 Economic income inequality (Income share held by highest 10%)



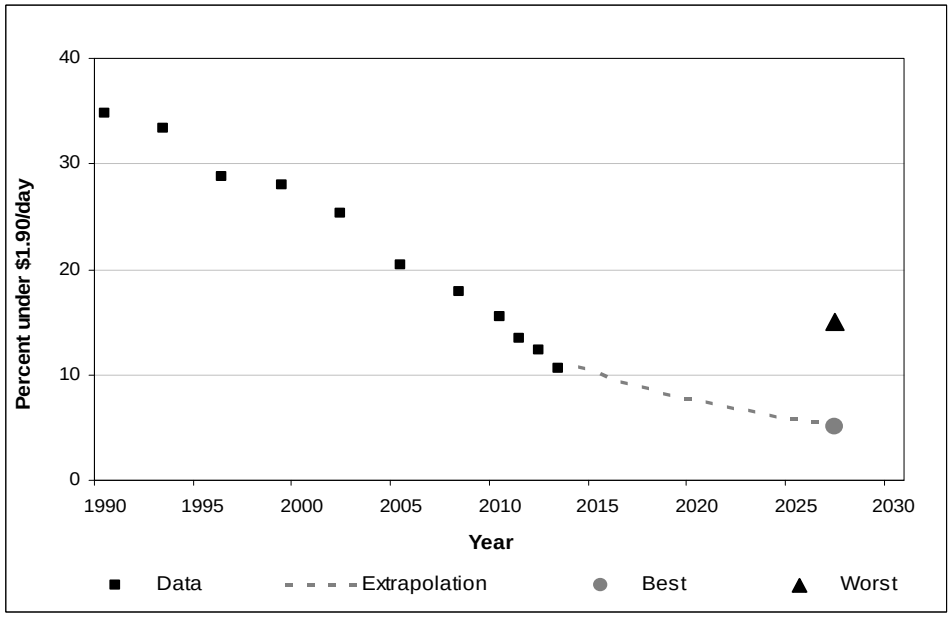
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.8 Unemployment, total (% of world labor force)



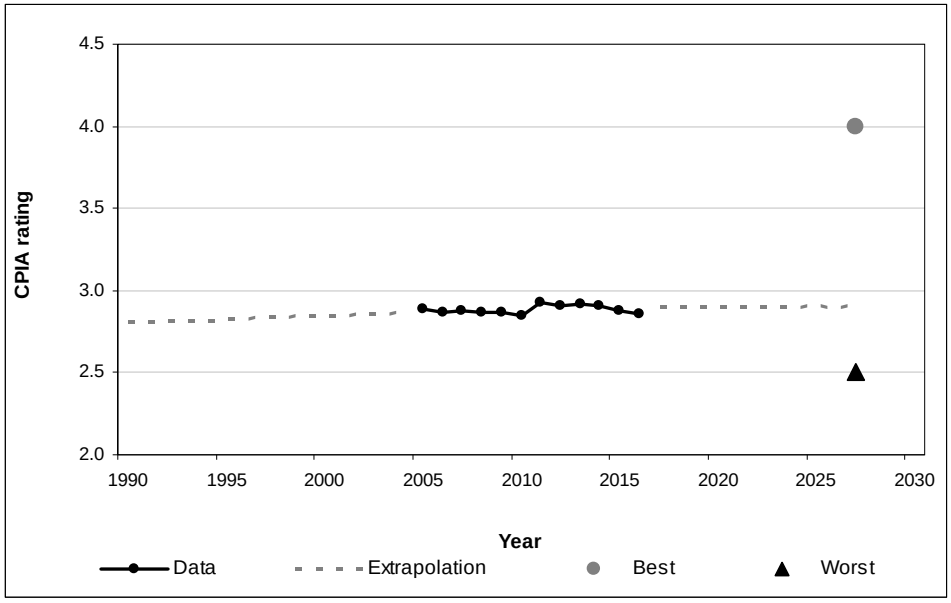
Source: ILO 2017 global report, with Millennium Project compilation and forecast

Figure 2.9 Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)



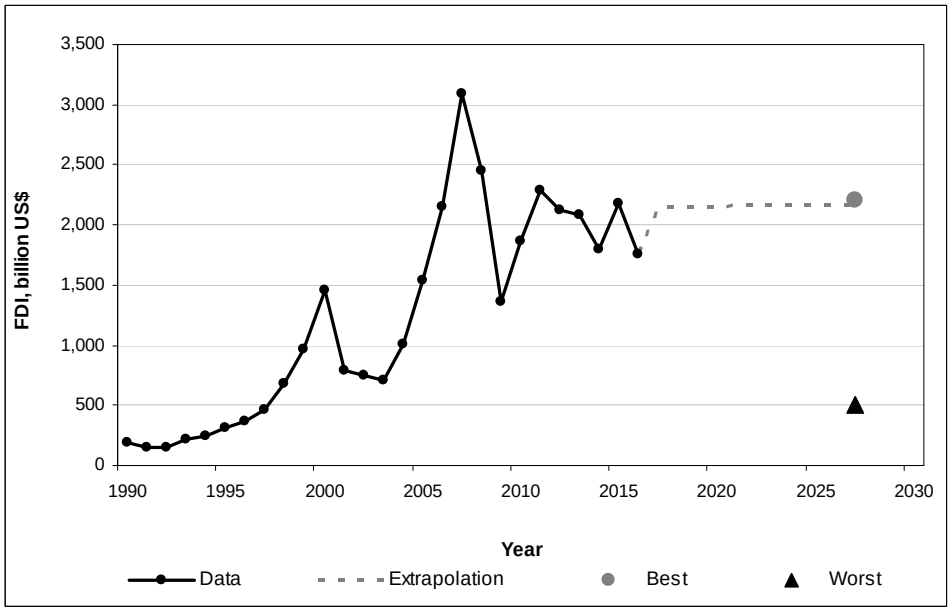
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.10 CPIA transparency, accountability, and corruption in the public sector rating (1=low; 6=high)



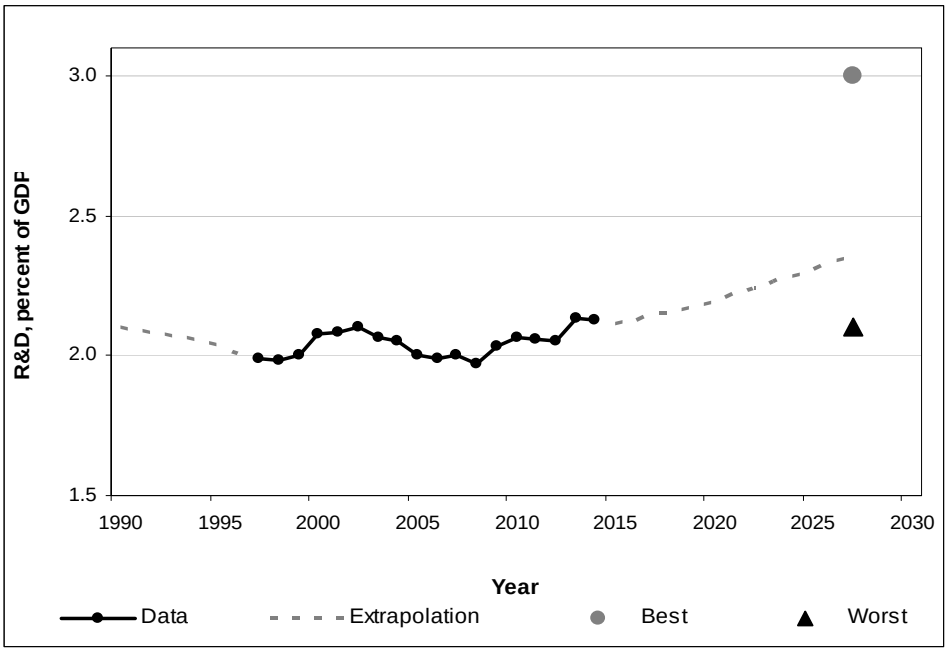
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.11 Foreign direct investment, net inflows (BoP, current $, billions)



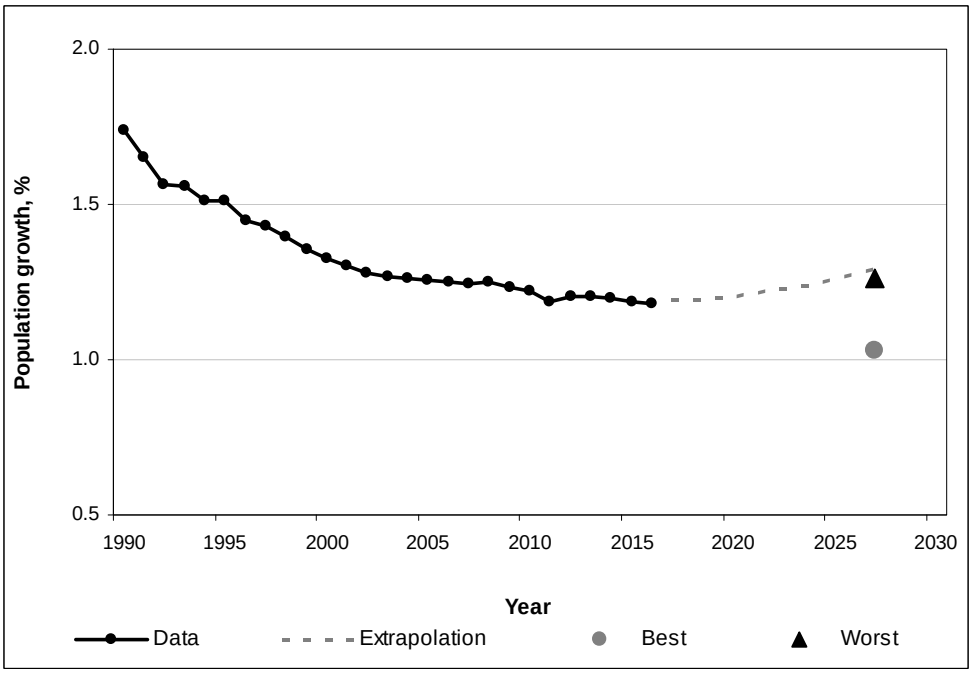
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.12 R&D expenditures (% of GDP)



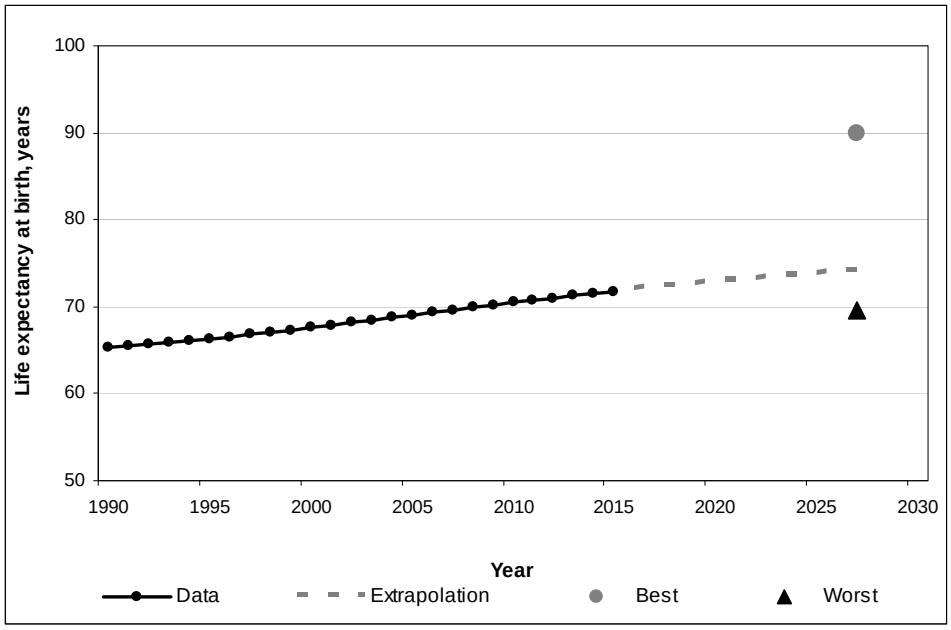
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.13 Population growth (annual %)



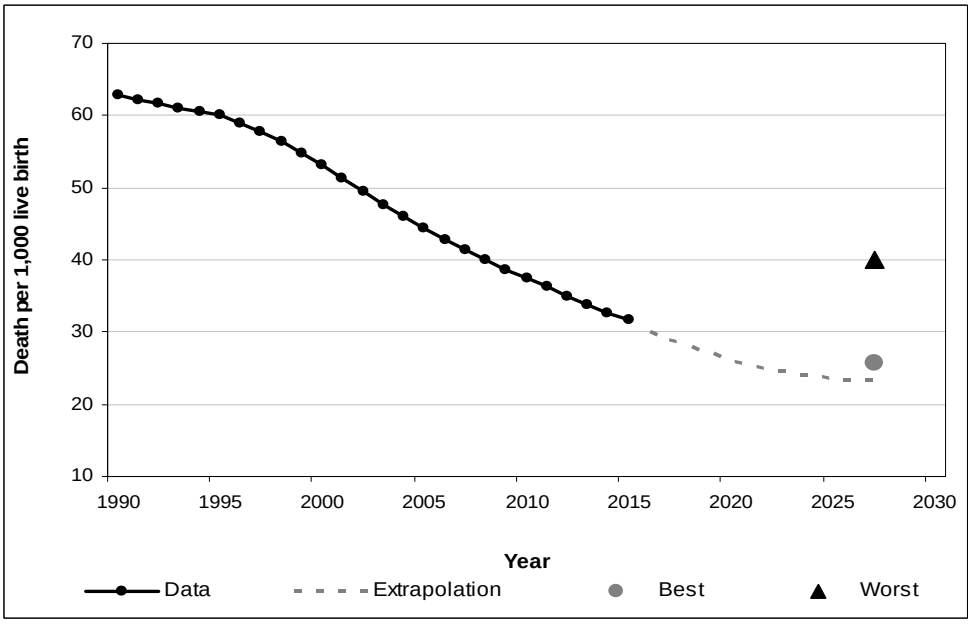
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.14 Life expectancy at birth (years)



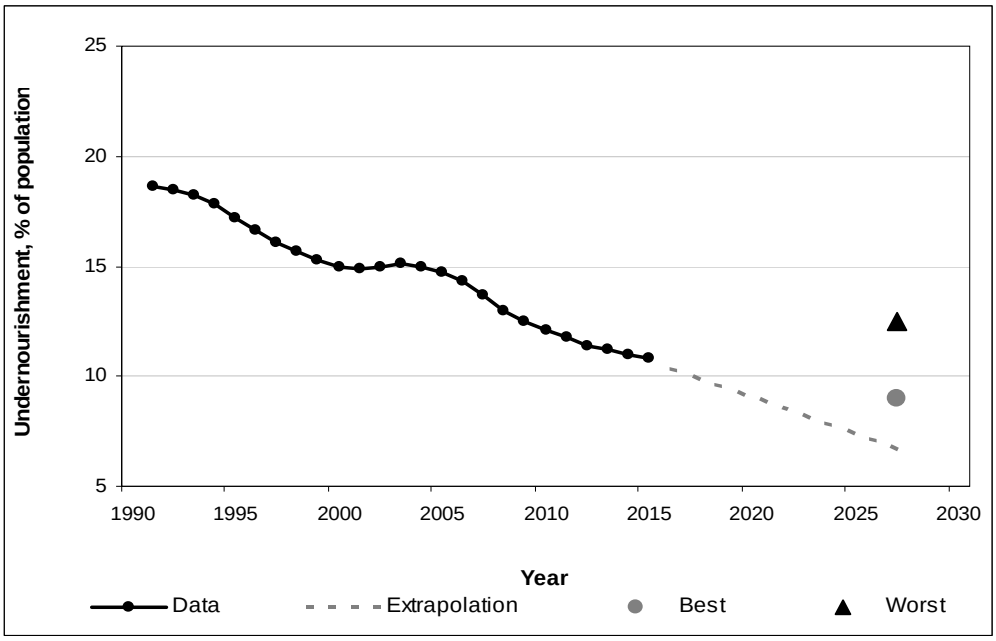
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.15 Mortality rate, infant (per 1,000 live births)



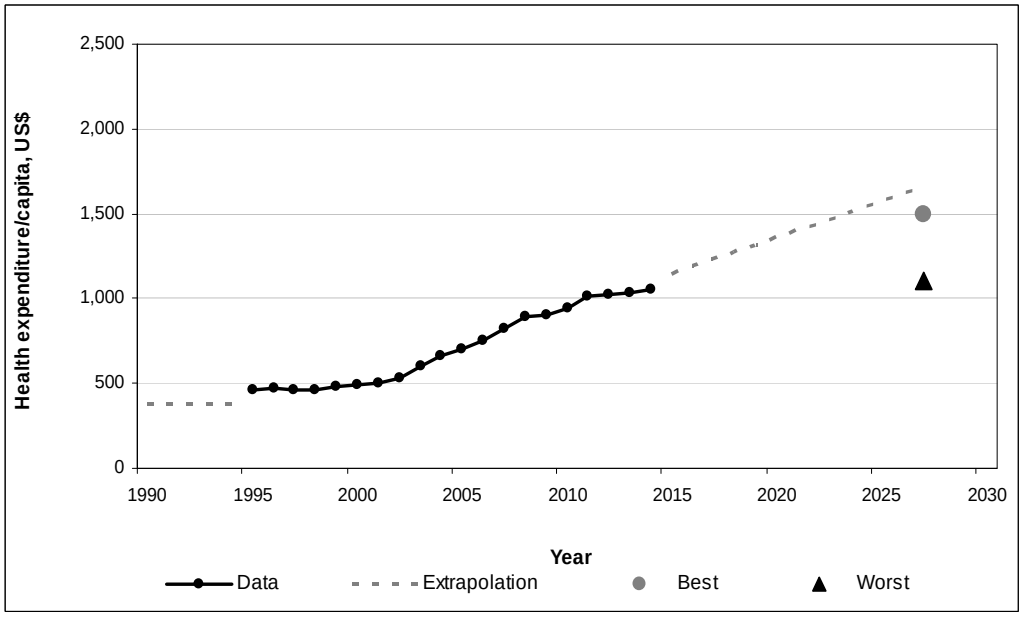
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.16 Prevalence of undernourishment (% of population)



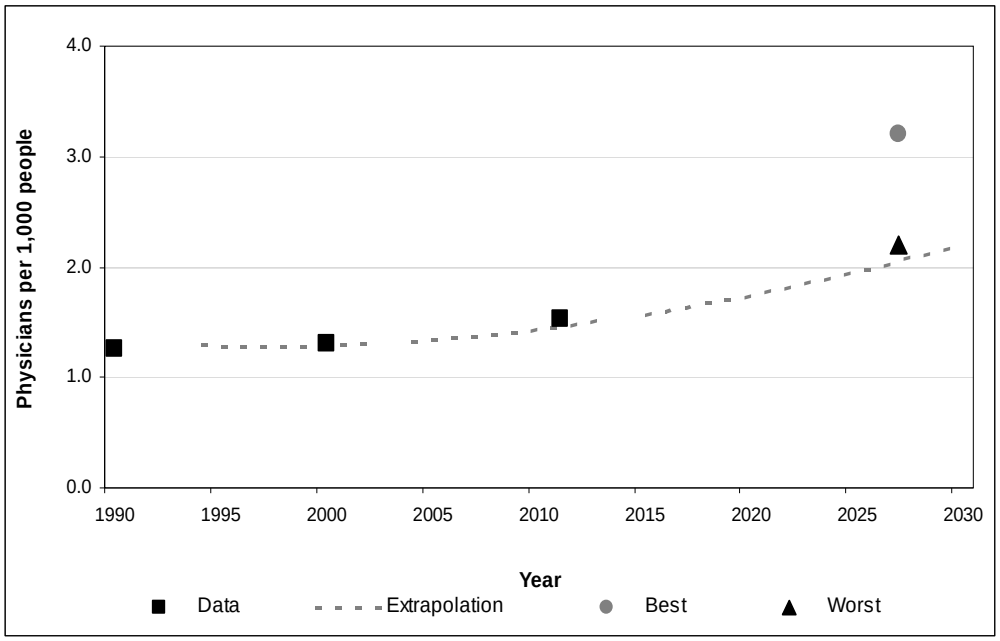
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.17 Health expenditure per capita (current $)



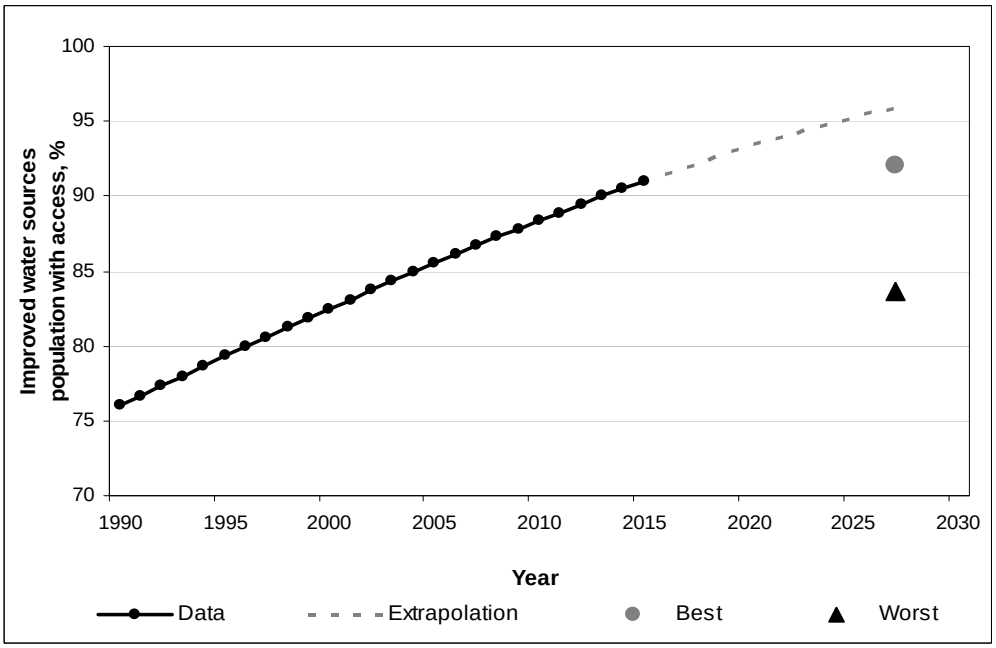
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.18 Physicians (per 1,000 people)



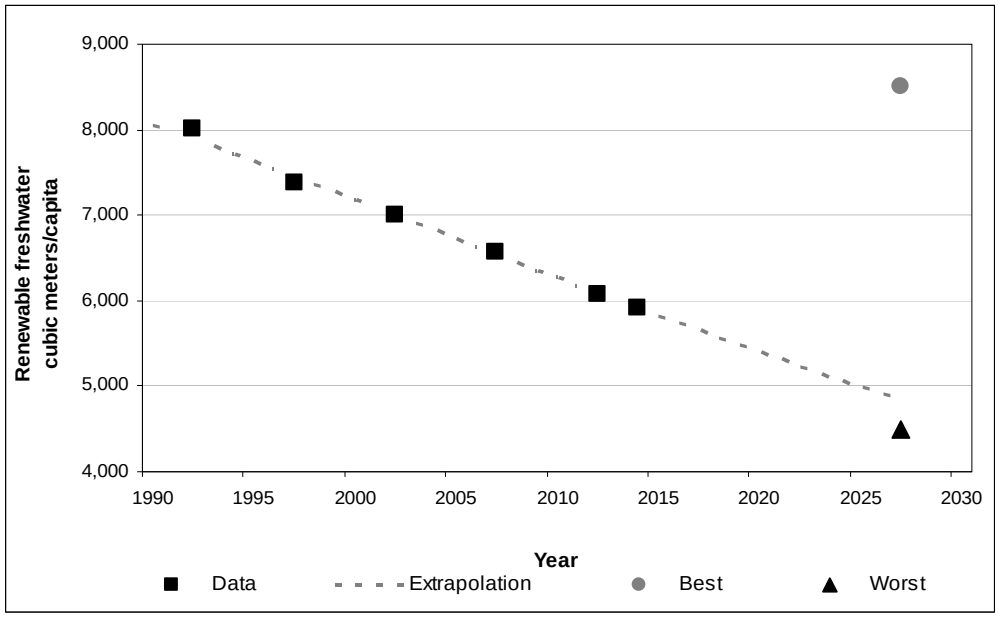
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.19 Improved water sources (% of population with access)



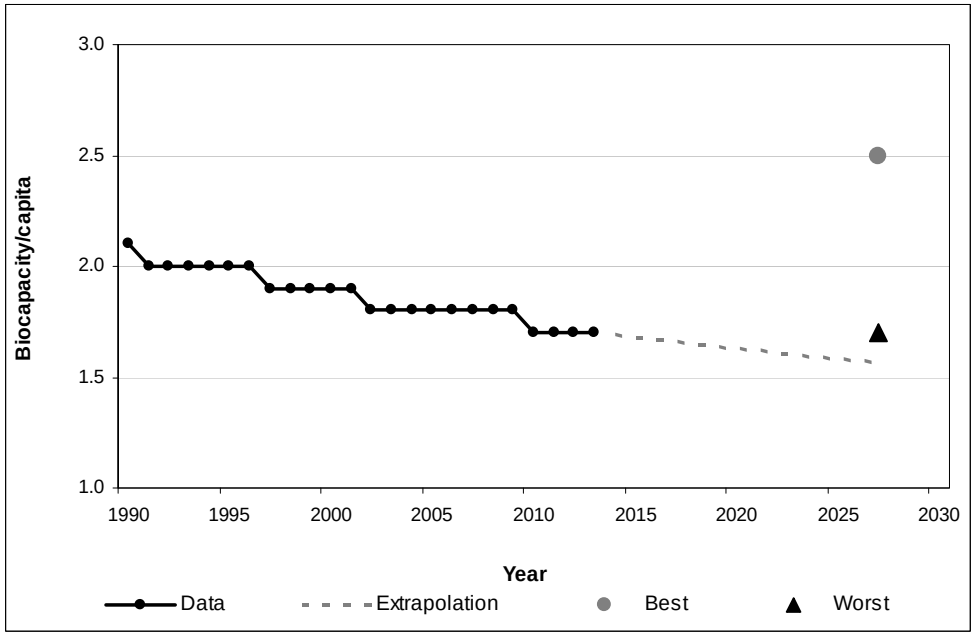
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.20 Renewable internal freshwater resources per capita (cubic meters)



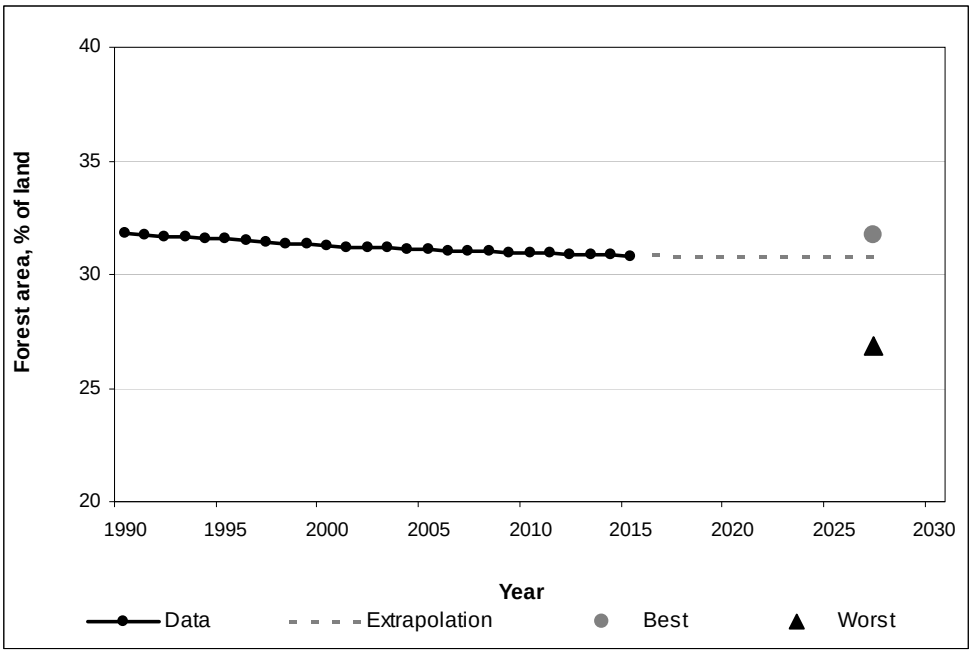
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.21 Biocapacity per capita (gha)



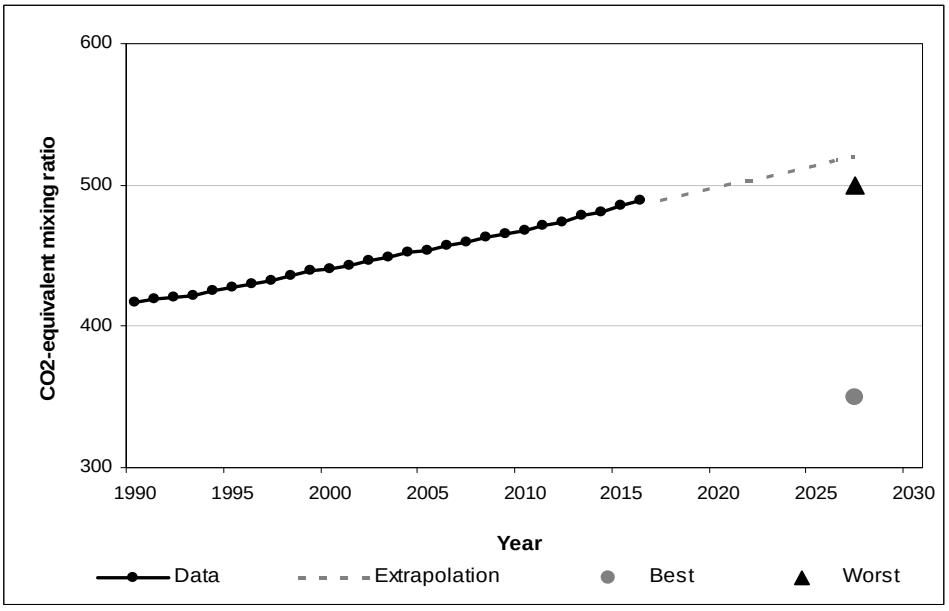
Source: Global Footprint Network, with Millennium Project compilation and forecast

Figure 2.22 Forest area (% of land area)



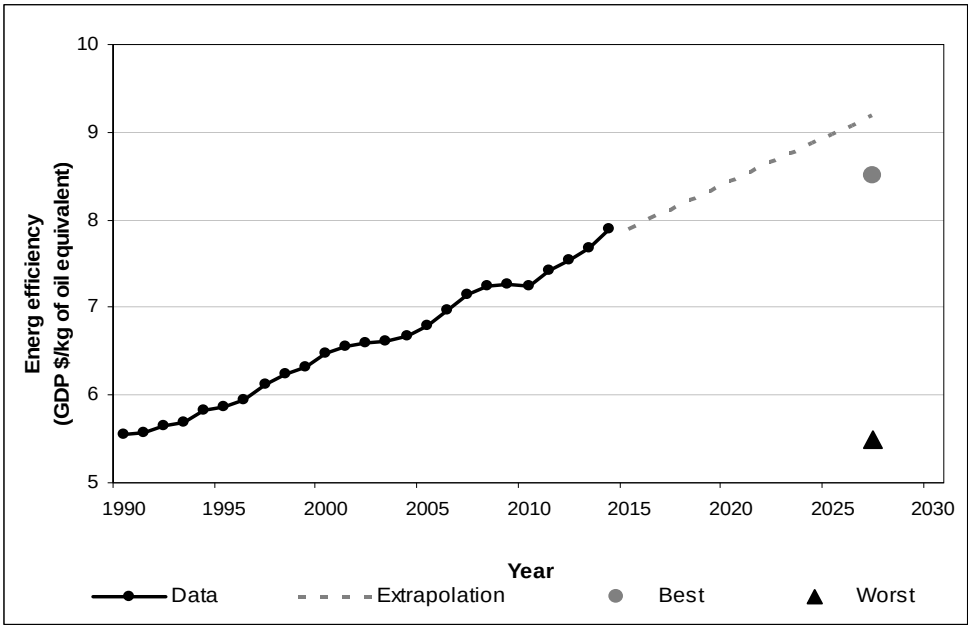
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.23 GHG emissions, CO_2-equivalent mixing ratio (ppm)



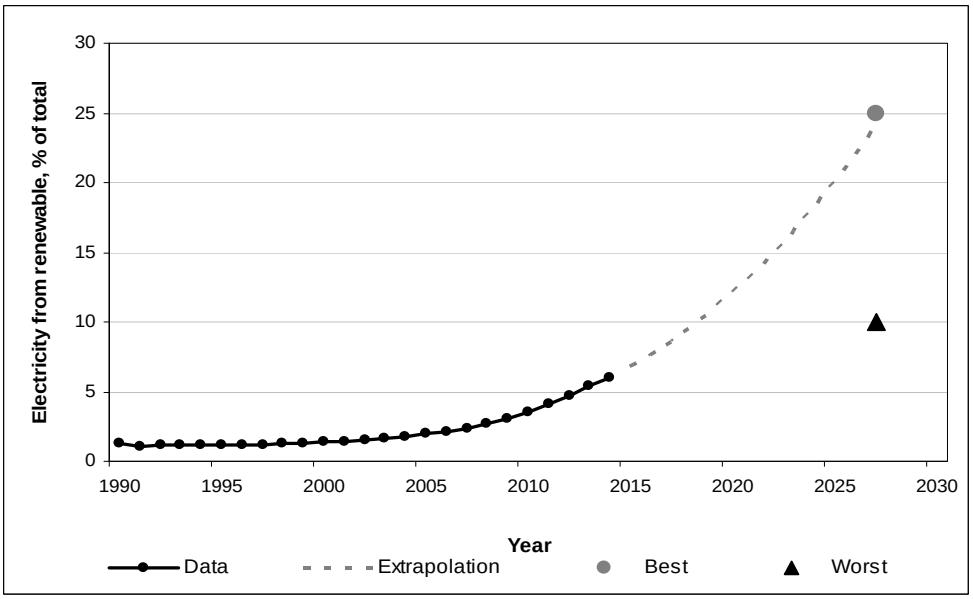
Source: NOAA Earth System Research Laboratory, with Millennium Project compilation and forecast

Figure 2.24 Energy efficiency (GDP per unit of energy use (constant 2011 PPP $ per kg of oil equivalent))



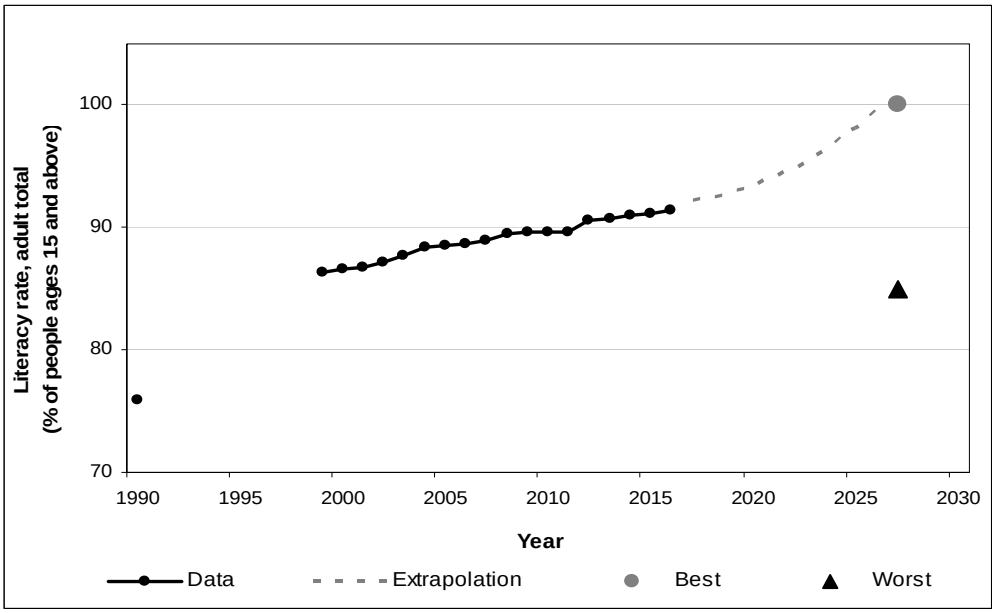
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.25 Electricity production from renewable sources, excluding hydroelectric (% of total)



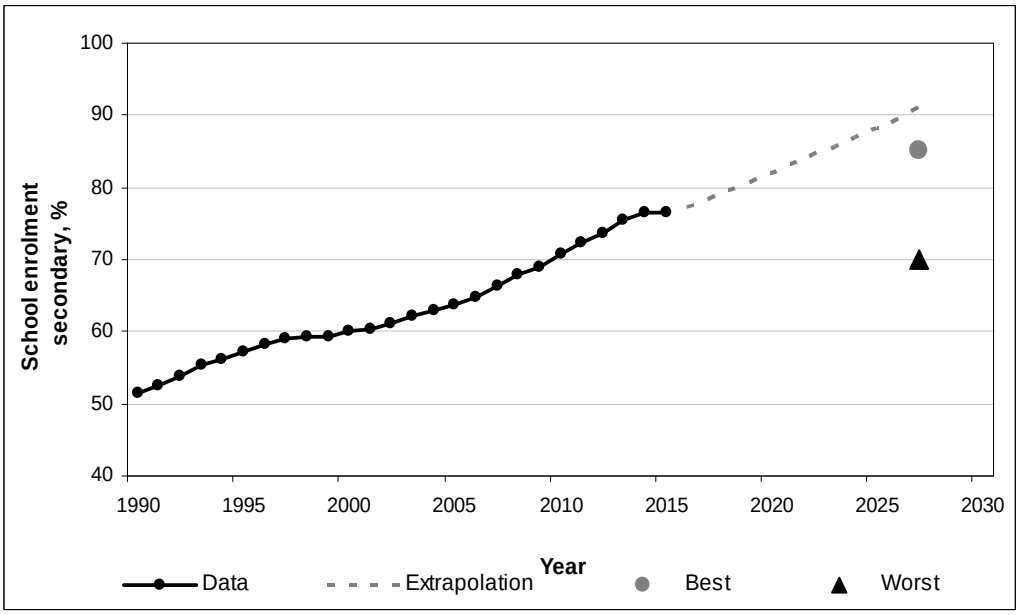
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.26 Literacy rate, adult total (% of people aged 15 and above)



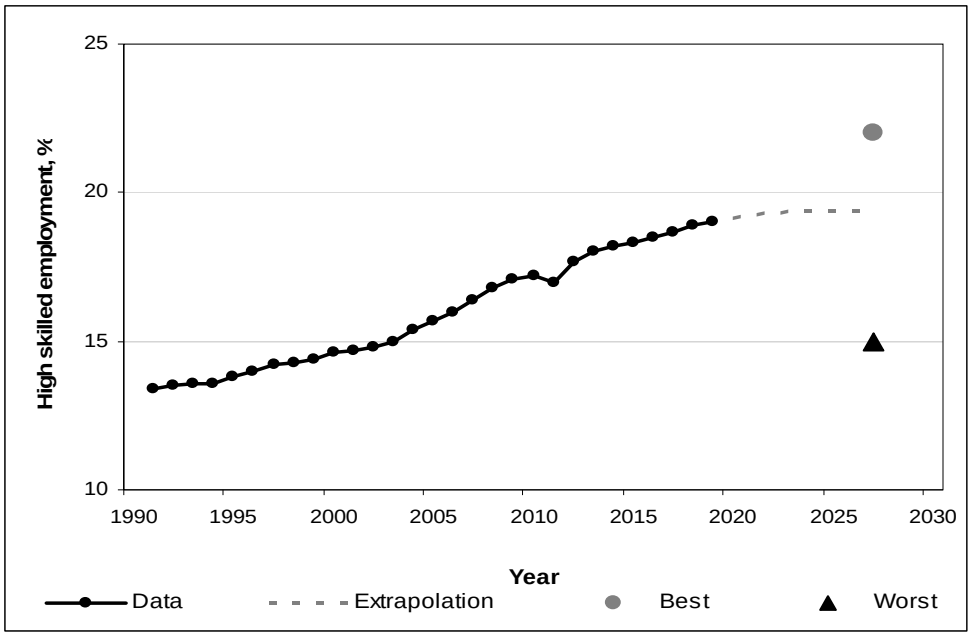
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.27 School enrollment, secondary (% gross)



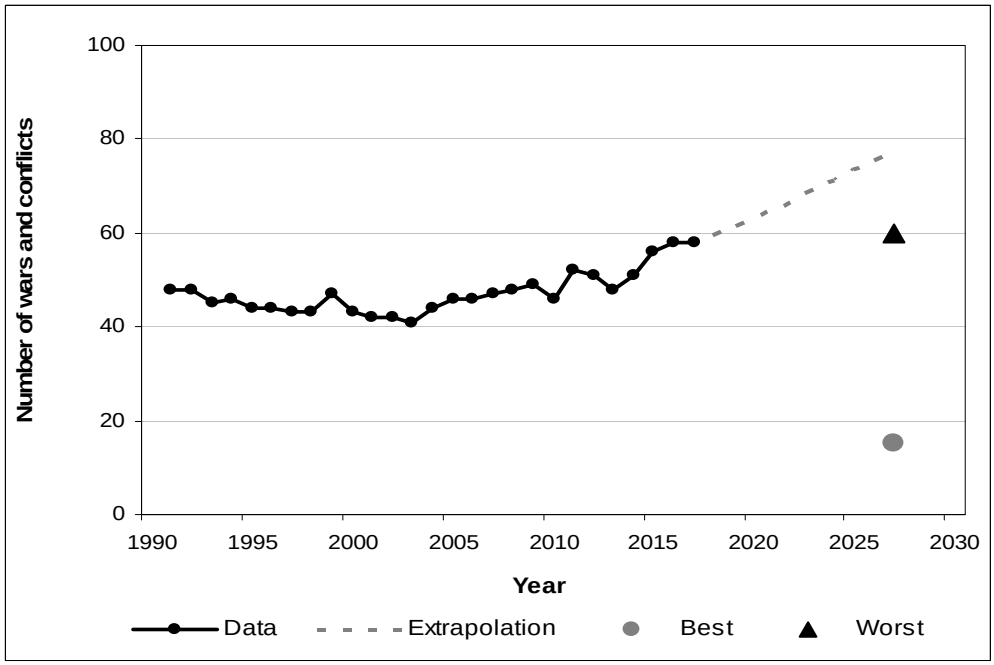
Source: World Bank indicators, with Millennium Project compilation and forecast

Figure 2.28 Share of high-skilled employment (%)



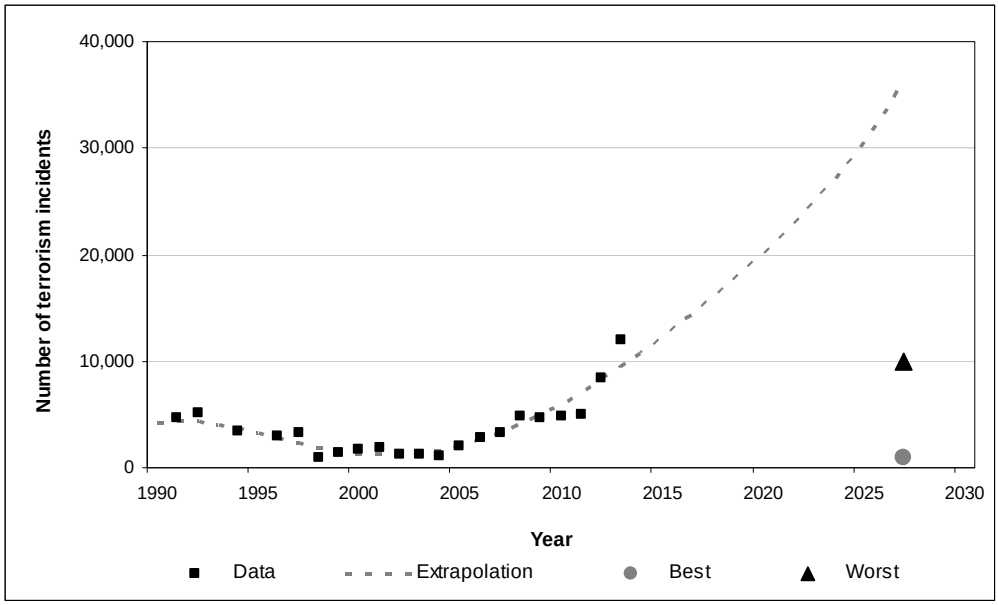
Source: ILO 2015 global report, with Millennium Project compilation and forecast

Figure 2.29 Number of wars and armed conflicts



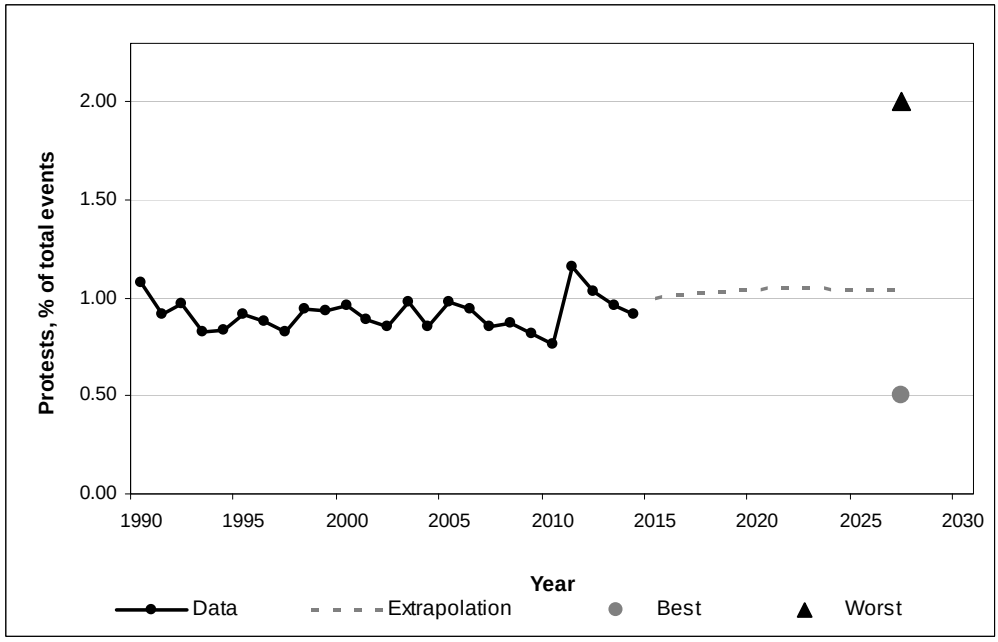
Source: List of wars by date, Wikipedia, with Millennium Project compilation and forecast

Figure 2.30 Terrorism incidents



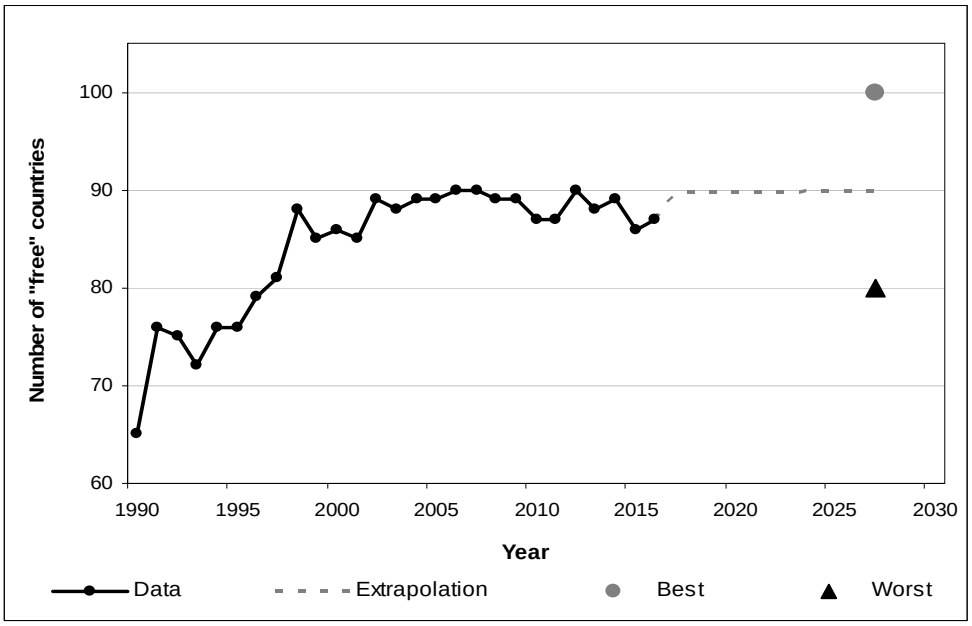
Source: Start Project, University of Maryland, with Millennium Project compilation and forecast

Figure 2.31 Social unrest indicator (number of protest events/total events) (%)



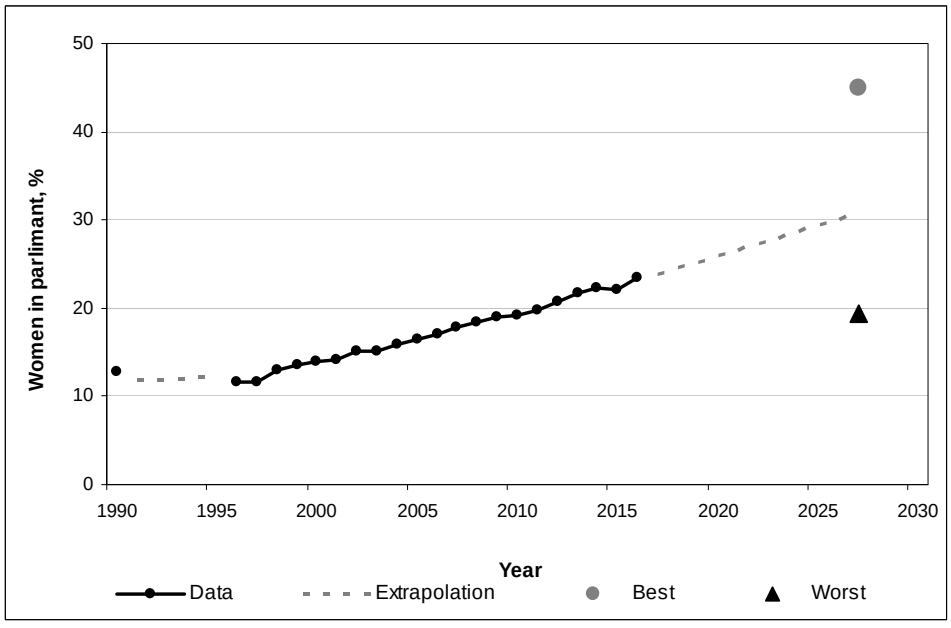
Source: ILO World Employment and Social Outlook Trends 2015, with Millennium Project compilation and forecast

Figure 2.32 Freedom rights (number of countries rated "free")



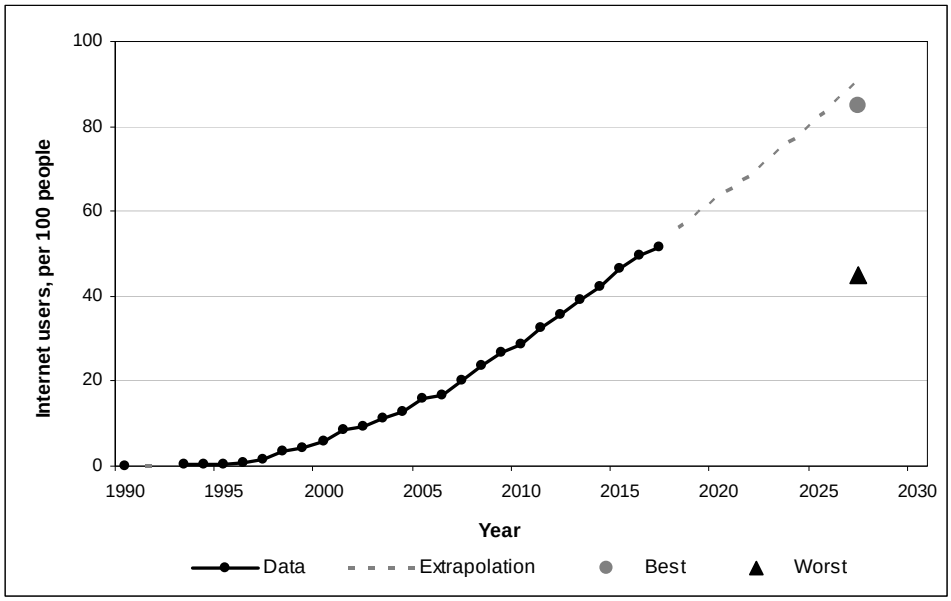
Source: Freedom House, with Millennium Project compilation and forecast

Figure 2.33 Proportion of seats held by women in national parliaments (% of members)



Source: IPU, with Millennium Project compilation and forecast

Figure 2.34 Internet users (per 100 people)



Source: World Bank indicators and Internetworldstats, with Millennium Project compilation and forecast