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THE WORLD IN 2025

Rising Asia and
socio-ecological transition

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“Prediction is very difficult, especially about the future”

Niels Bohr (1885-1962)

“Quand les contextes d’action s’étendent dans l’espace au point d’affecter des hommes à l’autre bout du monde, et dans le temps au point de conditionner le futur d’hommes proches et lointains, il est clair alors que la plupart de nos concepts et de nos pratiques doivent être profondément révisés.”

Daniel Innerarity, 2008

Foreword

Foresight and Forward looking activities have a long tradition in the European Commission. Today several Directorates-General have available the competencies or studies that allow them to better seize the challenges of the future. The European Union Research 7th Framework Programme integrates Foresight and Forward looking activities within the thematic field “Socio-economic Sciences and Humanities” (SSH).

Good European governance is also based upon Foresight and Forward looking exercises: analysis of societal trends in the world and in the Union, setting-up of reference and alternative scenarios, identification of potential breakthroughs (“wild cards”) are all elements that allow decision-makers to highlight their choices under a new perspective.

Reflexive or operational, qualitative or quantitative, participative or based on the expert’s opinions, Foresight and Forward looking activities find their place in the European system. The “Better Regulation” strategy requires, for example, *Impact Assessments* or evidence-based policy-making.

Thanks to effective methodologies (indicators, modelling, Delphi, technological roadmaps, scenario approach, participatory workshops) both wide socio-political issues like globalisation, migrations and employment for example, and specific techno-economic issues (greenhouse gas emission reduction targets, consequences of ageing, technological choices) can be evaluated. The advantages and disadvantages, the benefits and costs of different

political, economic, social or technological options as well as their economic, social and environmental impacts can be estimated.

“The World in 2025” first underlines the major future trends: geopolitical transformations in terms of population, economic development, international trade or poverty. Secondly, it elucidates the tensions: natural resources (food, energy, water and minerals), migrations or urbanisation. Lastly, transitional pathways have been drawn: towards a new production and consumption model, towards new rural-urban dynamics, towards a new gender and intergenerational balance. In summary, the sub-title of this publication “Rising Asia and socio-ecological transition” is explicit and could be an inspiring source for the future strategy of the European Union.

This report has benefited from the discussions of the group of experts set up by the European Commission in 2008, has taken stock of the most recent publications in the field of Foresight and Forward looking activities, and includes most of the reflection of different Commission Directorates-General. I would like to thank the specialists and colleagues who have stimulated or participated in this anticipatory exercise.



Jean-Michel BAER



The recent development of the world context and the strong European commitments to a regulated globalisation argue in favour of a prospective analysis of the **trends** which will shape the international environment, the **tensions** which will structure its development in the coming decades and the **transitions** that Europe could contribute to promote it.

THE TRENDS

The Asian century

In 2025, nearly two thirds of the world population will live in Asia

According to the UN, between now and 2025, the world population will increase by 20% to reach 8 billion inhabitants (6.5 today). 97% of this growth will occur in the developing countries (Asia, Africa).

In 2025, 61% of the world population will be in Asia¹. The population of India will approach the population of China (which will have started to decrease). With a high fertility rate, South Asia will experience a high population growth while this growth will be moderate in South-East Asia and low in East Asia.

In 2025, the population of the European Union will only account for 6.5% of the world population. None of the countries of the Union taken individually will count among the 10 most populated countries of the world. The Union will count the highest proportion

of people of more than 65 years old in the world (30% of the population). In 2030 just over two people will be of an age to work per elderly person compared to four in 2008.

The budgetary impact of ageing (the need for public provision of age-related transfers and services) is expected to be substantial and to increase by more than 5 percentage points of GDP by 2060 in the euro area especially for pension, healthcare and long-term care spending².

The cities in developing countries will account for 95% of urban growth in the next twenty years and will shelter almost 4 billion inhabitants in 2025. The number of the inhabitants of slums at world level will double between now and 2025 to reach more than 1.5 billion³.

Asia, with increasing inequalities, becomes the first producer and exporter of the world

In 2025 world production will almost have doubled (in relation to 2005). The USA-EU-Japan triad will no longer dominate the world, even if the United States preserve their leadership. A more balanced distribution will take shape. The emerging and developing countries which accounted for 20% of the world's wealth in 2005 will account for 34% of it in 2025.

1 *Beets, 2008, EC, 2008a; UN, 2007, and Decreux and alii, 2008*

2 *EC, 2009a*

3 *UN, 2007*



The centre of gravity of world production will move towards Asia⁴. The group made up of China-India-Korea will weigh as much as the European Union. With the addition of Japan, Thailand, Taiwan, Indonesia..., the share of Asia would in 2025 reach more than 30% of the world GDP and would surpass that of the EU, estimated at slightly more than 20%.

Before 2025 **China could become the second world economic power** and India the sixth economic power of the world ahead of Italy and behind France.

In 2030 the “global middle class” (with an income between 4 000 and 17 000 dollars a year) could account for 1 billion people, of which 90% will be living in developing countries. An increase in inequalities in China and in the other Asian developing countries is possible. Growing middle-class also has political and social implications.

In 2025, the volume of trade could double in relation to 2005 with an increasing part of exports coming from the countries of the South (more than 30% compared with 20% in 2005). The positions of Asia and the European Union are reversed. **The EU is no longer the first world exporter.** The exports of the EU (39% of the world volume in 2005) could account for 32% while the share of Asia increases from 29% to 35%. In an increasing knowledge society, a question remains on the growth of intangible assets (like human capital or use of ICT) and the share of these investments among the EU, US and Asia.

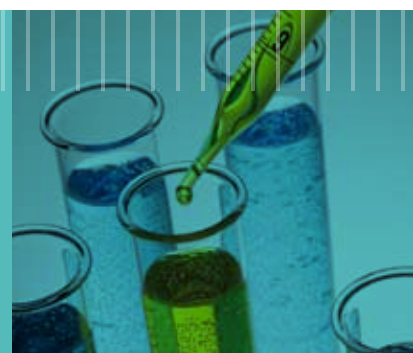
Asia catches up with (and overtakes?) the United States and Europe in the area of research

Research will develop outside the countries traditionally considered as leaders. **If the recent trends continue, in 2025, the United States and Europe will have lost their scientific and technological supremacy for the benefit of Asia** (China and India will have caught up with or even overtaken the Triad) even if they will still appear among the principal world powers as regards R&D⁵. However, their relative weight in terms of R&D investments could strongly fall to the profit, in particular, of emerging Asia. India and China could thus account for approximately 20% of the world’s R&D, i.e. more than the double of their current share.

In many crucial areas to Europe’s future welfare, such as energy saving technologies, research on sustainable development and climate change, health and the spreading of diseases, food safety, security, social sciences and humanities, etc., it is the global access to such knowledge, the development of joint global standards and the rapid worldwide diffusion of such new technologies which is at stake. Ensuring access to knowledge in global networks also means being attractive for researchers and investment from abroad.

4 *Decreux and alii, 2008*

5 *Soete, 2008*



Depending on immigration policies in industrialised countries and on the policies of emerging countries, one can imagine that we will move from today's "brain drain" (mainly towards the United States and the Anglo-Saxon countries) to a more balanced "brain circulation" of young researchers between regions of the world. It has been estimated that 645 000 Chinese students and 300 000 Indian students will study abroad in 2025, a sign that these countries are gaining ground in the global knowledge area⁶. The number of EU students and researchers going to China will have to increase.

Asia will be the main destination for the location of business R&D.

The EU – and especially some regions – succeeds best in the "traditional" scientific fields like chemistry, astronomy, pharmacology, physics and engineering sciences. But the EU is behind the USA in the new and emerging fields (in particular information technology and biotechnologies) although strong regional differences exist in Europe⁷.

Numerous scientific and technological advances (cognitive sciences, nanotechnologies, synthetic biology, surveillance technologies, biometrics, etc.) will give rise to controversies in society. Education (primary, secondary, tertiary and PhD levels) should also take into account these new realities.

Europe, with its wealth of various debate and participative governance experiences, is well equipped to manage them and involve the civil society in research. The absence of an international framework of dialogue on these developments is likely to lead to "free riding" behaviour (e.g. "ethical paradises") and to conflicts.

Poverty and mobility of men and women

International migrations will develop and, without an important inflow of immigrants, the European population would start to decrease as from 2012

If the current trends continue there will be almost 250 million migrants in the world in 2025 of which 65% will be established in the developed countries⁸. The concentration of poverty, especially in megacities (cf. slums), will be a major source of social destabilization.

⁶ *University World News*, 24 November 2007

⁷ *EC*, 2008b

⁸ *Gnesotto and Grevi*, 2006



Migrants are driven primarily by economic reasons or by political instability (refugees, asylum seekers). The number of immigrants living in Europe is estimated at 64 million (i.e. 9% of the population). In North America and in Oceania the percentages are higher.

In the future, immigrants could also move for ecological reasons, related, for example, to natural disasters due to climate change (150 million “climatic refugees” in 2050 according to the IPCC).

Without an important inflow of immigrants, the European population would start to decrease from 2012. With the estimates of net immigration of the last EUROPOP2008 scenario, the beginning of the decline is pushed back to 2035. The decrease of active population already began in many regions of Europe.

A third of the world population is undernourished; on the other hand obesity increases in developed countries

Almost one third of the population of the planet has a diet which suffers from various qualitative deficiencies (deficiencies in proteins, etc.)⁹. There are long-term change factors which influence the cost of food at world level (high demand, weather, fuel consumption, financial speculation, decreased stocks, and increases in oil and fertilizer prices) and which could lead to its increase in the future.

On the other hand, more than a third of the population of the USA is obese. If the tendencies of the last years experience a linear growth and if there is no intervention, the prevalence of obesity in EU-27 countries will thus reach 20% in 2020. At world level, the number of patients suffering from diabetes (primarily “type 2 diabetes”) has increased from 30 million in 1985 to 246 million today. It could affect more than 350 million people in 2030 if nothing is done to modify this trend.

In emerging countries (cf. China, Mexico, etc.) more and more people will suffer from ‘developed’ diseases. Malnutrition and obesity will coexist in several emerging countries putting high pressure on health systems.

⁹ OECD-FAO, 2008 and WHO, 2007 and 2008



The global health situation is improving but new risks are emerging

People are on the whole in better health, more prosperous and live longer than 30 years ago but serious inequalities exist between countries and within countries as regards access to health care¹⁰.

Infectious diseases will always dominate in the developing countries. As the economies of these countries develop, the non communicable diseases will become more important. That will be mainly related to the adoption of “Western” ways of life and of their risk factors – smoking, high fat nutrition, obesity and lack of exercise. In the developed countries, the non communicable diseases will remain dominant.

The extreme mobility, interdependence and interconnection of today’s world create a multiplicity of conditions favourable to the rapid propagation of infectious diseases and of the radio-nuclear and toxicological threats.

A growing urban concentration in many developing countries could amplify the risks of health deterioration and of propagation of diseases. Non traditional security issues like pandemics are coming up.

Since the 1970s, new diseases have been discovered, at the unprecedented rate of one per year. There are now almost 40 diseases which were still unknown a generation ago. In addition, the World Health Organization confirmed that more than 1 100 health events of epidemic nature occurred in the world during the last five years.

If prevention and effectiveness remain at their current level, the above-mentioned National Intelligence Council report stipulates that the number of patients affected by AIDS will increase from 33 million today to 50 million in 2025. In this scenario, 25 to 30 million people will need retroviral treatments just to be able to survive this particular year.

10 WHO, 2007 and 2008



Increasing scarcity of natural resources, vulnerability of the planet

The new geopolitics of energy is characterized by a relative balance of the strategic importance of the Middle East, Russia and the Caucasus

According to the International Energy Agency in 2025 the world energy demand will have increased by 50 % in relation to 2005 and will reach 15 billion tons oil equivalent.

Oil production will have started to stagnate (peak), coal is expected to become the first energy source between now and 2050. But in 2025 oil will still largely be in the lead.

In the trend scenario of the International Energy Agency, it is envisaged that from now to 2030 coal consumption, in particular for power stations in China and India, will increase by more than 50%. In this trend scenario the share of carbon-based energy should remain very largely dominant in 2030: Fossil fuels (oil, coal and gas) account for 80 % of the world's primary energy mix while nuclear (fission) and renewables (hydro, wind, solar, etc.) account for 10 % each¹¹.

In the hypothesis of an accelerated scarcity of oil and gas, with much higher prices, there will be an increased use of other energy sources which present risks or have little interest in combating climate change: oil shales, liquefied coal, first-generation bio-fuels, firewood resulting from deforestation...

The security of energy supply will increasingly be called into question in Europe. The EU will be more dependent on external sources than in 2005 (if policy does not change). **In 2030, the Union will import almost 70 % of its energy needs.**

To encourage alternative and green energy (cf. EU target of getting 20 % of renewables by 2020) without putting too much pressure on consumers, oil – and therefore gas – prices should be at a sufficient level, (i.e. approximately 70 to 80 dollars a barrel. But, except if specific regulatory mechanisms are enforced, stabilisation around such a level is improbable.

The new geopolitics of energy (reduction in the weight of oil for the benefit of other kinds of energy and renewable energy) could give a greater weight to Russia (gas), China (coal) and Kazakhstan while starting the relative decline of the strategic importance of the Middle East (except perhaps Iran which could become the next gas superpower)¹².

¹¹ IEA, 2008

¹² Theys, 2008



More than 50% of the major ore reserves are located in very poor countries

For certain metals of high technicality, the EU is very dependent on imports and access to these raw materials becomes increasingly difficult. More than 50% of the major ore reserves are located in the countries having a per capita income of 10 dollars or less per day¹³. Many countries that are rich in resources apply protectionist measures which stop or slow down exports of raw materials to Europe in order to support their downstream industries.

Half of the growth of the consumption of these products from 2002 to 2005 is due to China which increased its investments in the mining industries of the African countries (cf. difference between China and EU foreign affairs policy that is taking care of human rights and democracy).

The recycling of raw materials will become an important industrial activity.

Three billion people will be missing water in 2025

1.1 billion inhabitants do not have access to clean water. Between 1970 and 2000 water available per person living on earth decreased from an average of 12 900 m³ to less than 7 000 m³. In 2025 it is estimated that 3 billion people will not have water¹⁴.

Rather than water-related conflicts (cf. Israel/Palestine), one can expect policies aiming at safeguarding water quality and at financing access to drinking water.

Today 2.6 billion individuals – from which millions in city slums – do not have sanitation systems.

13 EC, 2008c

14 UNEP, GRID-Arendal, 2008



In order to be effective in its efforts to slow down climate change it is essential that the example of Europe be taken by the other continental powers

The progress achieved during the last twenty years in the fight against climate change remained limited in comparison to what a “successful transition” would suppose a priori. Measurements taken by scientists since 2000 have shown that the world emissions of carbon dioxide grow now more quickly than the most pessimistic scenario of IPCC. A warming of less than two degrees in a century seems now quite unlikely¹⁵. The European objective of not exceeding an average 2 °C temperature increase (in relation to the preindustrial era) seems difficult to attain.

The strategies of the major powers and of the emerging countries regarding post-Kyoto vary. At present, only Europe is ready to enter into binding and quantified commitments, unilaterally (20% of reduction of the emissions between now and 2020 in relation to 1990 and 30% in the event of a global agreement). Europe is the only region to propose long term ambitious objectives (an overall 50% reduction of emissions by 2050 and reductions between 60 and 80% for the most developed countries).

In 2025, if Europe is not followed by the other continental powers, the impact of its efforts to slow down climate change will remain marginal on the world CO₂ emissions. In any case, adaptation strategies are no options; they are necessary.

15 IPCC, 2007; and Theys, 2008



TENSIONS

Tension between the current methods of production, of consumption and the future availability of non renewable resources

The above-mentioned trends can interact and generate important tensions.

Is the current method of production capable of meeting the needs of a population of 8 billion people given the limitation of the resources available and its negative effects on the environment? Are the consumer's preferences (demand-side) having a prevalent impact? Is technology developing sufficiently fast? Are prices and taxation really modifying behaviours? If from tomorrow all the citizens of the world were to behave the same as the population of the USA with its food/water/energy consumption model, the highest per capita in the world by far, these goods would become rare and this could cause a serious worldwide crisis and explosive increase in their relative costs.

These tensions will affect food consumption, access to water, raw materials and energy.

Food: Malnutrition affects 2 billion people today. With the predicted growth of world population, one can fear that in 2025, this number will increase (cf. Africa and South Asia) in particular as food demand in emerging countries increases. Moreover, supply is likely to be reduced because of the reduction of agricultural land, of irrigation problems and of climate change, leading to increases

in food towards levels that are too high for the poorest groups. According to the OECD and FAO, agricultural prices will remain, on average, higher in the medium-term than during the past decade. Food-importing countries with land and water constraints but rich in capital, such as the Gulf States as well as countries with large populations and food security concerns such as China, South Korea, and India, are buying or leasing farmland abroad. Large-scale land acquisitions can be seen as an opportunity for increased investment in agriculture for developing countries lacking the necessary capital. But unequal power relations in the land acquisition deals can put the livelihoods of the poor at risk¹⁶.

Will the determinants of supply of agricultural products (essentially productivity gains) be able in the end to win over those which underlie the growth in demand (connected to human and animal feed, and to industrial use, such as bio-fuel production)? The latter would not compete – if bio-fuels of the second generation are available in 2025 – with agricultural products used for the human and animal foodstuffs. Otherwise the tension between food consumption and agro-fuels could be exacerbated. Nowadays, the production of bio-fuels requires the use of 4.5% of the world's cereals and of 7.6% of oilseeds. These quantities can be even higher for specific markets: 30% of the American cereals are transformed into ethanol. 40% of European oilseeds are used for biodiesel production.

¹⁶ IFPRI, 2009



Water: The need for water will increase sharply with the increases in world population and the rise in the standard of living in emerging countries, creating strong tensions with the quantities available which are likely to decrease due to climate change. If it is true that the desalination plants, first located in the Middle East (producing today half of the desalinated water of the world), proliferate around the Mediterranean, in Asia, in Australia and in California, the first generation of desalination technologies will use a great deal of combustion energy, and thus contributes to CO₂ emissions. Will desalination technologies with the help of renewable energy be developed on a large scale in time for these tensions to be reduced?

The marine environment is also to be mentioned. Seas will be considered as new territories. The Arctic for example or the deep sea issues are new challenges for off-shore energy or for pharmaceutical discoveries. Climate change will also have impacts on coastal demography and de/re-localisation of populations in several parts of the world.

Raw materials: The markets for raw materials follow a cyclic model based on supply and demand. From the beginning of the current century, a sharp increase in demand, primarily pulled by strong growth of the emerging

economies, had as an effect a tripling of the prices of metals between 2002 and 2008. In particular China accounted for more than 50% of the growth of the world consumption of industrial metals between 2002 and 2005. While the current effects of the financial crisis have led to a short-term slowdown in the growth of overall demand for raw materials, one expects that the growth levels of emerging countries in the future will maintain a high pressure on the demand for raw materials while expenditures in exploration – even if they have recently increased – will not be able to follow the rates of increase in demand.

Energy: Tension between rapidly growing demand and restricted supplies due to the resources available (oil, gas) or their polluting nature (coal) should cause a constant rise in energy prices that could be contained by an increased use of renewable energy as well as progress in the reduction of energy consumption. However around 2025 the energy question should remain a source of major tension (economic and geopolitical) due to the likely “oil peak” and the energy needs of a world of 8 billion individuals.

Briefly speaking, the tensions will be both between production and consumption patterns and between production/consumption patterns and natural resources.



Tensions between a general and simultaneous process of increasing economic interdependence and differentiation

The increasing economic interdependence between the principal poles of the world and between these poles and their peripheries (reflected by an increase in exchanges and in particular in the trade flows in the field of energy and of agricultural products) is accompanied by tensions related to:

- Different political approaches concerning global governance including human rights and the place of emerging countries (cf. "G20"), the need to manage global goods, to initiate projects of common interest, to encourage democracy and to fight totalitarianism and populism;
- Different economic approaches: after a period where world capitalism seemed to model itself gradually on the model of market finance, the latest report of the National Intelligence Council in the United States ("Global Trends 2025") foresees, for the coming decades, at economic level, a *coexistence and competition between several types of capitalism*, some of the emerging and oil producing countries promoting state capitalism; to illustrate that, one can mention, for example, that the number of sovereign funds increased from three in 2005 to more than forty today, and the amounts that they mobilise increased from 700 million to 3 trillions of dollars over the same period¹⁷;
- Territorial or cultural claims within the world's growth poles or at their periphery, if the political, economic and social cohesion of these poles is not ensured or increased;
- The non-inclusion in the operation of the world's "inter-poles" of the marginalized countries: fifty-six countries count for less than 0.01% of world trade; a third of the world population lives in a state of poverty; if nothing is done to reverse this tendency in the next 20 years, 38% of the African population risks finding itself in a state of extreme poverty; in other words, even if poverty regresses considerably overall, the wealth differential between the rich and the poor will progress, within nations as well as between nations.

Tensions between spatial proximity in the context of accelerated urbanisation and cultural distance

The rapid growth of cities and the growth of urban concentration, accompanied by a stronger connectivity at the local and even international level (cf. information and communication technologies), will cause at the same time very complex (in particular ecological and social) challenges and opportunities (for example, economic and cultural ones).

¹⁷ A recent paper (Rölller and Veron, 2008) shows that a growing share of inward investment into the European Union, including but not limited to sovereign wealth funds (SWFs), will come from countries with diverse political regimes with which Europeans may not always see eye-to-eye.



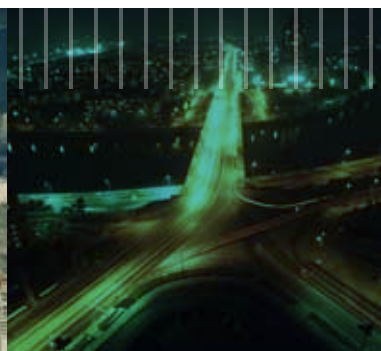
Tensions will appear between cosmopolitanism and difficult integration of foreigners: An increasing number of inhabitants will become accustomed to dealing with cultural complexity and mobility. New cosmopolitan centres will emerge. English will remain the dominant language for world services and trade. The promotion of multilingualism and the domination of two or three “international” languages will probably coexist in a different way from one country to another.

Numerous studies show the positive impact of international migrations on the transmitting countries and on the countries of destination. Nevertheless there is a topic which is regularly at the centre of the public debate –the social adjustments to be made by societies which welcome immigrants from another ethnic origin, the values of which can be very different to their own¹⁸. But a success in the immigrants’ integration in Europe could mean an increase in the active population and a reduction of social problems.

To the recollection of these observable tensions one could add examples of bifurcations and other unforeseeable turbulences (“wild cards”) which could shape the next two decades:

- Persistence of the financial and economic crisis beyond 2010;
- A major war (for the years 2010-2020 of strong turbulence);
- A technological disaster which could influence the choices of priorities of governments (e.g. a nuclear accident like Chernobyl blocking the nuclear option for many years);
- Pandemics with devastating effects;
- The collapse of a major urban area in a developing country;
- The blocking of the European Union as a result of the difficulties to initiate new economic governance and political decision mechanisms;
- A breakthrough in the field of renewable energy production;
- A new wave of technological innovations and a new rapid growth cycle drawn by emerging countries;
- Sudden or even brutal acceleration of the (nonlinear) impacts of climate change;
- 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.

18 ILO, 2004



THE MAJOR TRANSITIONS

Stabilising the world, recognising the new key-actors

The transition towards a multi-polar world and world governance

From 1945 to 1990, the world was bipolar (USA-USSR). From 1990 to 2008, the USA constituted the only superpower at world level. From 2008 to 2025 it is likely that the world will become truly multi-polar (and dominated by an “oligopoly” gathering the countries of the G8, of the G20, etc, reflecting the new balance of power and the loss of America’s leadership). If the United States remain the first military power, the scientific and technological catching-up of some states, the new irregular war tactics and the increasing importance of cyber-attacks will weaken their freedom of action (NIC report).

The new geopolitical situation which takes shape with the rise to power of emerging countries will probably have as a counterpart a new organisation of international relations. The EU aims at leading by example. A common governance system on a world level is likely to emerge (transition from the nation state to new legal-political entities) but one does not know how it will evolve. The creation of an economic level playing field at world level will perhaps lead to a democratisation of (authoritarian) regimes of state capitalism countries but one cannot exclude upheavals in the process.

The politico-cultural transition towards a new universalism

Cultural and political heterogeneity at world level at a time when Europe’s economic influence is relatively declining will require the concepts on which international relations rested until today to be revisited. *Collective emotions* became an important variable of international relations: in the United States after 11 September 2001 (the Bush Administration’s “religion of democracy”), in the streets of the Middle East (the “demonization” of “the West”)¹⁹. The diversity of the EU could be an asset in international relations between increasingly knowledge-based societies.

19 Gnesotto, 2008



Europe can prove that it is relatively independent of any other region of the world and that it struggles for the independence of the others and for their cooperation for the common good. To this end it can rest on the fact that it promotes a “constructivist” logic of a projected common future (“community of destiny”) with an opening to the world. Recent philosophical work²⁰ as well as concrete experiences within democratic societies²¹ provide elements for the development of a new universalism.

The transition towards a “large integrated Europe” and a “global Europe”

The multi-polarity of the world to come could have as an effect a transition towards a new “widened and diversified cohesion” perspective involving the European Union and its Eastern and Southern neighbourhood. This could even imply to enlarge the model of today’s cohesion policy. But the question of the borders of Europe, the movement of inclusion (of some) and of exclusion (of others) which illustrates it arouses suspicions on the part of those who feel threatened by the EU-USA alliance.

Beyond its immediate neighbourhood, it has been estimated that the euro area maintains relations of various intensity with 80 countries, in the Western Balkans, the former-USSR, the Mediterranean and sub-Saharan Africa, countries on which it depends for energy supply and its raw materials²².

Draw on the ecological and demographic challenges to invent a new development model

The transition towards a new “socio-ecological” production model

Environment-related requirements and the dependence on raw materials produced abroad will push the Union towards a new way of producing, of consuming, of living, of moving, etc. It will have to step up its efforts to become the uncontested leader at world level of this “socio-ecological” transition, in particular as the world market for “green” goods and services is expected to double from 1 370 billion dollars a year currently to 2 740 billion dollars around 2020.

The “oil peak” could be reached in 2025 or a few years later. This will call for an organised transition towards the “after-oil” era. The energy transition requires both a technological and a socio-economic effort. At the technological level, the renewable energy resources, capture and storage of CO₂, nuclear power and hydrogen and fuel cells must be mentioned. As regards economic incentives, taxation, the market for pollution permits and the internalisation of external costs should be mentioned.

20 Jullien, 2008

21 Bouchard and Taylor, 2008

22 Mazzafero and alii, 2002



But it is the changes in social behaviour which will contribute, if they are stimulated by appropriate policies, to a drastic reduction in energy consumption, and this remains the major objective. Consumers will insulate their houses, replace their car by a smaller one, they will walk, they will use public transport. Companies will reorganise their logistics, they will adapt their products and processes, they will relocate certain activities, they will locate their warehouses closer to train stations, they will substitute wood for plastics, they will produce more easily repairable products or will recycle them more. States will develop spatial planning approaches that take into account the increasing transport costs. They will encourage renewable energy, "clean" fossil fuels technologies and nuclear energy.

In order to finance these transformations (the socio-ecological transition and the urban transition mentioned below), it is necessary to evolve from the current financial system towards a system that gives priority to the long run and relies on both public and private financial resources.

The urban transition and the new "territorial dynamics"

In 1975, the numbers of people living in cities in countries in the North or South were virtually equal (700 million for the former, 820 for the latter). Thirty years on, the ratio is nearly 1 to 3: the cities of the North grew by only 30% in the last three decades compared to 400% for those of the South. In 2050, this ratio will be 1 to 5 as almost 80% of the world urban population will be in the countries of the South. And especially in Asia where will be located: 11 out of the 20 first megacities of the world (those with more than 10 million inhabitants); 17 of the 30 towns of 5 to 10 million inhabitants and 184 of the 364 cities between 1 and 5 million.

Based on work of the OECD and the International Energy Agency one can estimate on a world level at 200 trillions of dollars from now to 2030 the amount of investments to be devoted to infrastructures and housing – out of which approximately 25 trillions for energy, 45 for water, waste, transport and telecommunication infrastructures and approximately 120-130 for construction, housing and the construction of industrial and commercial buildings. These are, for the Europeans, major opportunities to collaborate with their partners for sustainable development²³.

23 Theys, 2008



The demographic transition and “active ageing”

In 2025 a period of stabilisation of world population growth will begin and its decline is envisaged as from 2050. The expected ageing of the European population will lead to new ways of life and to intergenerational arbitrations which will necessarily have an international dimension.

The approach towards ageing and the retirement age will depend on longer life expectancy and financial needs. New markets (on which Europe could play its part given its strengths in pharmaceuticals, medical equipment and cultural products) and new social services will be developed to meet the needs and problems of elderly people.

As underlined in the EU Ageing report, an increase of productivity will be necessary – also in crisis period – to face the tensions in public finances.

The European Union and its Member States will be confronted in the coming decades with major challenges: today the financial, economic and social crisis of which one does not know the duration and the implications, tomorrow the new industrial and trade situation, pressures on supplies and energy security, climate change, the technological revolutions, increased ageing of the population, international migrations...

If the EU wants to be able to promote the six transitions quoted above, an additional transition will be needed in the field of policy-making: towards a better coordination between national and EU policies as well as between different policy areas.

The first fifty years of European integration were that of the reunification of a continent deeply affected by two World Wars and the Cold War. The current globalisation and its future uncertainties call for an essential contribution from Europe.

On the “what to do?” Europe contributes by launching the debate on sustainable development and on the importance of social cohesion in globalisation (a new socio-political agenda?).

On the “how to do?” it constitutes a unique laboratory of globalisation from which other regions of the world are already taking inspiration.

Future challenges call for a consolidation and a strengthening of the European project and for its dynamic integration in the world.



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Indicative bibliography

Michel AGLIETTA, 2008, *La crise, Pourquoi en est-on arrivé là? Comment en sortir?*, Editions Michalon

Samir AMIN, 2008, *Au-delà de la mondialisation libérale: un monde meilleur ou pire?*, 23 pp. (*)

Gijs BEETS, *The world in 2025: Demographic issues*, September 2008, 18 pp. (*)

Gérard BOUCHARD, Charles TAYLOR, 2008, *Building the future – A time for Reconciliation*, Commission on Accomodation Practices Related to Cultural Differences, Gouvernement du Québec

João CARAÇA, 2008, *2025, A world too different from today?*, 12 pp. (*)

Yvan DECREUX (CEPII), Christophe GOUEL (INRA – CEPII) and Hugo VALIN (CEPII), *The World in 2025, Economic projections with the MIRAGE model*, Intermediary report for the European Commission – Directorate-General for Research, 5 September 2008, 34 pp.

European Commission, 2008a, *Demography Report 2008: Meeting Social Needs in an Ageing Society*, Commission Staff Working Document

European Commission, 2008b, *Regions 2020, An assessment of future challenges for EU regions*, Commission Staff Working Document

European Commission, 2008c, *The Raw Materials Initiative – Meeting our critical needs for growth and jobs in Europe*, Communication from the Commission

European Commission, 2009a, *Ageing Report, Dealing with the impact of an ageing population in the EU*, Communication from the Commission

European Commission, 2009b, *The World in 2025 – Contributions from an expert group*, Brussels

ESPON, project 3.2, *Spatial Scenarios and Orientations in relation to the ESDP and Cohesion Policy*, Final Report, October 2006

Lionel FONTAGNÉ, 2008, *The world in 2025: Macroeconomics, Growth, Trade*, 8 pp. (*)

Thierry GAUDIN, *The World in 2025, A challenge to reason*, September 2008, 81 pp. (*)

Nicole GNESOTTO and Giovanni GREVI, 2006, *The New Global Puzzle, What World for the EU in 2025?*, European Union Institute for Security Studies

Nicole GNESOTTO, 2008, *Le monde en 2025, Indicateurs Défense et sécurité: vers davantage d'insécurité*, 6 pp. (*)

Josephine GREEN, 2007, *Democratizing the future, Towards a new era of creativity and growth*, Philips (*)

International Energy Agency, 2008, *World Energy Outlook*, Paris

International Labour Office, 2004, *Towards a fair deal for migrant workers in the global economy*, Report VI, 92nd Session

International Labour Office, 2008, *Global Wage Report 2008/09: Minimum wages and collective bargaining: Towards policy coherence*, Geneva

Intergovernmental Panel on Climate Change, 2007, *IPCC Fourth Assessment Report: Climate Change*

François JULLIEN, 2008, *De l'universel, de l'uniforme, du commun et du dialogue entre les cultures*, Editions Fayard

Irina KUKLINA, 2008, *The World in 2025: focus on Russia*, 4 pp. [*]

Francesco MAZZAFERRO, Arnaud MEHL, Michael STURM, Christian THIMANN and Adalbert WINKLER, 2002, *Economic relations with regions neighbouring the euro area in the "euro time zone"*, European Central Bank Occasional Papers n° 7

Geoff MULGAN, 2008, *Europe 2025: Discovering the future through action as well as analysis*, 7 pp. [*]

National Intelligence Council, Office of the Director of National Intelligence of the USA, 2008, *Global Trends 2025: A Transformed World*

OECD-FAO, 2008, *Agricultural Outlook 2008-2017*

Richard PORTES, 2008, *The international financial system in 2025*, 2 pp. [*]

Lars-Hendrik ROLLER and Nicolas VERON, 2008, *Safe and Sound: An EU approach to Sovereign Investment*, BRUEGEL Policy Brief

Mu RONGPING, Ren ZHONGBAO, Song HEFA, Qu WAN, 2008, *Innovative Development and Innovation Capacity-building in China*, 22 pp. [*]

Luc SOETE, 2008, *Malthus' Revenge*, UNU-MERIT, University Maastricht, 16 pp. [*]

Uno SVEDIN, 2008, *Towards the gardening of the planet in the period of the anthropocene, The world as socio-bio-space (SBS), future options and challenges*, 23 pp. [*]

Jacques THEYS, *Le Monde en 2025, Les Quatre Transitions*, September 2008, 28 pp. [*]

Loukas TSOUKALIS, 2008, *Thoughts on Governance and Power in the World System*, 4 pp. [*]

UN, 2007, *World population ageing 2007*. Department of Economic and Social Affairs: Population Division. ST/ESA/SER.A/260. New York: United Nations

UN, 2007, *World Urbanization Prospects: The 2007 Revision Population Database*. Department of Economic and Social Affairs: Population Division. New York: United Nations

UNEP, GRID-Arendal, 2008, *Vital Water Graphics*, 2nd Edition

Joachim VON BRAUN and Ruth MEINZEN-DICK, 2009, *"Land Grabbing" by Foreign Investors in Developing Countries – Risks and Opportunities*, IFPRI Policy Brief n°13

World Bank, *World Development Report 2009, Reshaping Economic Geography*

World Health Organization (WHO), 2007 and 2008, *The World Health Report*

WWF, 2008, *Living Planet Report 2008*

[*] contributions from members of the expert group "The world in 2025".

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Recent developments in the world and the strong European commitment to a regulating globalisation argue in favour of a forward looking analysis. "The World in 2025" first underlines the major future trends: geopolitical transformations in terms of population, economic development, international trade and poverty. Secondly, it identifies the likely tensions: natural resources (food, energy, water and minerals), migrations or urbanisation. Finally, it defines possible transitional pathways: towards a new production and consumption model, towards new rural-urban dynamics, towards a new gender and intergenerational balance. "Rising Asia and socio-ecological transition" is the explicit sub-title that could be an inspiring source for the future strategy of the European Union.

