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## The World in 2025

Foresight Brief Nr. 167

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**Sponsors:** European Commission – DG Research – Directorate L – Science, Economy and Society Unit L2 – Research in the Economic, Social Sciences and Humanities – Prospective

**Type:** European/international – covering issues from a European or even global perspective

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**Duration:** 2008      **Budget:** N/A      **Time Horizon:** 2025      **Date of Brief:** Dec. 2009

### Purpose

*DG Research's Directorate for Science, Economy and Society in collaboration with the Bureau of European Policy Advisers launched a foresight exercise on "The World in 2025", which resulted in a report published in January 2009.*

#### The World to Come – Global Trends & Disruptions

The report "The World in 2025" highlights the main trends up to 2025 (demography, urbanisation, macro-economic projections, education, science and culture) and underlines the pressures on natural resources and the new production-consumption patterns while attempting to identify the so-called "wild cards". The role for European foresight and forward-looking activities are presented focussing on a multi-polar world and beyond technological innovation. The report has benefited from the discussions of the group of experts set up by the European Commission in 2008 (see box below).

It has taken stock of the most recent publications in the field of foresight and forward-looking activities and includes most of the reflections of different Commission Directorates-General.

#### Group of Experts & Scenario Process

DG Research's Directorate for Science, Economy and Society in collaboration with the Bureau of European Policy Advisers (BEPA) launched a foresight expert group on "The World in 2025", which met on five occasions in 2008 and 2009.

The objectives of this group were, first, to assess and measure global trends over recent decades to serve as a basis for forward projections while distinguishing the different major economies and regions, including the European Union, and identifying the main economic, geopolitical, environmental and societal relationships and interconnections.

Secondly, the group was asked to generate and analyse alternative (even disruptive) scenarios of world trends up to 2025 based on specified assumptions about economic, political, social, environmental and technological developments in order to assess their consequences for the EU and to examine which policy responses could be appropriate.



### Members of the Expert Group “The World in 2025”

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“The World in 2025” group was composed of experts with a profound understanding of global challenges and developments as well as a solid knowledge of foresight in specific

countries or regions. Group members included representatives from think tanks, universities, industry, the European Commission and governmental bodies. Meeting five times in 2008 and 2009, the group produced two publications: one collects the experts’ individual contributions and the other called ‘The World in 2025 – Rising Asia and Socio-ecological Transition’ highlights the conclusions.

The experts identified principal trends, tensions and transitions while highlighting strategies that may help policy stakeholders make informed decisions. They also say that competition for natural resources and shifts in wealth, industrial production and populations may lead to tensions over natural resources (food, energy, water and minerals), migration and urbanisation.

Each expert produced an individual contribution to the discussions and, collectively, they generated a set of indicative scenarios for the world in 2025. The experts covered a wide range of issues, including demography, migration, urbanisation, cohesion, macro-economics and trade, employment, services, environment and climate change, energy, access to resources, education, research, technology, innovation, economic governance, defence, security and intercultural dialogue.

The key messages concern the main challenges to be faced in the next fifteen years, the main drivers that could impact on the future, the main strengths and weaknesses of Europe by 2025 and finally the wild cards that may radically change the different situations that are foreseen.

## Europe to Face Marginalization

The report “The World in 2025” underlines the major future trends: geopolitical transformations in terms of population, economic development, international trade and poverty. It elucidates the tensions – natural resources (food, energy, water and minerals), migration and urbanisation – and draws transitional pathways towards a new production and consumption model, new rural-urban dynamics and a new gender and inter-generational balance.

### Shift towards Asia

By the year 2025, the centres of gravity, wealth and industrial production may shift towards Asia, and the United States and Europe could likewise lose their scientific and technological edge over Asia. India and China could account for approximately 20% of the world’s research and development (R&D), that is more than double their current share.

Within 16 years, the world population will reach eight billion, the experts in the report say. Some 97% of world population growth will occur in developing countries. The analysis of demographic growth for 2025 indicates that the European population will only constitute 6.5% of the world population.

### 2025 Trends

#### Geopolitical Transformations

Population growth in 2025 up to 8 billion worldwide  
 61% of world population in Asia, EU: 6.5%  
 35% of the European population will be older than 60

#### Geopolitical economic power

30% of GDP produced by Asia, EU: 20%  
 Asia will be the first world exporter: 35%, EU: 32%  
 Asia on par with US & Europe in the field of R&D

### Scarcity of Natural Resources

Increased population, according to the expert group, may lead to greater scarcity of natural resources and impact the environment. This can result in tension and shifts in production and consumption patterns and the availability of natural resources.

From these demographic and resource challenges, the report sees a new ‘socio-ecological’ production and consumption model arising. New technologies (renewable energy sources, capture and storage of CO<sub>2</sub>, nuclear power, hydrogen and fuel cells) as well as changes in social behaviour, supported by economic incentives, will contribute to a reduction in energy consumption (better house insulation, replacement of envi-

ronmentally damaging cars with greener options, and increased use of public transport).

The report says that while numerous scientific and technological advances will give rise to controversies in society, Europe, with its wealth of various debate and participative governance experiences, is well equipped to manage them and involve civil society in research. Global access to knowledge, though, together with the development of joint global standards and the rapid worldwide diffusion of new technologies will have a great impact on Europe's future welfare.

It is assumed that by 2025 Europe will be specialized in exporting high-tech products. Although the specific products are currently still unknown, they can be expected to benefit from the rapid growth in Asia whose growth will probably be accompanied by an increasing inequality in the purchasing power of the population. "The increase of the population is already a good indication of the future opportunities of the market, of the consumer aspirations that have not been covered, better than the Gross Domestic Product (GDP)."

### Potential Conflicts, Threats and Wild Cards

The report also points to the possibility of future social conflicts emerging in Europe around scientific and technological advancements in areas like cognitive sciences, nanotechnology, security technologies, genetic manipulation, synthetic biology and others.

Among the unforeseeable turbulences that could shape the next two decades, the report identifies seven "wild cards":

1. Persistence of the financial and economic crisis beyond 2010.
2. A major war (for the years 2010-2020 of strong turbulence).
3. A technological disaster that could influence the choices of priorities of governments (e.g. a nuclear accident like Chernobyl blocking the nuclear option for many years).
4. Pandemics with devastating effects.
5. The collapse of a major urban area in a developing country.
6. The blocking of the European Union as a result of the difficulties of establishing new economic governance and political decision mechanisms;
7. A breakthrough in the field of renewable energy production;
8. A new wave of technological innovations and a new rapid growth cycle driven by emerging countries;
9. Sudden or even brutal acceleration of the (nonlinear) impacts of climate change;
10. Progress in the adoption of a world governance system due to the extent of the problems to be dealt with and to the pressure of public opinion.

## What Experts Recommend to EU Policy Makers

### Key RTD Areas

The EU should struggle for maintaining its leadership in key RTD areas, such as technologies of energy saving, research into sustainable development and climate change, health and the containment of diseases, food safety and security in general.

### Europe Must Not Fall Behind in R&D

Experts suggest that Europe become a model based on emphasizing quality of life, which might involve maintaining global access to knowledge and guaranteeing or contributing to establishing international standards in science and technology. "To ensure access to knowledge through the global networks also means to be attractive for the researchers and the investment that comes from the outside", the report points out.

### From 'Brain-drain' to 'Brain-circulation'

There will be a switch from 'brain drain' to 'brain circulation', and young researchers will be moving to various regions of the world, which will become educational and scientific cen-

tres. It is estimated that in 2025 there will be 645,000 Chinese students and 300,000 Indian students outside their countries. In turn, the number of European students that transfer to these two countries can also be expected to grow.

### Effective Governance

Europe needs good policy in order to retain its traditionally strong position in developing cutting-edge innovation that goes beyond incremental improvements of existing technology. It will be essential that some key governance issues are solved. For instance:

1. Set a new 3% target. One in which the EU member states commit themselves to spending 1% of GDP from public funds for research and 2% for higher education by 2020. Its implementation will be under the full control of the national governments.
2. Consider the "Grand Challenges" – a term denoting major social problems that cannot be solved in a reasonable time, under acceptable social conditions, without a strong coordinated input requiring both technological and non-technological innovation and, at times, advances in scientific understanding. In a way, the central issue is the other side of the coin of the previous one. Can resources, not just in terms of research but also procurement and other investments, be

shifted across European stakeholders to more productive “societal uses” to influence not only the pace but also the direction of technical change and innovation?

3. Create a strong coordination between research and innovation policies in order to orient innovative activities towards the needs of society. A stage gate approach is suggested, including adequate provision for innovative procurement and pre-commercial procurement practices.
4. Discuss European versus national research policy approaches. The global financial crisis represents a window of opportunity for more radical reflections on the relationship between Community and national research policies. As fiscal pressures mount in each member state, the question of increasing the efficiency of national research funding agencies and of higher

education and public research funding is likely to be raised in coming months and years in many countries.

The opportunities for further deployment of new Community instruments will only be realized if they can demonstrate their particular value for Europe in terms of administrative flexibility and best practice governance. Only then will they play a central role in structuring a new, post-crisis augmented European Research Area (ERA).

### Will the Looming Crisis Be Averted in Time?

If issues of effective governance at EU level are not addressed as ones of absolute priority, the crisis shock might actually go the other way: increasingly questioning the value of Community research and leading to a future ERA that is much more based on the member states’ national efforts at attracting research talent within their own borders.

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## Outlook: Socio-economics & Humanities Re-considered

The stimulating contributions and discussions of this expert group have paved the way for a broad debate at European and world level. This prospective analysis contributes to understanding, anticipating and better shaping future policy and strategy developments in the European Union.

Forward-looking approaches help in building shared visions of the future European challenges and evaluating the impacts of alternative policies. A qualitative and participatory method (‘foresight’) combined with quantitative and operational methods (‘forecast’) allows better long-term policies to develop, like the post-2010 European strategy and the European research and innovation policies. Through its Seventh Framework Programme (FP7) with its ‘socio-economic sciences and humanities’ theme, the European Union is funding forward-looking activities with around EUR 30 million.

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## Sources and References

Based on the report ‘The World in 2025 – Rising Asia and socio-ecological transition’ (Publications Office of the European Union, Luxembourg, 2009) and information from the European Commission.

‘The World in 2025 – Rising Asia and socio-ecological transition’ report is available at [http://ec.europa.eu/research/social-sciences/pdf/report-the-world-in-2025\\_en.pdf](http://ec.europa.eu/research/social-sciences/pdf/report-the-world-in-2025_en.pdf) and [http://ec.europa.eu/research/social-sciences/pdf/the-world-in-2025-report\\_en.pdf](http://ec.europa.eu/research/social-sciences/pdf/the-world-in-2025-report_en.pdf)

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**About the EFP:** Policy professionals dealing with RTD, innovation and economic development increasingly recognize a need to base decisions on broadly based participative processes of deliberation and consultation with stakeholders. Among the most important tools they apply are foresight and forward looking studies. The EFP supports policy professionals by monitoring and analyzing foresight activities and forward looking studies in the European Union, its neighbours and the world. The EFP helps those involved in policy development to stay up to date on current practice in foresight and forward looking studies. It helps them to tap into a network of know-how and experience on issues related to the day-to-day design, management and execution of foresight and foresight related processes.