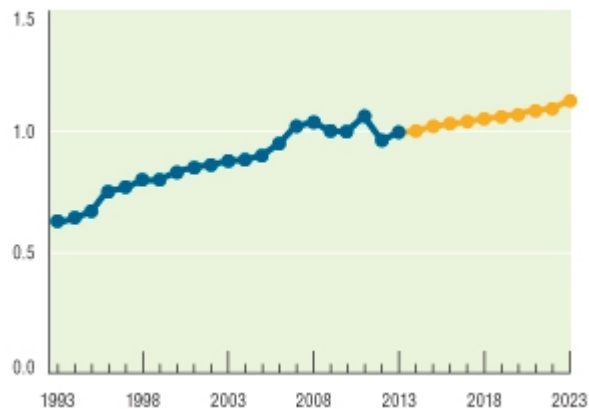


Our Global Situation and Prospects for the Future



Each of the 30 variables making up the index (Box 1) can be examined to show where we are winning, where we are losing, and where there is unclear or little progress.

By

Jerome C. Glenn

Box 1. Variables Used in the 2013–14 State of the Future Index

1. GNI per capita, PPP (constant 2005 international \$)
2. Economic income inequality (share of top 10%)
3. Unemployment, total (% of world labor force)
4. Poverty headcount ratio at \$1.25 a day (PPP) (% of population)
5. Levels of corruption (0=highly corrupt; 6=very clean)
6. Foreign direct investment, net inflows (balance of payments, current \$, billions)
7. R&D expenditures (% of GDP)
8. Population growth (annual %)
9. Life expectancy at birth (years)
10. Mortality rate, infant (per 1,000 live births)
11. Prevalence of undernourishment
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 (thousand cubic meters)
16. Ecological Footprint / Biocapacity ratio
17. Forest area (% of land area)
18. CO₂ emissions from fossil-fuel and cement production (billion tonnes)
19. Energy efficiency [GDP per unit of energy use (constant 2005 PPP \$ per kg of oil equivalent)]
20. Electricity production from renewable sources, excluding hydroelectric (% of total)
21. Literacy rate, adult total (% of people ages 15 and above)
22. School enrollment, secondary (% gross)
23. Number of wars (conflicts with more than 1,000 fatalities)
24. Terrorism incidents
25. Number of countries and groups that had or still have intentions to build nuclear weapons
26. Freedom rights (number of countries rated free)
27. Voter turnout (% voting population)
28. Proportion of seats held by women in national parliaments (% of members)
29. Internet users (per 100 people)
30. Prevalence of HIV (% of population age 15–49)

Humanity is making momentous strides forward in health, literacy, and many other critical areas, but also stalling or moving backward on many others, warns The Millennium Project in its latest State of the Future report.

The global situation for humanity continues to improve in general, but at the expense of the environment. Massive transitions from isolated subsistence agriculture and industry to a global, Internet-connected, pluralistic civilization are occurring at unprecedented speed and with never-before-seen levels of uncertainty.

The indicators of progress, from health and education to water and energy, show that we are winning more than we are losing—but where we are losing is very serious. As The Millennium

Project has documented over the past 17 years in its annual *State of the Future* reports, humanity clearly has the ideas and resources to address its global challenges, but it has not yet shown the leadership, policies, and management on the scale necessary.

On one hand, people around the world are becoming healthier, wealthier, better educated, more peaceful, and increasingly connected, and they are living longer. The child mortality rate has dropped 47% since 1990, while life expectancy has risen by 10 years to reach 70.5 years today. Extreme poverty in the developing world fell from 50% in 1981 to 21% in 2010, primary-school completion rates grew from 81% in 1990 to 91% in 2011, and only one transborder war occurred in 2013. Furthermore, nearly 40% of humanity is now connected via the Internet.

However, water tables on all continents are falling, glaciers are melting, coral reefs are dying, ocean acidity is increasing, ocean dead zones have doubled every decade since the 1960s, and half the world's topsoil has been destroyed.

Some critical socioeconomic fault lines are worsening, as well: Intrastate conflicts and refugee numbers are rising, income gaps are increasingly obscene, and youth unemployment has reached dangerous proportions. Meanwhile, traffic jams and air pollution are strangling cities. In addition, between \$1 trillion and \$1.6 trillion is paid in bribes, organized crime takes in twice as much money per year as all military budgets combined, civil liberties are increasingly threatened, and half the world is potentially unstable.

The International Monetary Fund expects the global economy to grow from 3% in 2013 to 3.7% during 2014 and possibly 3.9% in 2015. The world population having grown 1.1% in 2013, global per capita income will be increasing by 2.6% or more a year. Our world is reducing poverty faster than many thought was possible.

Nevertheless, the divide between the rich and poor is growing fast: According to Oxfam, the total wealth of the richest 85 people equals that of 3.6 billion people in the bottom half of the world's economy, and half of the world's wealth is owned by just 1% of the population. We need to continue the successful efforts that are reducing poverty, but we also need to focus far more seriously on reducing income inequality in order to avoid long-term instability.

Instability has already been erupting and expanding in many parts of the world over the last five years, due to a confluence of rising food and energy prices, failing states, falling water tables, climate change, desertification, and increasing migrations resulting from political, environmental, and economic conditions. And, because the world is better educated and increasingly connected, people are becoming less tolerant of the abuse of elite power than in the past. Unless these elites open the conversation about the future with the rest of their populations, unrest and revolutions are likely to continue and increase.

Although wars between states are becoming fewer and fewer, and the numbers of both nuclear weapons and battle-related deaths have been decreasing, conflicts within countries are increasing: A third of Syria's 21 million people are displaced or live as refugees, and the world ignores 6 million war-related deaths in the Congo.

Other fault lines are emerging worldwide in the form of rapidly rising frequency of cyberattacks and espionage, an escalation in territorial tensions among Asian countries, and overlapping jurisdictions for energy access to the melting Arctic. It will be a test of humanity's maturity to resolve all these conflicts peacefully.

Meanwhile, the world is automating jobs far more broadly and quickly than it did in earlier eras. How many truck and taxicab drivers will future self-driving vehicles replace? How many industrial laborers will lose their jobs to robotic manufacturing? How many telephone support personnel will be supplanted by AI telephone systems?

In every industry and sector, the number of employees per business revenue is falling, giving rise to employment-less economic growth. Job seekers will need more opportunities for one-person Internet-based self-employment and for markets for their interests and abilities in other job markets worldwide. Successfully leapfrogging slower linear development processes in lower-income countries is likely to require implementing futuristic possibilities—from 3-D printing to seawater agriculture—and making increasing individual and collective intelligence a national objective of each country.

The explosive, accelerating growth of knowledge in a rapidly changing and increasingly interdependent world gives us so much to know about so many things. Unfortunately, we are also flooded with so much trivial news that serious issues get little attention or interest, and too much time is wasted going through useless information.

At the same time, the world is increasingly engaged in diverse conversations about how to relate to the environment and to our fellow humans, and about what technologies, economics, and laws are right for our common future. These conversations are emerging from countless international negotiations, UN gatherings, and thousands of Internet discussion groups and big-data analyses. Humanity is slowly but surely becoming aware of itself as an integrated system of cultures, economies, technologies, natural and built environments, and governance systems.

Collecting Our Intelligence

These great conversations will be better informed if we realize that the world is improving more than most pessimists know and that future dangers are worse than most optimists indicate. Better ideas, new tools, and creative management approaches are popping up all over the world, but the lack of imagination and courage to make serious change is drowning the innovations needed to make the world work for all.

As a global think tank, The Millennium Project gathers insights from a network of more than 4,500 experts who continuously gather and share data via our online Global Futures System (GFS). GFS can be thought of as a global information utility from which different readers can draw different value for improving their understanding and decisions.

The collective intelligence emerges in GFS from synergies among data/information/knowledge, software/hardware, and experts and others with insight that continually learn from feedback to produce just-in-time knowledge for better decisions than any of these elements acting alone.

In addition to succinct but relatively detailed descriptions of the current situation and forecasts, we also formulate recommendations to address the various global challenges. Some of our recommendations are as follows:

- Establish a U.S.–China 10-year environmental security goal to reduce climate change and improve trust.
- Grow meat without growing animals, to reduce water demand and greenhouse-gas emissions.
- Develop seawater agriculture for biofuels, carbon sink, and food without rain.
- Build global collective intelligence systems for input to long-range strategic plans.
- Create tele-nations connecting brains overseas to the development process back home.
- Establish trans-institutions for more effective implementation of strategies.
- Detail and implement a global strategy to counter organized crime.
- Use the State of the Future Index as an alternative to GDP as a measure of progress for the world and nations with 30 variables that includes indicators for social equity and well-being.

The World Report Card

The world is in a race between implementing ever-increasing ways to improve the human condition and the seemingly ever-increasing complexity and scale of global problems. So, how is the world doing in this race? What's the score so far?

The Millennium Project's global State of the Future Index (SOFI), produced annually since 2000, measures the 10-year outlook for the future based on historical data on 30 key variables. In the aggregate, these data depict whether the future promises to be better or worse. The SOFI is intended to show the directions and intensity of change and to identify the responsible factors and the relationships among them.

The current SOFI, shown in Figure 1, indicates a slower progress since 2007, although the overall outlook is promising.

Some Key Trends Affecting the State of the Future

- **Computing.** The EU, United States, Japan, and China have announced programs to understand how the brain works and apply that knowledge to make better computers with better computer–user

interfaces. Google also is working to create artificial brains that could serve us as personal artificial-intelligence assistants. Another great race is on to make supercomputer power available to the masses with advances in IBM's Watson and with cloud computing by Amazon and others. About 85% of the world's population is expected to be covered by high-speed mobile Internet in 2017.

- **A Web-connected world.** More than 8 billion devices are connected to the Internet of Things, which is expected to grow to 40 billion–80 billion devices by 2020. According to the UN's International Telecommunications Union, nearly 40% of humanity now uses the Internet. This global network is close to becoming the de facto global brain of humanity.

So what happens when the entire world has access to nearly all the world's knowledge, along with instantaneous access to artificial brains that can solve problems and create new conditions like geniuses, while blurring previous distinctions between virtual realities and physical reality? We have already seen brilliant financial experts—augmented with data and software—making the short-term, selfish, economic decisions that led to the 2008 global financial crisis, continued environmental degradation, and widening income disparities. It is not yet clear that humanity will grow from short-term, me-first thinking to longer-term, we-first, planet-oriented decision making.

Humanity may become more responsible and compassionate as the Internet of people and things grows across the planet, making us more aware of humanity as a whole and of our natural and built environments. Yet multi-way interactive media also attracts individuals with common interests into isolated ideological groups, reinforcing social polarization and conflict and forcing some political systems into gridlock.

And although the Internet's growth may make it increasingly difficult for conventional crimes to go undetected, cyberspace has become the medium for new kinds of crimes: According to the cloud-services provider Akamai, there were 628 cyberattacks over 24 hours on July 24, 2013, the majority of which attacked targets in the United States. Cyberattacks can be thought of as a new kind of guerrilla warfare. Prevention may involve an endless intellectual arms race of hacking and counter-hacking software, setting cyber traps, exposing sources, and initiating trade sanctions.

- **Civil strife.** The long-range trend toward democracy is strong, but Freedom House reports that world political and civil liberties deteriorated for the eighth consecutive year in 2013, with declines noted in 54 countries and improvements in only 40 countries. At the same time, increasing numbers of educated and mobile-phone/Internet-savvy people are no longer tolerating the abuse of power and may be setting the stage for a long and difficult transition to more global democracy.
- **Climate change.** The Intergovernmental Panel on Climate Change's *Fifth Assessment Report* found that world greenhouse gas emissions grew by an annual average of 2.2% between 2000 and 2010, up from 1.3% per year between 1970 and 2000. Each decade of the past three was warmer than the previous decade. The past 30 years was likely the warmest period in the Northern Hemisphere in the last 1,400 years.

Furthermore, even if all CO₂ emissions are stopped today, the IPCC report notes that “most aspects of climate change will persist for many centuries.” Hence, the world has to take adaptation far more seriously, in addition to reducing emissions, and creating new methods to reduce the greenhouse gases that are already in the atmosphere.

Without dramatic changes, UN Environment Program projects a 2°C (3.6°F) rise above preindustrial levels in 20–30 years, accelerating changing climate, ocean acidity, changes in disease patterns, and saltwater intrusions into freshwater areas worldwide. The UN Food and Agriculture Organization reports that 87% of global fish stocks are either fully exploited or overexploited. Oceans absorb about 33% of human-generated CO₂, but their ability to continue doing this is being reduced by changing acidity and the die-offs of coral reefs and other living systems.

- **Energy needs.** The world also needs to create enough electrical production capacity for an additional 3.7 billion people by 2050. There are 1.2 billion people without electricity today (17% of the world), and an additional 2.4 billion people will be added to the world’s population between now and 2050.

Compounding this is the requirement to decommission aging nuclear power plants and to replace or retrofit fossil fuel plants. The cost of nuclear power is increasing, while the cost of renewables is falling—wind power passed nuclear as Spain’s leading source of electricity. However, fossil fuels (coal, oil, and natural gas) will continue to supply the vast majority of the world’s electricity past 2050 unless there are major social and technological changes. If the long-term trends toward a wealthier and more sophisticated world continue, our energy demands by 2050 could be more than expected. However, the convergences of technologies are accelerating rapidly to make energy efficiencies far greater by 2050 than forecast today.

- **Water stress.** Major progress was made over the past 25 years that provided enough clean water for an additional 2 billion people. But as a result of water pollution, accelerating climate change, falling water tables around the world, and an additional 2.4 billion people in just 36 years, some of the people with safe water today may not have it in the future unless significant changes occur. According to the Organisation for Economic Co-operation and Development (OECD), half the world could be living in areas with severe water stress by 2030.
- **Population growth.** The UN’s mid-range forecast is that the world’s population, which now totals 7.2 billion people, will number 9.6 billion by 2050. By that date, the number of people over age 65 will equal or surpass the number under 15.

Average life expectancy at birth has increased from 48 years in 1955 to 70.5 years today. Future scientific and medical breakthroughs could give people longer and more productive lives than most would believe possible today. For example, uses of genetic data, software, and nanotechnology will help detect and treat disease at the genetic or molecular level.

- **Accelerating technologies.** Science and technology's continued acceleration is fundamentally changing what is possible, and access to this knowledge is becoming universally available. For example, China's Tianhe-2 supercomputer is the world's fastest computer, at 33.86 petaflops (quadrillion floating point operations per second)—passing the computational speed of a human brain. Individual gene sequencing is now available for \$1,000—and the price could go down much further in coming years—a development that will enable individualized genetic medicine for every patient.

Although advances in synthetic biology, quantum entanglement, Higgs-like particles, and computational science seem remote from improving the human condition, such basic scientific endeavors are necessary to increase the knowledge that scientists can use to develop and improve technologies to benefit humanity. But with little news coverage and educational curricula, the general public seem unaware of the extraordinary changes and consequences that need to be discussed: Is it ethical to clone ourselves, to bring dinosaurs back to life, or to invent thousands of new life forms through synthetic biology? Should basic scientific research be pursued without direct regard for social issues? On the other hand, might social considerations impair progress toward a truthful understanding of reality?

- **Gender equity.** Violence against women is the largest war today, as measured by death and casualties per year. Globally, 35% of women have experienced physical and/or sexual violence. While the gender gaps for health and educational attainment were closed by 96% and 93% respectively, according to the 2013 Global Gender Gap report by the World Economic Forum, the gap in economic participation has been closed by only 60%, and the gap in political outcomes by only 21%: Women account for only 21.3% of the membership of national legislative bodies worldwide, up from 11.3% in 1997.
- **“Hidden” hunger.** Food markets in much of the developing world exhibit an increasing problem of hidden hunger—that is, the intake of calories is sufficient, but those calories contain little in nutritious value, vitamins, and minerals. Although the share of people in the world who are hungry has fallen from over 30% in 1970 to 15% today, concerns are increasing over the variety and nutritional quality of food. The FAO estimates that some 30% of the world population (2 billion people) suffers from hidden hunger.
- **Vulnerable urban coastal zones.** Human construction is diminishing the land structures that the world's coastal zones rely on to blunt the impacts of hurricanes, tsunamis, and pollution. This is a harmful outcome, not only for flora and fauna, but for us, as well, since more than half the world's people live within 120 miles of a coastline. Without appropriate mitigation, prevention, and management of the natural infrastructure within urban coastal zones, billions of people will be increasingly vulnerable to a range of disasters.
- **“Lone wolf” terrorism.** Individuals acting alone can wield increasing amounts of damage. The number of terrorism incidents increased over the past 20 years, reaching 8,441 in 2012 and more than 5,000 in the first half of 2013.

Of all terrorism, the lone-wolf type is the most insidious, because it is exceedingly difficult to anticipate, given the actions and intent of individuals acting alone. The average opinion of our international panel is that nearly a quarter of terrorist attacks carried out in 2015 might be by a lone wolf, and that the situation might escalate: About half of the participants that we surveyed thought that lone-wolf terrorists might attempt to use weapons of mass destruction by around 2030.

“Global Collective Intelligence Systems” Bring It All Together

It is unreasonable to expect the world to cooperatively create and implement strategies to build a better future without some general agreement about what that desirable future is. Such a future can only be built with awareness of the global situation and of the extraordinary possibilities.

What we need is a global collective intelligence system to track science and technology advances, forecast consequences, and document a range of views on them. The accelerating rates of changes that the world now experiences call for new kinds of decision making with global real-time feedback. The Global Futures System is an early expression of that future direction.

Jerome C. Glenn is CEO of The Millennium Project and The Global Futures System, www.themp.org. This article is adapted from *2013-14 State of the Future*, co-authored by Glenn with Theodore J. Gordon and Elizabeth Florescu (published by The Millennium Project, millennium-project.org/millennium/201314SOF.html).