



European Strategy and
Policy Analysis System

2030

Global Trends to 2030: Can the EU meet the challenges ahead?



AN INTER-INSTITUTIONAL EU PROJECT

Global Trends to 2030: Can the EU meet the challenges ahead?

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Introduction

As the world is experiencing change at a speed ...
Proverbs 29:18

As the world is experiencing change at a speed and with an intensity that often seems unprecedented, the pace and quality of our collective analyses of such change should follow suit. The European Strategy and Policy Analysis System (ESPAS) project aims to help the European Union (EU) identify the main global trends, assess their implications and review the resulting challenges and policy options confronting decision-makers. At the same time, the project also signals a readiness on the part of the European Union to engage with our international strategic allies, counterparts and experts, from around the world, in order to try to reflect on, and ideally address together, those common global trends and challenges.

This text draws extensively on four previous, more detailed, reports drawn up under the ESPAS process to date ⁽¹⁾, as well as on discussions at the annual ESPAS conferences, and on an extensive review of the existing literature on global trends. It seeks to distil into compact form the main trends that will shape the global geo-political, economic and social systems of coming decades, with special reference to their

⁽¹⁾ The four reports commissioned by ESPAS are:
= EUISS report for ESPAS, *Global Trends 2030 — Citizens in an Interconnected and Polycentric World*, 2012;
= CEPS report for ESPAS, *The Global Economy in 2030: Trends and Strategies for Europe*, 2013;
= RAND Europe report for ESPAS, *Europe's Societal Challenges: An analysis of global societal trends to 2030 and their impact on the European Union*, 2013;
= FRIDE and Chatham House (RIIA) report for ESPAS, *Empowering Europe's Future: Governance, Power and Options for the European Union in a Changing World*, 2013.

implications for the Union in the period ahead. We hope that the report will be of interest to its readers and will benefit the European Union, its Member States and its citizens alike, as well as Europe's international partners, by giving useful insights into, and suggesting possible responses to, the big global issues of our time. In doing so, it identifies key questions for policy-makers to address in the period ahead.

Representatives of the four institutions and bodies involved in the ESPAS's work — the European Commission, the European Parliament (EP), the General Secretariat of the Council of the European Union (GSC) and the European External Action Service (EEAS) — will continue to cooperate actively in coming years, to ensure that this kind of analysis of global trends is further deepened in the service of informed policy-making.

ESPAS was launched as a Pilot Project and subsequently became a Preparatory Action under the 2010 and 2012 European Union budgets respectively. This unique inter-institutional process aims at identifying and sharing analysis on the long-term global trends that are likely to face the European Union in the coming decades, as well as the potential policy challenges which may result. The goal is to try to develop a new capacity for strategic foresight within and for the European Union.

Under the guidance of an inter-institutional task force, the ESPAS process has so far looked specifically at major global trends that are already apparent or may develop over the next fifteen years, concentrating on three main areas: i) economics, ii) society and iii) governance and power. In 2012 it commissioned a general report from the European

Union Institute for Security Studies (EUISS) on overall global trends, then established a working group for each of the three specific fields, commissioned further research reports from leading think tanks in each field in 2013 and subjected all the evolving work to discussion and review at successive annual conferences (in 2011, 2012 and 2014).

The texts of the various reports, details of ESPAS discussions, and the composition of the ESPAS task force and working groups can all be found at a dedicated website, www.europa.eu/espas. A parallel online depository of papers from many sources on global trends can also be accessed at www.europa.eu/espas/orbis, an off-shoot of the ESPAS process.

The budgetary background foresees that the *'ESPAS system should be designed to provide regular input to the European Union institutions to nourish long-term and medium-term strategic thinking. Such input would include a detailed*

appraisal of long-term trends and submission of the report to the incoming Presidents of the European Union institutions looking at challenges and options for the period 2014-19'.

A general note of caution should, of course, be attached to all work on future trends. Predictions rarely prove wholly accurate, since no trend is immutable; and unforeseeable events can, and often do, intrude dramatically to alter the course of history. Yet foresight exercises remain valuable. They allow us to view the present from a wider perspective and to understand it better. They make it easier to take early corrective action against potentially negative developments and to mould the policy environment in a more positive way. By providing predictions of what *could* happen, they force issues into the open and invite policy-makers to address them and to find solutions that are in the long-term interests of society. To the extent that Europe's future lies in the hands of Europeans, foresight is a key tool to help us shape that future in a positive way.

Executive Summary

Want of foresight, unwillingness to act when action would be simple and effective, lack of clear thinking, confusion of counsel until the emergency comes, until self-preservation strikes its jarring gong — these are the features which constitute the endless repetition of history.

Winston Churchill

The powerful forces governing the global transformation that started in the early 1990s are reshaping the world ever more strongly and rapidly. The world is becoming steadily more complex, more challenging and also more insecure.

Part one of this report sets out five global trends:

1. The human race is growing older and richer with a growing middle class and widening inequalities.
2. Economic weight and political power is shifting to Asia. Sustained development of the world economy is becoming more vulnerable to challenges and to weaknesses in the globalisation process.
3. A revolution in technologies and their applications transforms societies in almost every aspect. Digitisation is the invader and radical, disruptive change the consequence.
4. Managing scarcity of resources becomes an increasing challenge, with rising energy consumption and shifting patterns of production.
5. The interdependence of countries, now a fact of global life, is not matched by strengthening global governance. The world order becomes more fragile and unpredictable.

Part two of the report looks at three structural 'revolutions' that are forging a more complex and insecure world – economic and technological, social and democratic, and geopolitical – that the authors believe these trends may bring about, as well as the challenges that they may imply for the European Union.

1) Three revolutions forging a more complex and insecure world

■ **An economic and technological revolution:** the convergence of technologies and the proliferation of tools available to large multitudes will transform economies and societies. Huge opportunities will result in terms of productivity, welfare gains and individual empowerment. However, societal disruptions may include a further rise of unemployment, increasing inequalities and the impoverishment of the middle classes in developed countries, including in Europe.

- **A social and democratic revolution:** More empowered and better connected individuals will be more creative, more dynamic and less wedded to life-time jobs, but they will also be more demanding and critical. Evolution such as this could allow countries to fundamentally rejuvenate their 'social contracts' and to invent new forms of governance. But it will make it more difficult to design collective agreements and to shape common approaches through the traditional structures, such as political parties or trade unions. Anti-establishment feeling may rise further, as well as recourse to less traditional and more local initiatives. Pressure will increase for greater accountability and transparency at the different levels of governance.
- **A geopolitical revolution:** Asia's rise looks set to continue and the roughly two centuries of global dominance by the European continent and the United States are drawing to a close. Together with the emergence of other powers in Africa and Latin America, this will lead to an increasingly multi-polar world. Globalisation will continue but will be increasingly driven by new actors with different values. More confrontational modes between key actors may result.

The post-war multilateral framework may come under increasing pressure, putting at risk the collective ability to manage increasing interdependence in an efficient manner. The international community is struggling to uphold and restore ever more numerous weak and failed states. At the same time, destructive non-state actors may increasingly take advantage of the loopholes.

As a result of these three revolutions, the coming decades are likely to bring growing turbulence and even radical change. The effects of a possible further acceleration of climate change may complicate the situation even more and exacerbate the negative consequences of the trends described above. The overall context will be daunting, since the challenges will be interconnected and too big for individual states or even regions to address. On a global scale, the resilience of almost every major state and organisation is likely to be severely tested.

In this climate of uncertainty, volatility and systemic risk, the scope for negative game-changers is considerable. Possibilities include a massive financial and monetary crisis, a major pandemic, a large-scale energy crisis, a conflict in the Asia-Pacific region.

Positive game-changers are also possible, sometimes in response to such risks — such as a truly inclusive digital revolution, a major energy revolution, a transformed transatlantic relationship, a reinvented multilateral system and a renewed European Union.

2) Implications for the European Union

The three 'revolutions' sketched above will have significant implications for the European Union and its Member States, both in the period between now and 2030 and beyond, and for immediate policy choices in the five years ahead.

The European Union faces these major trends and challenges at the start of a new political and economic cycle. It has considerable assets at its disposal: cultural diversity, highly-educated human capital, excellent research capacity, a developed infrastructure, strong social cohesion and a functioning decentralised political system operating at many levels and based on the rule of law and individual freedom. But all these assets need active fostering for Europe to remain at the forefront of human development. 'Business as usual' in terms of economic and social governance and external resilience will not suffice for Europe to hold its ground in a rapidly changing and more demanding world.

Inevitably, the European Union's future faces risks and challenges. The main ones are internal and turn on the need to rebuild trust in the European Union and to deliver concrete and beneficial results for its citizens.

Resolving the equation of European growth over the next twenty years will not be easy. Financial leverage in Europe and elsewhere in the world will be limited by high levels of debt. The engine of the emerging countries may not be powerful enough to drive the world economy forward fast, and may be further weakened by significant domestic challenges and the rapid ageing of their populations. It is dangerous, therefore, to wait for growth to return like a cyclical phenomenon. Growth can no longer come from simple catching-up or from a simple Keynesian approach. It has to be achieved without debt. The completion of the Single Market and of a genuine Economic and Monetary Union play an important role in this operation. Success will also depend on the European Union's capacity to anticipate, to be more flexible, more agile and more inclusive. At the same time it has to act strategically and foster a long-term perspective among actors in both the public and private sectors.

The report identifies five main and interlinked policy 'challenges' for the European Union, to be addressed in the following years. It does *not* set out prescriptive policy initiatives, but it rather seeks to frame a number of possible strategic challenges that decision-makers may face. These challenges to be dealt with call for a reshaping of the economy, promoting a society of change and innovation, combating the rise of inequality and growing exclusion, enabling individual empowerment and democracy and enhancing the international role of the European Union.

(i) Reshaping the economy

- **Europe needs a new platform for sustainable, durable economic growth.** There are real dangers in regarding growth as a cyclical phenomenon that is bound to return. High debt levels are a serious handicap in Europe and elsewhere in the world and the emerging countries are not necessarily destined to be powerful engines for the global economy. The goal of a European renaissance can mostly be delivered by innovation, not merely digital, not only technological, but also societal and in the design and practice of governance.

- **Mobilisation of public and private investment** to help to boost Europe's economy. A stronger convergence of public

and private investment, among other things tapping into private savings, would stimulate job-creation and help to sustain the European model of a social market economy.

- **Completion of the single market.** The single market in goods and services is far from complete, mainly because of the resistance of actors with vested interests in the status quo. Indeed, even where it is nearer to completion, such as in the industrial sector, it needs regular updating to take account of market developments. Gaps are even increasing in the service sector, where potential economic growth is greatest. Strong initiatives are required to reverse such trends.
- **Enhanced governance of the euro area.** The management and reduction of public debt in the euro area, as well as the definitive repair of the banking system, will require political unity and resolve. The coordination and delivery of major economic reforms in Member States' economies and the completion of Economic and Monetary Union (EMU) are the short- and medium-term tasks. The longer-term agenda could include improved coordination of tax and labour policies to match enhanced budgetary and economic surveillance, progress towards project bonds and possibly adequate central financing capacities. Throughout such processes, it will be essential to maintain sufficient cohesion between euro area and non-euro area members.
- **Development of a genuine 'Energy Union' and the combating of climate change.** The fragmented energy market and the transition towards renewables must be addressed rapidly and comprehensively, by policies that also reduce the seriously risky current dependence on outside sources. Security of supply and competitiveness should both be enhanced. The goal of a genuine 'Energy Union' should also contribute to the European Union's endeavours to reduce emissions in the light of the dangers posed by climate change.

(ii) Promoting a society of change and innovation

- **A true digital revolution.** The European Union and its Member States need to catch up with the top actors to regain some leadership in technical and industrial innovation, especially in the fast-growing digital sector of the economy. Enabling operators to deliver top-level research and enter the market with less difficulty will be key. Individuals will need to take on board new patterns of consumption, work and communications. At the European Union level, completion of the digital single market will be essential to enable the European Union to achieve higher growth without debt and to reduce current unemployment levels.
- **Building a European research and innovation area.** Despite European Union programmes, fragmentation of R&D both in the public and in the private sector leads to inefficiency, lack of critical mass and multiple product standards. Mobility of scientists between academia and industry and bold initiatives are the likely keys to more streamlined investments and maximum innovation.
- **A rethinking of education.** The return on investment in education must be reassessed thoroughly throughout

Europe. Currently high levels of spending are not preventing growing skills mismatches, digital illiteracy and premature school dropout, resulting in the exclusion of many young or indeed older workers from the labour market. Inadequate linguistic training acts as a brake on labour mobility. Europe's earlier advances in key enabling skills are sometimes being lost compared to other leading or emerging economies. New education and life-long training policies should aim at lasting excellence and wider participation in the labour force.

(iii) Combating the rise in inequality and growing exclusion

- **Growing inequalities** will increasingly affect the European Union's cohesion and undermine its economic strength. So far, the European Union has not succeeded in reintegrating the low-skilled workers and other social groups most affected by globalisation. It is even less prepared for the coming technological revolution, which could dramatically widen the gap between 'winners' and 'losers'. To avoid increasing social divisions, the European Union with its Member States — each within its respective competences — should focus collectively on: less rigid labour markets, more inclusive education systems, the reduction of barriers to initiative and competition and greater investment in healthcare. For citizens affected by or at risk of total exclusion, measures should equip them with the skills demanded in the labour market and generally promote their insertion in active community life.
- **Reshaping the migration debate.** Many European Union Member States face increasing pressure from high levels of migration challenging the cohesion of their societies. That pressure, especially from the Southern neighbourhood, is likely to increase further over the coming decades, for demographic and political reasons. There are no easy solutions to this problem. At the same time, ageing in Europe implies that over the longer term there will be fewer people of working age to keep the economy going. Before 2030, migration policies must be re-framed, with a view to a more economically sustainable, humane and carefully managed migration strategy.

(iv) Enabling individual empowerment and democracy

- **Improving delivery of policies and political accountability.** The increased complexity of governance and the growing multiplicity of information mean that citizens often lose sight of the plans and promises made by political authorities at the national and European level. A lack of trust ensues, which can endanger political and social cohesion. Inclusive and efficient ways to safeguard and deepen democracy must be shaped at all levels, without undermining the values and fairness of the present governance systems. At European Union level, deep reforms in its interaction with states and citizens are needed. These could include: a clearer setting of priorities; systematic respect for subsidiarity; functional transparency; clearer communication systems; and modernised governance systems, including a better alignment between institutions and a clearer division of tasks between them.

(v) Enhancing the international role of the European Union

- The European Union will be confronted with major external challenges from a more insecure world at its doorstep, in the form of the 'return' of geo-politics, reduced United States engagement and increasingly turbulent neighbourhoods. Europeans will need to take greater collective responsibility for their security and defence. However, the European Union is far from fully equipped with the appropriate policies, instruments and strategic focus to deal effectively with such threats. It will still need to:
 - Foster stability and development in its wider strategic neighbourhood, including engaging more deeply with key actors, while reversing the present downward trend in defence spending, in order to preserve the European Union's own security and to be able to act when necessary.
 - Reinforce the global system, by efficiently promoting a multilateral framework that is adapted to the newly multi-polar world and still remains based on universal values.
 - Further develop its alliances and engage with rising powers. Existing strategic partnerships should be deepened, notably with the United States as key partner. Such partnerships should promote economic integration, but also be reinforced wherever appropriate with security and defence dimensions, cross-investments and management of human flows. Rising global powers should not be isolated, but rather engaged with and encouraged to take up greater global responsibilities. The rise of China, as a fundamental game-changer, calls for a reassessment of the European Union's relationship with this country in a way that matches its future importance.

Overview – A world of increasing complexity, uncertainty and rapid change

*You cannot solve a problem on the same level that it was created.
You have to rise above it to the next level.*

Albert Einstein

A new era

A global transformation started in the early 1990s. What once seemed a linear progression towards greater democracy, more open markets and peaceful international cooperation appears to be weakening. It is unlikely to be the dominant paradigm by 2030.

Three revolutions are simultaneously under way which are bound to alter the strategic challenges that Europe will have to address:

An **economic and technological revolution**: the convergence of digital, biological and industrial technologies and the proliferation of digital tools available and affordable to large multitudes, everywhere and for virtually any purpose, will fundamentally change the way economies and societies are functioning. The new 'Knowledge Society' presents huge opportunities, in terms of productivity and average welfare gains and empowerment of the individual. But it can also trigger major societal disruptions: we are already witnessing a rise of unemployment in repetitive low skill jobs; an increase of inequalities within societies (more than across countries); and a relative impoverishment of the middle classes in developed countries, including in Europe.

A social and democratic revolution: more empowered and better connected individuals will be more creative, more dynamic, less wedded to life-time jobs, but also more demanding and critical. This could allow to fundamentally rejuvenate the social contract and to invent a new form of governance. But it will make it more difficult to design collective agreements and to shape common approaches via the traditional structures of parties or trade unions. Anti-establishment feelings may further rise, as well as recourses to less traditional and more local initiatives. In any event, pressure will increase for accountability and transparency at all levels of governance.

A geopolitical revolution: Asia's rise looks set to continue and the roughly two centuries of global dominance by the European continent and the United States are drawing to a close. Together with the emergence of other powers in Latin America and possibly Africa, this will lead to an increasingly multi-polar world. Globalisation will no longer be driven and dominated by Western powers advocating greater democracy, more open markets and peaceful international cooperation. This change of paradigm may well bring about a more confrontational mode between key actors like the United States and China. The post-war multilateral framework may as a result come under increasing pressure, putting at risk the collective ability to manage increasing interdependence in an efficient manner. Destructive non-state actors, some fanned

by religious extremism, may increasingly take advantage of the loopholes. At the same time, the international community is struggling to uphold and restore ever more numerous weak and failed states.

In this context, the European Union's and its Member States' internal stability may become substantially endangered by terrorism, widening inequalities and populism, while its security will be challenged by the political and social destabilisation in neighbourhood countries. The European Union will need to gather all of its strength and resilience to preserve its values, its prosperity and security, and perhaps its very survival in its present form.

Accelerating pace of change and pressure of short-termism

There is a general consensus that scientific and technological development is accelerating. While a quarter of a century was needed for electricity to make its way into general use, there were only ten years between the first sequencing of the human genome and its routine utilisation. During this brief period, costs and implementation times fell by a factor of ten. New technologies are penetrating daily life more rapidly than ever.

Globalisation, allied to rapid development of the new information technologies, is likely to speed up the pace of change even further: information circulates immediately via the media and social networks; companies operate under ever more intense shareholder pressure; working life is growing more intense. All of this implies that key decisions across all social, economic and political sectors will focus mainly on the short term. Increasingly, this will be a source of vulnerability.

Managing complexity

Complexity is already part of everyday life for many people and it will certainly be more pervasive by 2030 ⁽²⁾. Several forces are driving this process, including societies' ever-increasing environmental and social demands, and popular appetites for more consumer goods, greater thrills and more leisure. It also derives in part from the mobility of people and goods and the possibilities of enjoying several lives in the timescale and framework of just one. Thus, complexity begins with the individual.

Complexity also derives from the difficult and obscure processes and formulae associated with key issues and events. The mechanisms of the economic crisis, for example, are difficult to understand, even for experts, who frequently fail to agree. People thus fail to understand what determines their quality of life, be it in education, in production or the delivery of public goods and frustration ensues.

However, increased uncertainty can also stimulate innovation and creativity, and open the way to different futures; complexity can widen the spectrum of possible action and

increase the density of social and economic life. New methods and new tools, in particular big data and artificial intelligence, will provide new ways of managing both uncertainty and complexity.



Agile and adaptive structures

A rapidly changing, more complex and multiple world will require agile and adaptive structures that take control of a new environment without destroying it.

The world of the future, combining volatility, unpredictability and complexity, will require interdisciplinary approaches that enable anticipation, facilitate reaction and forge resilience. Above all, it requires the prioritisation of long-term objectives and strategies. This is not as widely recognised as it should be: the persistence of short-termism suggests that present political and business structures do not encourage such behaviour. Public authorities need to reflect on how to encourage and reward more long-term strategies and innovations. ⁽³⁾

Rise of 'people power'

One major factor adding to complexity will be the rise of 'people power', driven by the political and economic empowerment of ordinary people. This is widely attributed to in-depth democratisation in developed countries, to the rise of the new middle class in developing countries, and to worldwide access to technology and information.

Empowerment may or may not lead to further diffusion of Western values in the world, but will anyhow generate increased expectations and demands for individual rights worldwide and in all areas, economic, legal and cultural. In 2030, even more individuals will want to be free to manage their own private lives, choose a partner, divorce a spouse or determine their family arrangements. As consumers, they will want to be able to enjoy access to goods, to travel and to technological progress. As citizens, they will want to be governed by an accountable political class.

⁽²⁾ Secretary General of the European Parliament, *The European Parliament 2025: Preparing for Complexity*, 2012.

⁽³⁾ The Oxford Martin Commission for Future Generations, 2014. Securing the long term in national and international decision making. The report *Now for the Long Term*, is the product of a year-long process and debate chaired by Pascal Lamy on the successes and failures in addressing global challenges over recent decades. The report calls for a radical shake-up in politics and business to embed long-term thinking, and provides practical recommendations for action in order to create a more resilient, inclusive and sustainable future.

People power presents three dimensions: (i) the development of the potential of the individual; (ii) the power that this potential confers and (iii) the impact on public and private systems.

By 2030, the growth of people power is likely to affect all players — states, the markets, businesses and the media:

- People’s purchasing choices will drive the world economy, fuelled essentially by consumption by a greatly expanded middle class;
- Governments and business will be constrained by greater popular control of institutional structures;
- Mobility and connectivity, physical, political and intellectual, will promote individual independence;
- Changing behaviour and the assertion of people’s expectations and interests will tend to stimulate bottom-up political mobilisation and decision-making.

Power balances, methods of governance and economic models will increasingly be affected. Citizens in 2030 will be able to reshape economic developments with the rise of the sharing economy (e.g. OviShare, car sharing, Airbnb); and to redistribute power in politics through increased participation and proposals for innovative solutions to meet social needs.

However, this process of individual empowerment will be uneven because access to technologies and information will be unequal. Some social groups will be marginalised and will feel left behind by the speed of change and bewildered by the complexity and uncertainty of daily life. The challenge will be to ensure that policies facilitate societal adaptation and inclusion for these groups too, thus avoiding systemic risks. Even if this trend does encourage societies to converge on democratic values over time, notably human rights and the rule of law, progress could still be faltering and uneven. People power is very likely to encounter resistance, not least because some middle classes will regard authoritarian regimes as best protecting their interests.

The rise of the individual may thus present risks of instability but also a unique opportunity for Europe. European history and diversity, perhaps more than any other, provide a fruitful soil for intelligent responses to new expectations. Europe’s assets — transparency, decentralisation, diversity, culture, direct representative democracy at national and European Union level — could help to embed individuals’ new requests in an intelligent way and give birth to a new model, perhaps even suited for wider projection in other countries and regions.

Between now and 2030, there may be more demands for social justice, political freedom and economic effectiveness of the kind seen in the Arab Spring or demonstrations in the Ukraine. At the same time, the traditional institutions of established democracies are facing challenges, and even rejection, by new political movements in Europe and the United States. These may draw support from various social groups demanding radical cutbacks in the welfare state or better support and protections for those being left behind by social and economic change.

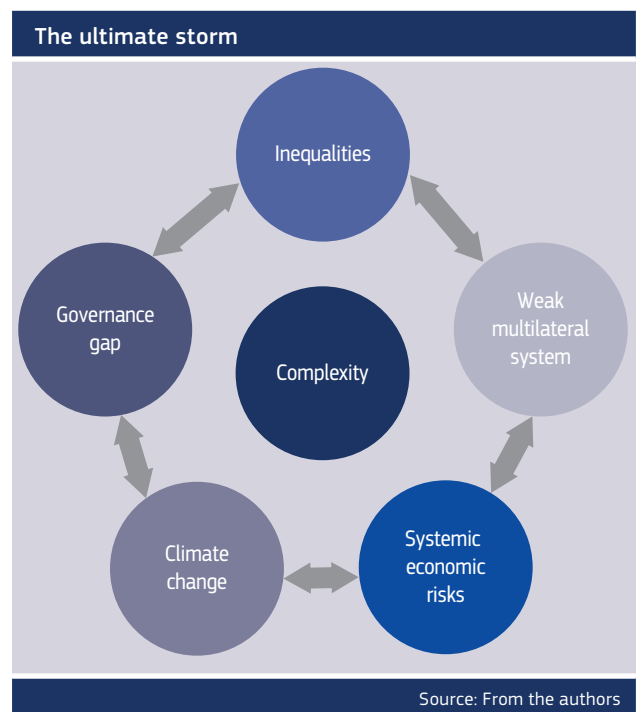
The expression, let alone satisfaction, of individual expectations in collective institutions is no simple matter, even in democratic politics. Inert political systems are an obstacle, as is the difficulty of taking into account the full range of individual interests in collective action. Much of the recent dissatisfaction with democracy at regional, national and continental levels has to do with political systems perceived as being distant, dysfunctional or corrupt.

Global governance remains at best inadequate and at worst dysfunctional. In a 2030 timeframe it is highly unlikely that people will be given the scope to exercise global citizenship, or directly shape agreements between major states though the influence of well organised pressure groups may continue to grow. But generally, the gap between the expectations of citizens and the responses offered by the global political system will reinforce social dissatisfaction and create frustration worldwide. At local level, this mismatch may generate revolutionary dynamics in extreme cases.

An ‘ultimate storm’?

Complexity and uncertainty increase the potential impact of major crises at local and global level that the following developments may trigger:

- Economic growth in emerging countries that provokes disappointment, frustration and political volatility;
- Climate change, which will most affect the most fragile areas and populations in the world, and may have serious consequences in terms of migration and economic prospects and performance;
- The growth in inequalities, both real and perceived, made worse by a lack of opportunities for movement between social strata;



Source: From the authors

- The weakness of the multilateral system for ensuring the peaceful resolution of conflict and respect for common values.

In the following pages, this report analyses the key global trends which underpin these dangers and their major implications for Europe. The intention is to provide a longer-term perspective and more food for thought than is normally available to political institutions and their leaders. If decision-makers wish to use it, it may be a useful tool to help them to anticipate and react to change.

Five key global trends to 2030

INTRODUCTION

Trends

In a world characterised by rapid change and a significant probability of major upsets, attempting to look ahead to 2030 is as difficult as it is necessary. Nevertheless, five broad trends can be discerned:

1. The human race is growing older and richer with a growing middle class and widening inequalities.
2. Economic weight and political power shifts to Asia; sustained development of the world economy becomes more vulnerable to challenges to and weaknesses in the globalisation process.
3. A revolution in technologies and their applications transforms societies in almost every aspect. Digitisation is the invader and radical, disruptive change the consequence.
4. Managing scarcity of resources becomes an increasing challenge, with rising energy consumption and shifting patterns of production.
5. The interdependence of countries, now a fact of global life, is not matched by strengthening global governance. The world order becomes more fragile and unpredictable.

Note: The analysis developed below is cautious and attempts to adopt a cross- or multi-disciplinary approach which seeks

to identify what we know, as well as what we know we do not know and to reflect creatively, where appropriate, on what we do not know that we do not know. We define these three categories of information by their degree of uncertainty in relation to the future. In ascending order:

- **Projections** forward from today's world — some of these projections are robust, such as demographic trends, and some will at least be largely determined by what already exists, such as the development of new technologies.
- **Uncertainties** — the trends and challenges we know about, even if we do not know exactly how they will develop. This is the case with geo-political or societal changes, for example, or the response to climate change.
- **'Wild cards'** — matters largely of speculation and/or warnings of improbable but deeply disruptive developments or sudden events. Reflection on such issues should foster a better understanding of current issues and promote creative thinking, helping to engender greater openness to the possibility of significant change.

Table 1. Global and European trends and uncertainties

	WORLD		EUROPE	
	GLOBAL TRENDS <i>as projections</i>	<i>Uncertainties</i>	EUROPEAN UNION TRENDS <i>as projections</i>	<i>Uncertainties</i>
General	Complex, fragile, unstable and insecure world. Age of insecurity.	<i>Systemic risks linked to emerging countries, stalling global growth.</i>	Integration of euro area, insecure environment, low growth.	<i>Capacity to change? Accumulation of risks? Changing ethics/values?</i>
Economy	Global ageing.	<i>Economic downturn of China with systemic consequences? Globally changed allocation of investment flows? Technological revolution in energy or communications area?</i>	Unsustainability of current welfare systems. Shrinking labour force. Need structural reforms for investment and saving allocation. Education key in ageing society.	<i>Massive productivity gains in public sector? Massively reshaped economies through technological revolution?</i>
	Increasing competition for energy, raw materials and other natural resources.	<i>Impact of shale gas, smart grids, new renewables? Impact of climate change? Impact of middle class?</i>	Crisis in the energy mix of many Member States.	<i>Achievement of a pan-European energy grid? Disrupted security of supply?</i>
	Financial deleveraging and state intervention.	<i>Currency wars? Systemic risks linked to financial systems in emerging countries?</i>	Slow recycling of toxic assets. Moderate growth without debt. Eurozone integration.	<i>End of free capital markets? Euro without structural reforms?</i>
	Increased North/South and South/South competition on export markets. Increased role of regional arrangements.	<i>Geopolitisation of trade? Globalisation stalling?</i>	European Union remains one of the most open economies, vulnerable to downturns in global trade.	<i>Consequences of Trade and Investment Partnership with the United States? FTAs with China/Russia? European Union still a standard setter with United States or not?</i>
Technologies	Converging technologies. Disruption of business models in all services.	<i>Fully fledged industrial (and then social) revolution? Level of disruption and opportunities created?</i>	Potential for catch-up still here. Clustered markets for innovative mixes (services/products). Education will be key.	<i>Successful digitalisation and further integration of the Single Market, including services?</i>
Society	Rising economic middle class. Increased inequalities. Rising discontent. Empowered individuals. Migration patterns regionalised (south-to-south, north-to-north).	<i>Age of revolutions? Individuals challenging collective structures? Rise of nationalism and (religious) extremism?</i>	Reach out to global middle classes, threats on European Union middle class. Rise of inequalities. Creativity-based society. European Union will continue to be a destination country for migrants from the neighbourhood.	<i>Spill over effects from the instability in emerging countries? Resilience/capacity of adaptation of political institutions?</i>
External relations	More multi-polar but less multilateral. Return to power politics.	<i>Serious global geopolitical realignment? Rise of new multi-institutions driven by BRICS?</i>	Decline in military spending. Dependency on energy and military supplies. US pivot.	<i>Future of NATO? European Union fragmentation? European Union leadership on global stage?</i>
	New conflicts (esp. natural disasters and its consequences). Global insecurity continues with increased non-state rebel group violence trouble.	<i>Terrorism, political tensions. Instability, low growth?</i>	Impact on European Union itself (its frontiers, its integration process). European neighbourhood in trouble.	<i>Domestic and energy insecurity?</i>

KEY GLOBAL TREND 1

A richer and older human race characterised by an expanding global middle class and greater inequalities

Inequality is actually detrimental to the progress of humanity.

Kang Youwei

life-expectancy increasing by two years every decade combined with an overall decline in the fertility rate ⁽⁴⁾.

The latest growth estimates for the world population contrast with earlier forecasts of a global population increase. The decline in fertility rates in many emerging countries could be greater than forecast and off-set continuing high-fertility rates in Sub-Saharan Africa and in India. With life-expectancy overall increasing, the world population could peak at around 8.3 billion towards 2030. After then flattening out, it could fall for the first time in history, returning to current levels towards the end of the 21st century.

Changing demographics will have a profound impact on geopolitical and economic trends worldwide ⁽⁵⁾.

THE WORLD IN 2030

Projections

- Ageing will be global. The world population growth will slow and peak, possibly within 20 years, at around 8.3 billion people;
- A new global 'middle class' in the emerging countries will expand rapidly, mainly in cities, and particularly in Asia;
- Dynamic and technologically empowered, this new group will be especially vulnerable, subject to increasing inequalities and unprecedented ageing;
- Inequalities within countries will widen worldwide;
- Migration may well further increase, in particular along South-South routes.

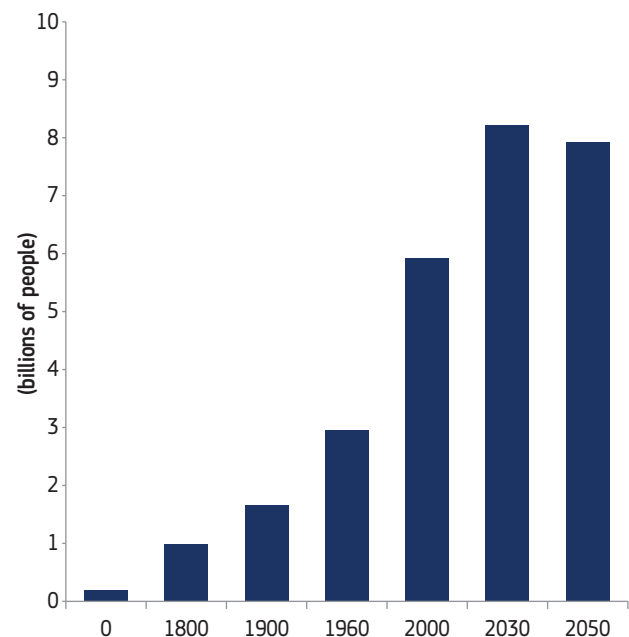
Uncertainties

- Ageing in the emerging economies may affect their economic growth and domestic stability;
- Growing inequalities in access to resources (education, health services) may trigger serious social discontent.

Wild cards

- Unexpected continuing growth of world population to 11-12 billion people with major negative effects on food and health issues, energy availability and stability;
- Uncontrolled global pandemics could spread with systemic impacts.

Figure 1. World population (billions)



Source: CEPS report for ESPAS, 2013

Ageing global population

In the period to 2030, global demographics will continue to alter under the impact of increasing life-expectancy, declining fertility and rising levels of education. These developments will modify the structural foundations of the global economy: an ageing world population could have a major impact on developed and emerging economies. If the latter maintain steady growth, then ageing will be accompanied by the rise of a global middle class.

The generalised ageing of the population in developed and emerging countries alike will be greater than foreseen for the period to 2030. This ageing is the consequence of

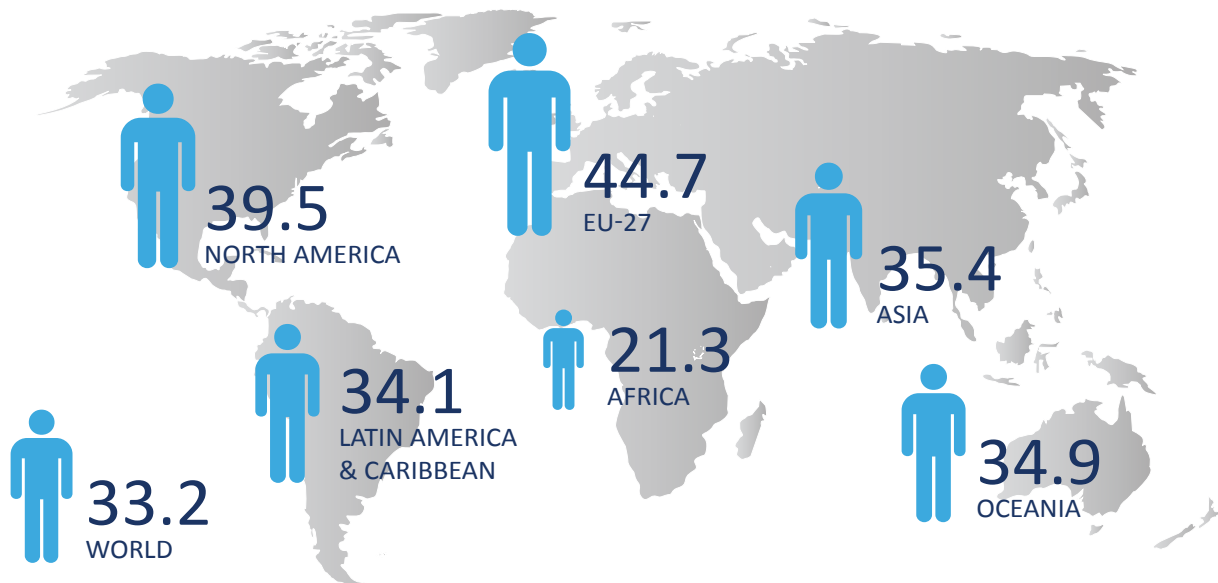
⁽⁴⁾ John Llewellyn, *The Business of Ageing*, Nomura International, 2008.

⁽⁵⁾ CEPS report for ESPAS, 2014.

With an average age of 44 years, Europe will be the 'oldest' region — more than double the average age of 21 in Sub-Saharan Africa. People over 65 will account for close to 23 % of the European Union's population, compared with 16 % today (Eurostat, 2013). Assuming there is no change in current trends, between now and 2060, Germany's

population will fall from 82 million (20 % of them pensioners) to 65 million (30 % of them pensioners). Between 2035 and 2045, France and Germany will probably have approximately the same number of inhabitants — 71 million.

Figure 2. Median age in different regions of the world in 2030



Source: Rand Europe Report for ESPAS, 2013

Systemic impacts of global ageing

While the longer-term effects of demographic changes are more uncertain, they may well change the global economic and political environment. On the one hand, ageing and the slowing of population growth in most parts of the world would help reduce poverty, but on the other they could also slow the pace at which the emerging economies catch up with the developed.

The crucial uncertainty relates to the effects of the decline in China's active population. So far, the one child policy has implied a massive ageing with potentially serious impact (see the graph below), if the country remains closed to migratory flows. Without policy change, the average age in China will increase by 11 years (to 46) between now and 2050, whereas in the United States it will rise by only three years (to 41) ⁽⁶⁾.

The ageing of the world's population will be amplified as time passes: the number of people over 65 will double over the next 25 years, rising to 13 % of the world population. Whereas it took 114 years for the proportion of over-60s in Sweden's population to double from 7 to 14 %, the same transition could take no more than 25-28 years in China or India ⁽⁷⁾. In many of the most developed countries, the active

population (20-70 year-olds) is already declining and will be only partially offset by increasing employment of women and older people. The demographic transition of the Southern Mediterranean countries could help stabilise the region by narrowing the gap between population growth and economic growth, notably in Egypt.

Widespread ageing will probably have major repercussions on the labour force, personal savings and global productivity. Social protection systems in the advanced countries, particularly in Europe, will come under pressure, especially in the health sector, and will struggle to manage the consequences of old-age dependency: between 1965 and 2005 the average retirement age increased by only six months, whereas life-expectancy went up by nine years ⁽⁸⁾. The emerging countries in Asia (with the exception of India) will have to manage a demographic transition that will affect their economies profoundly. Lastly, ageing will have implications for migration and social risk assessment.

⁽⁶⁾ United Nations, Population Division, *World Population Prospects: 2012 Revision*, 2013.

⁽⁷⁾ John Llewellyn, *The Business of Ageing*, Nomura International, 2008.

⁽⁸⁾ David Bloom, David Canning and Günther Fink, *Implications of Population Ageing for Economic Growth*, 2011.

The impact of ageing on an economy will depend a lot on education levels: people with a university education will work longer, have more savings and be more productive, including after the age of 65. This suggests that emerging countries with insufficient universal education and decreasing birth rates will face the largest challenge: in China half of today's 50 to 65 year-olds did not finish primary school. A growing class of impoverished old people may develop.

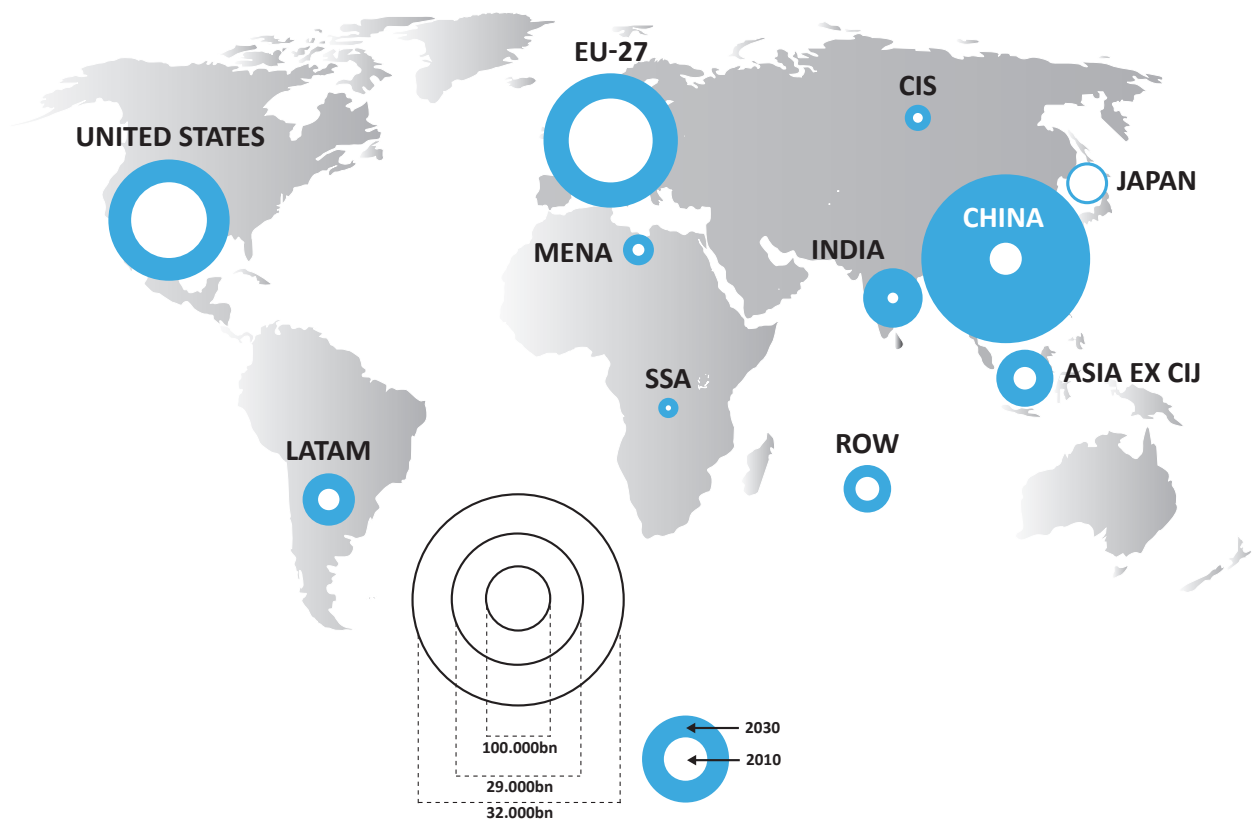
Perhaps even more than the ageing of its population, it is the threat of a long-term decline in its active population that gives cause to fear for Europe's economic prosperity and standing in the world. The shrinking of its labour force will put a downturn pressure on economies and could induce long-term stagnation, unless there are significant gains in productivity, coupled with focused approaches to education

and training. Almost all current analyses and forecasts foresee a fall in productivity over the coming decades and therefore a long period without substantial economic growth. Combined with ageing, this may destabilise social protection systems, intensify tensions on currencies, and render high levels of youth unemployment semi-permanent. Combined, these effects could undermine social cohesion.

Global middle class

On current projections, the global economy's middle class is expected to more than double between 2009 and 2030, from 1.8 billion to almost 5.0 billion. It is thus expected to account for about 60 % of the world population. The overwhelming bulk of growth should be concentrated in Asia which would be home to 66 % of the world total.

Figure 3. Middle class in 2009 and forecast for 2030



Sources: OECD, Standard Chartered Research.

This will not be a homogenous group — the difference in purchasing power between advanced countries' middle classes and those in emerging countries will remain. But it will reflect considerable increases in the purchasing power of large formerly poor populations leading to greater mobility and access to information and communication technologies. It will also likely result in an important rise in political expectations.

The assumptions underlying the rise of a large, new global middle class are closely related to the sustained growth of the emerging economies. In its absence, for example, a decline of 1.5 % in India's growth rate between now and 2050 would reduce the growth of that country's middle class by as many as 150 million people⁽⁹⁾. The real purchasing power of the new middle class will heavily depend on education, housing and health costs in countries where public services are at present non-existent, weak or in the hands of the private sector.

In parallel, there will be a continued leap in the world's urban population which is expected to pass 6 billion by 2045. Today, 54 % of the world's population lives in urban areas, a proportion that is expected to increase to 66 % by 2050⁽¹⁰⁾. By 2030, the world is projected to have 41 mega-cities with 10 million inhabitants or more⁽¹¹⁾. Their growth will shift over time towards Africa and Asia, as medium-sized

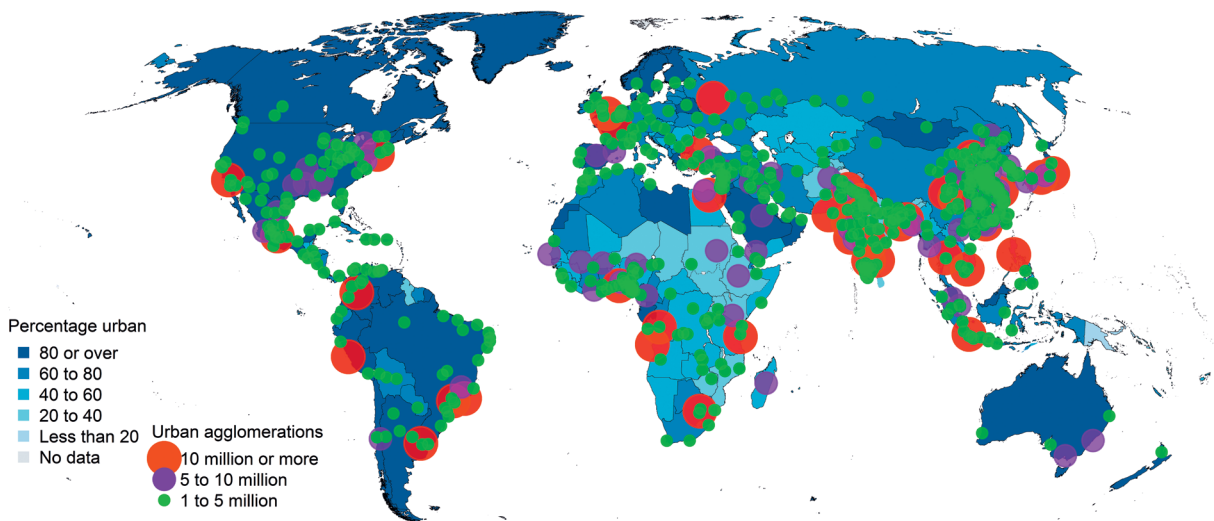
urban centres expand⁽¹²⁾. Europe, with 73 % of its population living in urban areas, is expected to be over 80 % urban by 2050. It is very likely that the direct flows of information, trade and investment between these cities will strongly increase, without much involvement of national government.

The growth of the global middle class is expected to go hand in hand with a significant rise in levels of education — it is expected that 90 % of the world's population will know how to read in 2030⁽¹⁴⁾ — as well as increased access to new technologies, with 50 % of the world's population having Internet access. However, the quality and availability of education will remain a key dividing line between advanced and emerging countries, especially in the older age groups.

Emerging country middle classes will, however, be highly disparate. Less rich and less well educated than their Western counterparts, they will have a markedly lower purchasing power, owing to the foreseeable rise in the costs of education, health and pensions. Less well developed social protection systems will also leave this new middle class more vulnerable to economic turbulence. Much will depend on the pace at which growth slows after rapid expansion in the emerging economies and the feeling of vulnerability this might engender. Reactions could feature political protest movements or tendencies towards protectionism. Lastly, the

Figure 4: World Urbanization Prospects 2030

Percentage urban and location of urban agglomerations with at least 1 million inhabitants, 2030



Data source: World Urbanization Prospects: The 2014 Revision

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Source: United Nations, *World Urbanization Prospects: 2014 revision*⁽¹²⁾.

⁽⁹⁾ RAND Europe report for ESPAS, 2013.

⁽¹⁰⁾ United Nations, Population Division, *World Urbanization Prospects: 2014 revision*, 2014.

⁽¹¹⁾ Ibid.

⁽¹²⁾ McKinsey, *Urban World: Mapping the Economic Power of Cities*, 2011.

⁽¹³⁾ United Nations, Population Division, *World Urbanisation Prospects: 2014 revision*, 2014.

⁽¹⁴⁾ EUISS report for ESPAS, 2012.

rise in global affluence could be accompanied by further reductions in absolute poverty ⁽¹⁵⁾.

Extreme poverty still strongly affects Sub-Saharan Africa, with more than 40 % of extremely poor people — more than anywhere else except Bangladesh — in no less than 26 countries. The largest absolute numbers of extremely poor people are found in India (33 % of the world total), China (13 %), Nigeria (7 %), Bangladesh (6 %) and Dem. Rep. of Congo (5 %).

Extreme poverty fell from 36 % of the world population in 1990 to 17.7 % in 2010, which translates into still 1.2 billion people on less than USD 1.25 a day. The aim is to reduce it to 9 % in 2020 and to 3 % in 2030. However, at present growth rates and with income distribution unchanged, only a reduction of 10 % on present figures would be achieved by 2030.

Increasing inequality

Although an overall decline in global poverty is expected as the emerging economies catch up, inequalities within countries of various kinds will increase worldwide. Many recent studies highlight the growing inequality at global level ⁽¹⁶⁾, including in the developed countries ⁽¹⁷⁾, and the increase in the share of the income and assets held by the richest 1 % or 0.1 % globally. This development has been constant over the past 25 years and has reversed the trend towards a more equal redistribution of income in developed countries following the Second World War.

Irrespective of moral and political considerations, growing income inequality is becoming an economic problem because of its adverse effects on growth and economic performance ⁽¹⁸⁾. In circumstances of weak social mobility, it can seriously endanger the cohesion of societies, undermining mutual trust and limiting the capacity and readiness to change. Combined with the demographic profiles of many countries, these developments will place a strain on social protection systems and demand significant efforts in the area of social innovation.

The conclusions of the various analyses conducted under the ESPAS project converge on an important point: growing inequalities pose a major political, social and economic risk in the years to come ⁽¹⁹⁾. Over two thirds of emerging and poor countries, encompassing 86 % of the population of the developing world, will experience growing inequalities. Inequalities, especially in living standards and education, could have an increasing impact on patterns of migration.

Rising inequality in income will also affect the industrialised countries and could weaken the cohesion of their middle classes. The impacts are well known: the feeling of relative decline within the middle class, a brain drain and increasing

numbers of 'new poor', including unemployed skilled workers and low-income retirees. The increase in personal wealth, especially that of the richest (top 1 %), has been favoured by taxation and social security policies that are less redistributive. Tax rates on capital and high incomes have fallen steadily since the early 1980s in most OECD countries. Already in 2010, the top 10 % of earners accounted for 35 % of total income in Europe and almost 50 % in the United States. Between 1979 and 2007, the richest 1 % in the United States saw their incomes (after tax and any other redistributive deductions) rise by 275 %, compared with 18 % for the poorest 20 % ⁽²⁰⁾. So far this evolution has not led to militant demands for compensatory tax increases. Rather, the view that public taxes are undermining consumption power and entrepreneurship still prevails.

Despite improvements, gender inequality could persist globally in the period to 2030, although significant improvements are expected ⁽²¹⁾. Women currently account for six tenths of the world's poorest and two thirds of illiterate people. They are under-represented in access to home ownership and positions of responsibility. The gap in qualifications between men and women is likely to persist. Disparities in pay, even when women have the same qualifications, could also continue, albeit with regional variations, for instance in Sub-Saharan Africa where 80 % of women are underpaid, compared with 20 % in Eastern Europe and Central Asia). Such pay disparities could increase the pauperisation of women over 65.

Another form of inequality, the digital divide within and between countries, will persist as access to networks will be far from universal. Technological development plays a double-edged role in this respect. It accentuates social and economic inequalities between individuals/countries, since it benefits most hyper-connected professionals and high-income countries. The lightning-fast development in Africa of mobile telephony and of the service sector, especially banking services, is one example: between 2005 and 2011 the rate of access to a mobile telephone rose from 12 to 53.3 %, compared with 1.4 % for landlines ⁽²²⁾. The technological divide could also be underlined in industrial production and trade: those who do not have access to these technologies will be cut off from some global and regional markets. The populations of emerging and developing countries, as well as from poor regions in advanced countries, may be strongly handicapped by insufficient access to networks and technologies. Conversely, technological advances can also help reduce inequalities.

Migration in transition, as South-South flows look set to grow

The rise of the global middle class and the growth in inequality will affect global migration. Migration flows will change, with a decline in South-North migration and a rise in South-South migration. Some emerging countries with

⁽¹⁵⁾ World Bank, *Prosperity for All: Ending Extreme Poverty*, 2014.

⁽¹⁶⁾ OECD, *Making Inclusive Growth Happen*, 2014.

⁽¹⁷⁾ RAND Europe report for ESPAS.

⁽¹⁸⁾ IMF, *World Economic Outlook*, 2014.

⁽¹⁹⁾ In particular, RAND Europe report for ESPAS, 2013.

⁽²⁰⁾ Congressional Budget Office (CBO), *Trends in the Distribution of Household Income between 1979 and 2007*, 2011.

⁽²¹⁾ RAND Europe report for ESPAS, 2013.

⁽²²⁾ International Telecommunications Union, ITU, 2013.

growing economies could see their migration deficit reversed⁽²³⁾ and internal South-South migratory circuits develop, internal migration flows linked to urbanisation will continue. Longer term, the migratory pressure from the Southern Mediterranean countries could fall, as a result of demographic change⁽²⁴⁾. Migrations linked to the effects of climate change (climate-change refugees) are likely to take place predominantly via South-South flows, with potentially destabilising local effects.

Pressure to emigrate will derive in many areas of the world from chronic instability and not necessarily open conflict. Other important sources of pressure will be crises in the countryside, exacerbated in some places by desertification and the destruction of farmland, and urban unemployment among young people, women and skilled workers. Rising literacy, the decline of absolute poverty and the existence of structured migratory channels (regular or irregular) will continue to foster migration. But Western Europe may not remain a primary destination. The Gulf States, coastal China and the metropolises of South-East Asia or Africa could partly replace it. Total migration numbers may not diminish,

but Western Europe should be relatively less affected. Ironically, the need in Europe for immigrants, including low-skilled workers, may increase as a response to projected labour and skills shortage⁽²⁵⁾. However, the social and political conditions (the rise in populism, increasing resentment and fears among the middle classes) may make it more difficult for governments to win support for more open and forward-looking immigration policies.

Lastly, new mobility arrangements could replace the traditional settlement model of immigration with professional mobility, circular migration and short-stay migration. The countries of transit would thereby become temporary host countries and the countries of settlement points of emigration. Substantial flows of tangible and intangible assets would accompany this increase in individual mobility. It is likely that circular migrations, business mobility, family reunifications and round-trips would involve more people, re-channel resources and create cross-border communities between countries and cultures that may sometimes be far removed from one another. Such fluid and reversible flows and communities would also be harder to control.

⁽²³⁾ RAND Europe report for ESPAS, 2013. See also: Augur, *Challenges for Europe in the World in 2030*, European Commission, 2012.

⁽²⁴⁾ CEPS report for ESPAS, 2013. See also Euromed 2030 - Long Term Challenges for the Mediterranean area, report of a Group of experts, European Commission, 2010.

⁽²⁵⁾ Boston Consulting Group, *The Global Workforce Crisis: \$10 Trillion at Risk*, 2014.

KEY GLOBAL TREND 2

A more vulnerable process of globalisation led by an 'economic G3'

Previously the doings of the world had been... dispersed; but ever since... [they] have been interlinked.

Polybius, 2nd century BC

THE WORLD IN 2030

Projections

- The shift in the world economy towards Asia will continue;
- Trade in goods may slow down, with service and investment flows increasing;
- Emerging nations will be forces for global economic and political change;
- An 'economic G3' — United States, China and the European Union — will dominate, with China expected to rise to first place;
- Rising carbon dioxide emissions will further amplify global climate change. Negative effects will be more visible.

Uncertainties

- A downturn in China could have systemic consequences;
- Social discontent in emerging countries could periodically disrupt their economies and trigger regional or global conflicts;
- Tensions could sharpen over raw materials, energy and natural resources potentially resulting in conflicts;
- A possible currency war between the United States dollar and the renminbi would affect world markets.

Wild cards

- Globalisation could stall or even move backwards;
- A major financial crisis affecting most emerging countries;
- Geopolitical tensions or conflicts impacting the global economy;
- Serious destabilisation in Africa in the absence of better governance;
- Extent of United States' involvement in world affairs.

Continued shift of the world economy towards Asia

The shift in the centre of gravity of the world economy towards Asia will continue to 2030 and beyond. The forces driving growth for emerging countries will continue to operate, albeit at a slower pace, thanks to the opening-up of markets, notably South-South, up-skilling of the workforce and a high level of savings. The diffusion of new technologies in these economies and societies will also play a positive role.

Linear projections foresaw a 21-fold increase in Chinese GDP between 2008 and 2050, as against an increase of 121 % for Europe based on a 2 % annual growth assumption. But more realistic projections that include labour capital, energy and technological progress and price adjustment indicate a factor of 16 for China, 21 for India, the United States doubling and the European economy increasing by 40 % ⁽²⁶⁾.

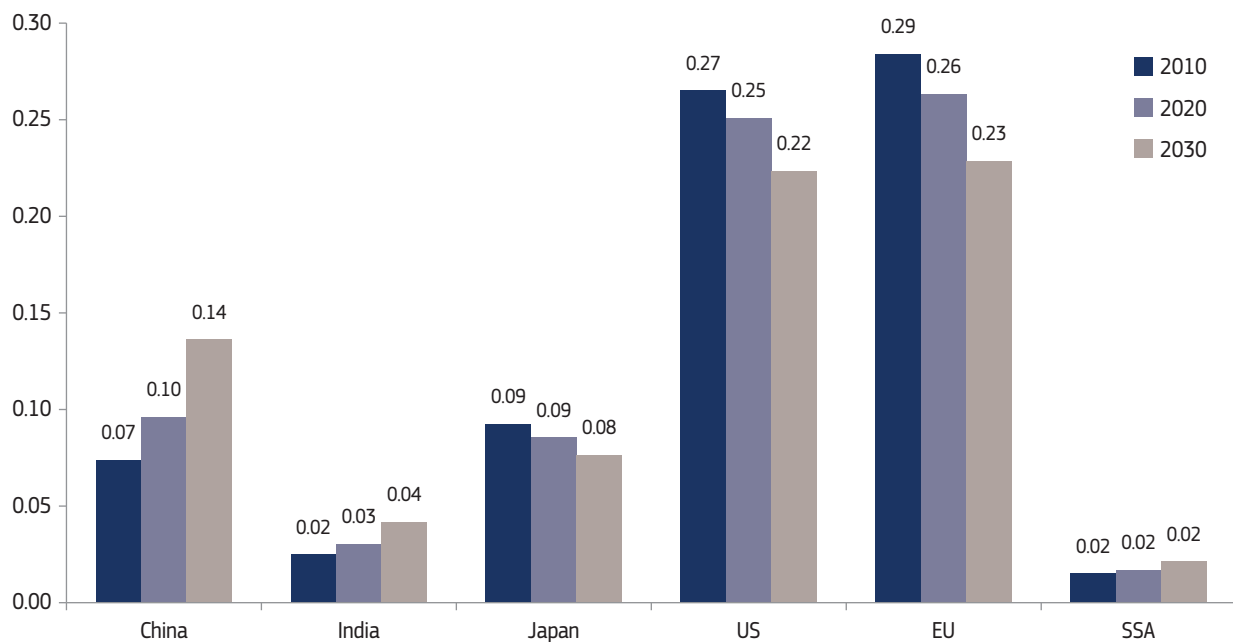
⁽²⁶⁾ Jean Fouré, Agnès Bénassy-Quéré and Lionel Fontagné, *The world economy in 2050: a tentative picture*, CEPIL, 2010.

Despite this change of economic balance, the global economy will be dominated by three continental economies — the United States, Europe and China. The advance of China and other Asian nations is not so much a sudden break as the reversal of a historical anomaly lasting two centuries. Led by China and other regional powers, Asians are heading back towards the place they held in the world economy until the 18th century. The shrinking gap between the industrialised world and the emerging countries marks the end of developed countries' monopoly of advanced high-end manufactured production and high added-value services.

Analysis for this ESPAS project suggests that global growth still should continue at around 4 % per annum, with world GDP expected to double by 2030 ⁽²⁷⁾. There is little doubt that

the emerging countries' economies will continue to catch up, with growth propelled by their opening up to trade, level of savings, investment in technologies and developing human capital. However, the rate at which they catch up will probably slacken as they develop and specialise, and disparities between them are likely to widen. In 2030, the combined Chinese, Indian and Sub-Saharan African labour force may be five times the size of the United States and European labour forces. However, Asia's economic advance will depend on the stability of the world economic and social order and on whether the emerging countries can actually sustain their success. In particular, China's ability to rebalance its economy and carry out the institutional and political reforms necessary for stability will be a key factor.

Figure 5. Contribution to cumulate World GDP, by regions (over decades, at constant prices)



Source: CEPS report for ESPAS, 2013.

⁽²⁷⁾ CEPS report for ESPAS, 2013. But 'The BRICs and beyond: prospects, challenges and opportunities' from PWC, 2011, refers: 'The world economy is projected to grow at an average rate of just over 3 % per annum from 2011 to 2050, doubling in size by 2032 and nearly doubling again by 2050'.

Figure 6. Centre of gravity of the world economy between 1 and 2025 AD



Source: "Urban world: Cities and the rise of the consuming class", June 2012, McKinsey Global Institute. © 2012 McKinsey & Company. All rights reserved. Reprinted with permission.

An 'economic G3' still in the lead, but with China first

The United States, Europe and China will account for almost 55 % of the world's GDP in 2030. The main change is related to their position relative to one another: China's gross domestic product is expected to overtake both the European Union and the United States. The European Union would drop to second place and the United States to third (see figure below).

The acceleration of growth rates due to technological changes is largely responsible for the speed of this development: it took 150 years to double GDP per head in the UK; in China it took 10 years during the first decade of this century.

While remaining competitors, these three major powerhouses — United States, the European Union and China — will be very closely interlinked. The main question will be how the value added in world production of goods and services is distributed. Keys to success will include competitive services and the quality of regulations and standards, rules on competition and intellectual property. The economies that manage to impose their rules and norms will enjoy a considerable and long-lasting advantage. This is a strong driver for the negotiations on a Transatlantic Trade and Investment Partnership (TTIP) which is strategically important to the future well-being of both the United States and European economies. If China were to sign up in a later phase to such a rules-based free-trade system, it would provide an indispensable boost to the world economic growth and stability.

Table 2. Trends in the GDP PPP of the top seven national economies in the world

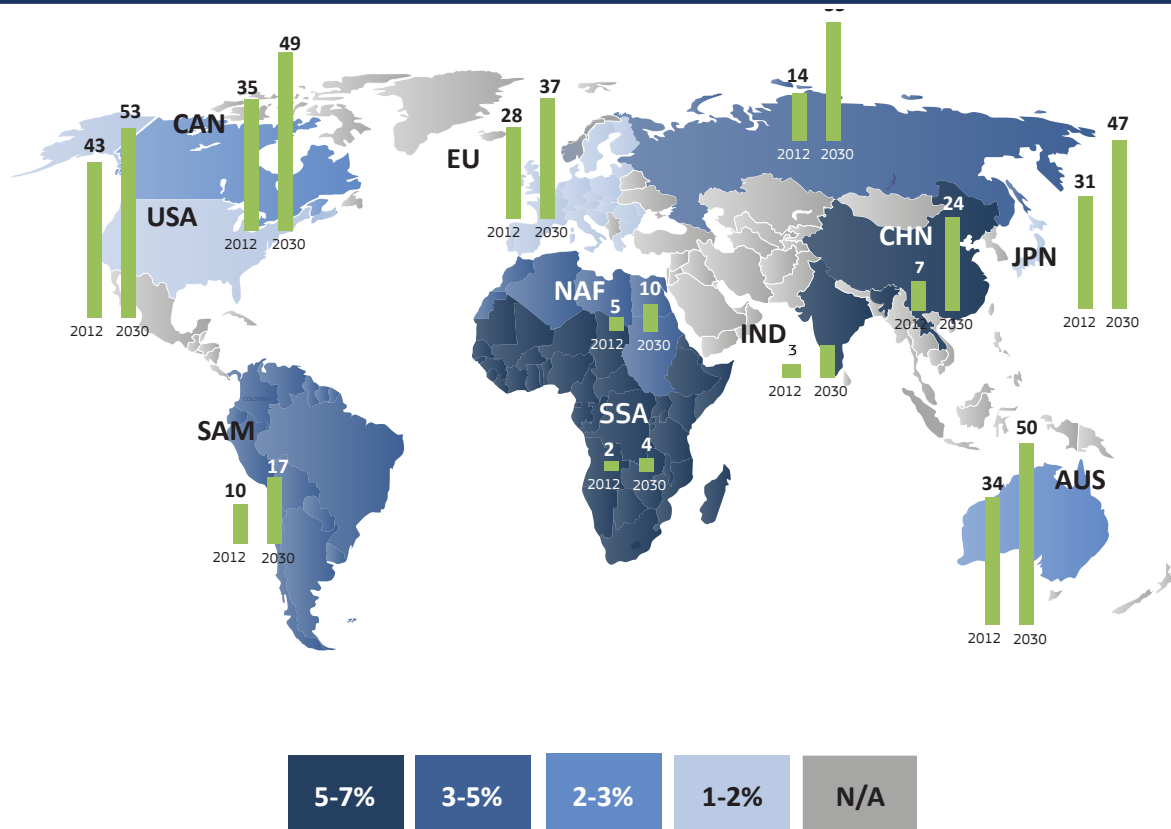
1990		2010		2020		2030	
United States	8095	United States	13389	United States	15861	China	31809
Japan	4212	China	5180	China	15211	United States	18659
Germany	2356	Japan	5048	Japan	7127	Japan	10057
France	1746	Germany	2879	India	3420	India	6799
Italy	1539	France	2218	Germany	3180	Russian Fed	4548
UK	1487	UK	2060	Brazil	2901	Brazil	3874
Russian Fed	814	Brazil	1920	UK	2856	UK	3624

Sources: CEPS — CEPIL, report for ESPAS 2013

Barring major accidents, China should remain by far the largest advanced emerging economy, more than 2.5 times the size of the Indian economy. After 2030, however, India's growth rate could outstrip China's because of its dynamic population growth, although that will not be enough to outstrip total Chinese GDP in the foreseeable future. At the same time, new economic powers — notably Mexico and Indonesia — are likely to emerge and join the current middle-ranking group, which will still include Brazil, Japan and possibly Russia.

The *European Union* will still enjoy one of the highest per capita incomes in the world, but lower relative growth means that its share of global GDP would shrink from 23.1 % to 15.5 % between 2010 and 2030⁽²⁸⁾. Obviously, the relative weight of its present Member States will also decline on a global scale: following current projections⁽²⁹⁾, the UK could be the only European economy still ranked among the top seven in the world (see table below). The euro area would account for only 10 % of global GDP.

Figure 7. GDP Growth in PPP in 2030 (blue shading) and GDP per capita PPP in thousands USD (green bar charts)

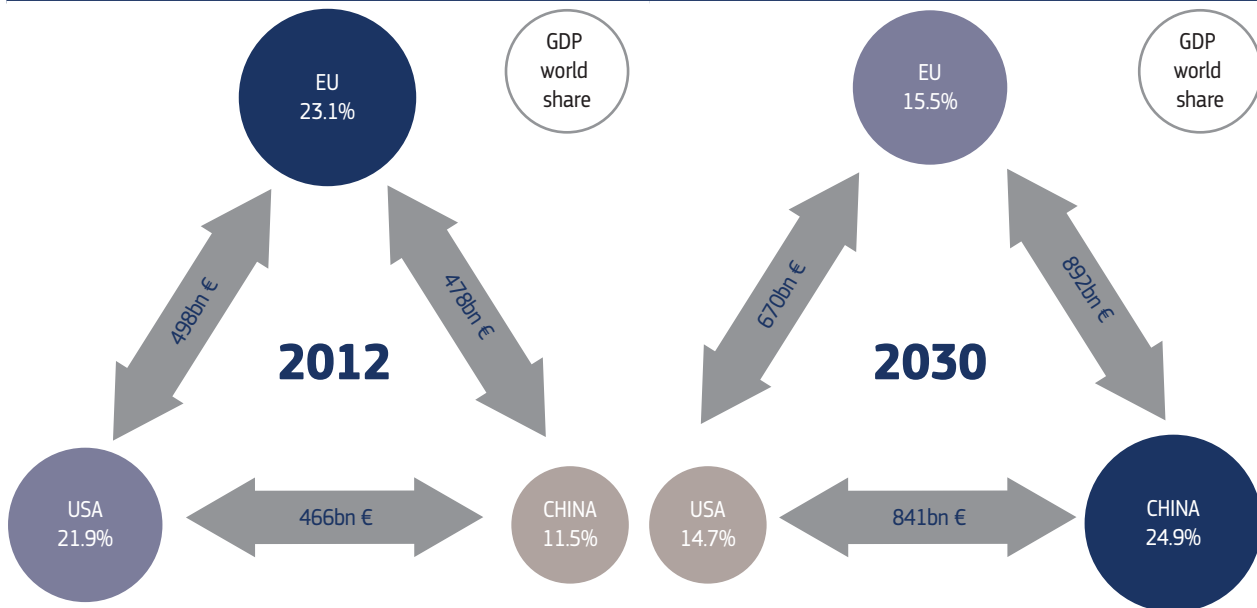


Source: CEPS report for ESPAS, 2013

(28) CEPS report for ESPAS, 2013.

(29) Ibid.

Figure 8a. Bilateral Trade Flows and World GDP share of the three economic powers



Source: CEPS report for ESPAS, 2013

It follows that more than 90 % of global GDP growth will occur outside Europe ⁽³⁰⁾ and the emerging countries will account for half of global consumption. External trade will grow faster than the internal market, accounting for as much as 50 % of total trade, as against 40 % today. With the relocation and fragmentation of production chains, the services associated with traded goods (marketing, R&D, design) will grow substantially and will be a determining factor for the competitiveness of products. Direct and indirect trade in services will account for nearly 50 % of the value of trade flows.

So, in 2030, the European economy could become smaller in relative terms and less influential on global issues. The leverage in trade negotiation provided by its internal market could suffer.

Close up on the United States — its role in the global system

Barring a major catastrophe, the United States will still be the dominant super power in 2030. It will be the only country to have global economic, military, technological and financial reach, a global currency and an unrivalled system of global alliances ⁽³¹⁾. This confers a special responsibility to curb others from distorting the international system for their own ends, and to commit itself to the major battles ahead while respecting and fostering that system.

Yet recent history shows that despite — or because of — its special position as the dominant power, the United States has been reluctant to become involved in certain aspects of the multilateral system, — exploiting it, as with the Iraq ⁽³²⁾ war, or even rejecting it, as in the case of Guantanamo. In a less malleable world, between now and 2030, United States leadership will be judged on its capacity to resist the temptation to manipulate the system and to commit itself to maintain a proactive and responsible role ⁽³³⁾: combating climate change; strengthening the UN Convention on the Law of the Sea, also in order to encourage a peaceful solution to the tensions in the South China Sea; fostering stewardship of the Arctic; supporting the European Union integration process as a model of rules-based integration and promoting the European Union's emergence as a player in the security and defence fields. The direction taken by the TTIP may also be decisive, in particular the degree to which it is opened up in a second phase to other major countries.

A key challenge for the United States concerns the room for manoeuvre that domestic politics will allow to engage responsibly in world affairs. The United States public is uneasy about globalisation and tired of foreign interventions after a decade of wars with mixed results ⁽³⁴⁾. Moreover, a high level of government debt, an increasingly polarised and ever less effective political system and growing inequalities will impose serious constraints on United States action abroad ⁽³⁵⁾.

⁽³⁰⁾ 'Trade, Growth and Jobs Commission' contribution to the European Council, February 2013.

⁽³¹⁾ Fride-Chatham House Report for ESPAS, 2013.

⁽³²⁾ The UN Secretary General, Kofi Annan, declared explicitly in 2004 that the US-led war on Iraq was illegal: 'I have indicated it was not in conformity with the UN charter. From our point of view and from the charter point of view it was illegal.'

⁽³³⁾ UK Ministry of Defence, *Global Strategic Trends out to 2045*, 2014.

⁽³⁴⁾ See notably the lack of public support for foreign policies expressed in the German Marshall Fund's *Transatlantic Trends 2014*.

⁽³⁵⁾ On the political situation in the United States, notably Foreign Affairs. September-October 2014. See *America — Land of decay and dysfunction*.

The major trends highlighted in this report will impact the transatlantic relationship in divergent ways. Some trends may push the transatlantic partners closer together while others will have the potential to drive them further apart.

Converging transatlantic trends towards 2030 include shared democratic values and the strong historical, cultural and human ties built up over more than two centuries, leading to wide participation in transatlantic networks. Empowerment of individuals is an important shared belief. Furthermore, the two actors share a common interest in innovation for sustainable development and face common challenges in resolving the economic and financial problems ahead. While the United States and the European Union together account for just over a quarter of global trade, they are the source of more than two thirds of the global stock of outward foreign direct investment (FDI) and are the destination for more than half of inward FDI stock⁽³⁶⁾. They also share a common interest in effective and multilateral global governance.

But the risk of a growing divergence in strategic interests on the two sides of the Atlantic⁽³⁷⁾ must also be addressed. This can be brought about by very contrasting defence capabilities, demographic trends and energy profiles. Regarding the latter, Europe will remain in the near future heavily dependent on imported energy, while the United States is rapidly becoming virtually self-sufficient. In strategic terms, the United States has unchallenged defence superiority, a stable neighbourhood and a growing engagement in Asia, whereas Europe is encircled by a broad arc of potential crisis, from the Sahel to the Arctic, and currently has limited capacity for joint intervention in security and defence matters. In the field of the Internet, United States players dominate the landscape, contrasting with a European economy that draws its strength from traditional industries and services.

Overall, taking into account the factors above, it is likely that, despite a relative decline, the two sides of the Atlantic will continue to wield considerable joint influence. The question then arises as to what the transatlantic partnership could do collectively to hold together the international system and minimise the risks of divergence (see box on Transatlantic Partnership).

Close-up on China — success projected but not guaranteed

Among the major challenges ahead, none will be greater for the world than China's ability to undertake the changes needed to manage and limit any decline in its growth. By 2030, the Chinese economy should contribute up to 30 % of global growth. On present trends, foreign direct investment by China could reach USD 1.0 trillion by 2020, and — according to some observers — by 2030, it could be playing

the role that the UK played after 1870 and the United States after 1945.⁽³⁸⁾

China's recent development is a unique achievement in history, both in scale and speed: more than 600 million people have been lifted out of poverty through annual growth of around 10 % over two decades. Yet the scale of the challenges facing China and hence of the reforms it must undertake is immense: it needs to redefine the role and limits of the state and the private sector in the move towards a market economy; to foster the development of an open, innovative society; to reduce corruption and fraud to manageable levels; to develop a truly independent banking sector; to manage a real estate bubble and very high levels of public and private debt; to ensure the cohesion of a society with marked social and territorial inequalities; and to combat terrorism and manage separatist movements. Europe and its partners must be very clear-headed about the country's future, given that China's responses to these challenges could upset any projections. However, China has shown its ability to look far ahead and so overcome many problems. Looking ahead to 2020, the National Intelligence Council's 2000 report still pointed to the difficulties that integration into the global economy was posing for the development of the Chinese economy. Despite its continuous success, some economists still voice doubts about the Chinese economy's ability to avoid a collapse of its model of growth or at least a serious crisis⁽³⁹⁾.

Future growth will depend on major political, economic, and social reforms. But in every scenario, China's growth rate is predicted to drop sharply in a few years from 10 % to below 5 %. The country's future is beset by uncertainties:

- **Economic uncertainties.** The rebalancing of the economy towards consumption has started, but further efforts will be required to improve innovation and productivity, especially to cope with the economic effects of a rapidly ageing population. Over the next five years the number of pensioners will exceed the number of new entrants into the economy. If this adjustment is not carried out, the Chinese economy will experience a cycle of over-investment, further limiting the growth rate over a prolonged period. The size and opacity of public and private debt, the latter notably at regional level, will have to be addressed. A real market economy must be set up in the financial sector. Overall, the value of the economy's production chain appears certain to increase, in particular thanks to rising numbers of graduates and large investments in technology. The number of university graduates could increase by around 200 million by 2030. The internationalisation of the renminbi is inevitable given the size of the Chinese economy, its growth and its integration into world trade.

⁽³⁶⁾ Hamilton and Quinlan. *The Transatlantic Economy 2013, Annual Survey of Jobs, Trade and Investment between the United States and Europe*. 2013.

⁽³⁷⁾ See Transatlantic academy. *Liberal Order in a post-Western world*, 2014.

⁽³⁸⁾ Arvind Subramanian, *Eclipse: Living in the Shadow of China's Economic Dominance*, Peterson Institute of International Economics, 2011.

⁽³⁹⁾ Magnus, *Asia's economic miracle fading*, Centre for Economic Reform, 2013.

- **Social uncertainties.** Growing inequalities within society and between regions will pose a major challenge and could reduce the development of inland regions and wage growth in particular.
- **Environmental concerns.** The environmental risks linked to uncontrolled economic development and to corruption will increase considerably, as illustrated by the instances of food fraud and pollution affecting large urban areas, both of which had major public health repercussions. In 2030 China will be the world's largest emitter of carbon dioxide.
- **Political uncertainties.** The chief concern of the Chinese leadership will be domestic political stability. It will mobilise considerable financial and political resources to ensure internal security and control, including over Internet communications. Secure access to the natural resources necessary for growth will remain China's foreign policy priority: by 2035 it will be importing 75 % of its oil, and its gas consumption could triple⁽⁴⁰⁾. But its foreign policy will also continue to be heavily influenced by domestic political considerations and the desire to restore the country's standing after the 'century of humiliation'. Its growing assertiveness towards its neighbours is reflected in a tougher stance in the China Sea and elsewhere in its neighbourhood, which could worsen — with risks of conflicts — if growth slows down sharply.

Close-up on Africa — seeking good governance to unlock huge potential

Africa's population has experienced a marked increase in last few decades, representing five times its size in 1950. This rapid population expansion is set to continue. By 2030, Sub-Saharan Africa could be an area of dynamic growth provided that there is significant and sustainable progress on governance. This is the only area in the world where the labour force will increase significantly, rising from 500 million to over a billion in 2030⁽⁴¹⁾. The drivers behind the continent's growth will be not only its raw materials abundance, but also its demographics and the improved ratio between the active and non-active population.

Despite this, Sub-Saharan Africa's total GDP is unlikely to be sufficient to have a global impact⁽⁴²⁾. Wealth per person will be five times less than in China and half as much as in India. The low level of general education will remain a major obstacle and the lack of employment will continue to encourage emigration, especially to Asia and Europe.

TRANSATLANTIC PARTNERSHIP 2030: TOWARDS A NEW VISION OR CHIMERA?*

The expectation by 2030 is that the United States, the European Union and China will still be the world's dominant powers, and that NATO and the United States will remain the provider of last resort of European Union security. How can the European Union and the United States work add to their common interests and thus lessen the importance of their potential divergences?

Managing the wide range of complex issues ahead will be easier and more coherent if the United States and the European Union can widen and deepen their cooperation. They could:

Build on their combined economic strength

The prosperity and competitiveness of both should be enhanced by completing the negotiations on the Transatlantic Trade and Investment Partnership (TTIP) ensuring also the durability of a rules-based global order. This is to be achieved by eliminating non-tariff barriers and aligning regulatory standards. This should obviously be compatible with the revival of efforts for a global multilateral round through the WTO. In time also, this work could extend to the financial, digital and energy sectors, creating a genuine Transatlantic Market for 2030.

Develop a common vision of a global order

A multilateral, multi-polar world is not inevitable. But, in a multi-polar world with increasing diffusion of power, the European Union and the United States have a common strategic interest in looking at inclusive multilateral solutions to face global challenges. This may best be done by working towards a global convergence of both living standards and shared values, based on a rules-based international system. To do this, the United States and the European Union would need to enhance their consultation and cooperation mechanisms. Furthermore, this system must be updated if it is to survive in the 21st century. Emerging powers have benefitted, but have not been fully incorporated into multilateral systems. Moreover, there are new issues such as migration, food crises and water scarcity that are not fully covered by existing multilateral institutions and need to be brought under new frameworks.

⁽⁴⁰⁾ FRIDE-Chatham House report for ESPAS, 2013.

⁽⁴¹⁾ Unicef, *Generation 2030 I Africa*, 2014.

⁽⁴²⁾ CEPS report for ESPAS, 2013.

Build a Transatlantic civil society for empowered individuals

The United States and the European Union will increasingly share many common policy problems on such issues as economic growth, environmental protection, Internet governance, democratic institutions, science and technology and developing ethical guidelines for biomedical and technological innovation. With a diffusion of power from the state to non-state actors taking place, the strengthening of ties between citizens across the Atlantic becomes more important and opens the opportunity to broaden such linkages worldwide. Maintaining a free and open Internet is vital for European Union and United States citizens, recognising that its main rules have been defined by the civil society and business needs.

How might these ideas be implemented? According to the authors of the report, one should 1) first, establish an EU-US joint 'vision group' for global trends research providing a platform for joint EU-US long-term strategic thinking (the goal is not just the future: thinking about the future assists in articulating the issues of the present). This could result in not only the provision of long-term perspectives on US-EU relations but contribute towards rethinking the global system in the context of long-term trends. 2) Second, also promote a deepening of US-EU relations in the context of NATO which should be the framework for the deepening of EU-US security cooperation in the Euro-Atlantic region.

Transatlantic ties shaping global trends for a better world. M. Burrows/A. de Vasconcelos. Transatlantic Policy Network (TPN).

The key to Africa's development will be the emergence of a middle class, which could number almost a billion by the middle of the century. This middle class could bring about a complete transformation of the economy, if it ensures:

- Gradual establishment of an African business model, more endogenous and less dependent on external aid, with more control over its own resources and based on a domestic market and domestic consumption.

- A virtuous circle to retain skilled labour in Africa and establish local growth-promoting industries, especially in high-potential sectors such as energy, water, infrastructure and telecommunications.
- Green development, as a driving force for the African economy and as a response to the global food challenge. Global agricultural production needs to increase by 60 % for the planet to be able to feed all in 2050. Africa is home to almost 40 % of the world's unused arable land ⁽⁴³⁾. With improved irrigation techniques in the near future and the impact of developments in biotechnology, agricultural production could potentially increase by 50 % ⁽⁴⁴⁾, with 70 % of the increase in crop production coming from higher yields ⁽⁴⁵⁾. According to a World Bank report in 2013, Africa's agro-food and beverage market should triple to USD 1 trillion by 2030 ⁽⁴⁶⁾. In practical terms this should lead to more jobs, prosperity and opportunities, and a new competitiveness enabling Africans to enter the world markets.
- Durable and successful new centres of excellence to provide African students with better training and advanced scientific and technical expertise ⁽⁴⁷⁾. Such centres should help forge research and innovation solutions to meet Africa's specific challenges: managing the effects of climate change, improving agricultural output, and finding new remedies for infectious diseases. In 2030, a ratio of 500 per million researchers should be achieved, from less than 50 today.

However, major structural challenges still block such an evolution, such as the lack of transport infrastructure and thus of trade flows beyond national markets and the lack of farmers' access to innovation and knowledge.

Africa's potentially huge human resources remain hampered and possibly endangered by basic deficiencies in food security and healthcare. One in four persons in Sub-Saharan Africa remains undernourished, and the slow rate of improvement means the absolute numbers will carry on increasing in the next decades ⁽⁴⁸⁾. On a key indicator such as child mortality, figures are also improving but convergence with the developed world is still not happening, in contrast to other developing regions such as Asia and Latin America ⁽⁴⁹⁾. Under such circumstances, the risk of very large-scale epidemics in Africa may well remain by far the largest.

⁽⁴³⁾ FAO, *World Agriculture: Towards 2015/2030*, 1995.

⁽⁴⁴⁾ World Bank Report, *Growing Africa: Unlocking the Potential of Agribusiness*, 2013.

⁽⁴⁵⁾ FAO, *World Agriculture Outlook*, 2002.

⁽⁴⁶⁾ Idem.

⁽⁴⁷⁾ The World Bank finances 19 centres of excellence in universities in seven countries of West and Central Africa, delivering specialised education in science, technology, engineering, and mathematics, as well as agriculture and health.

⁽⁴⁸⁾ FAO, *The State of Food Insecurity in the World*, 2014. The number of underfed people fell relatively but increased by 38 million in absolute numbers between 1990 and 2014, a trend set to continue.

⁽⁴⁹⁾ WHO, *Levels and Trends in Child Mortality*, 2014. At 92 deaths per 1 000 live births, child mortality stands at 15 times the average in high income countries. Convergence at present rates would take over a century.

Crucially, economic development is conditional on much better governance: the rule of law, democracy, and respect for human rights must become a much more tangible reality. It also implies a change in the dynamics of Sub-Saharan Africa's relations with its partners on the world stage leading to a solid network of private partner companies in all segments of the world market, rather than just producers of raw materials dependent on external development models. This would require a 'decolonisation in terms of mentality' vis-à-vis Europe and the United States, as well as a reassessment of the South-South cooperation notably with China, India and Brazil. It would require a change of posture from all actors, more focused on the long term and on diversification of the African economies rather than on resources extraction.

In this context it is worth noting that close cultural and linguistic links will remain between Africa and Europe, sustained notably by the important African community in Europe. English and French as well as Portuguese will remain *lingua franca* for many African countries.

Old and new emerging countries — keys to success

The BRICS' stunning growth over the last twenty years has been a major and unexpected phenomenon in the world economy. But the economic future of the BRICS — including, as noted, China — will depend on their ability to break through the glass ceiling and join the ranks of advanced countries, as only some Asian countries have achieved in the recent past (Japan, South Korea and Singapore). Like these, the BRICS will need to grow from being 'cut-and-paste' economies, using technologies developed by others, to produce their own. Every emerging country will have to find its specific place in the global economy with sustained and specific comparative advantages, to avoid being squeezed between competitors or bypassed by the next generation of emerging countries.

Several new emerging countries will appear on the scene by 2030, since economic progress is accelerating in many states⁽⁵⁰⁾. New large economies in 2030 measured in total GDP at PPP include⁽⁵¹⁾ Mexico, Indonesia, Turkey, Nigeria and Vietnam. Their enduring success will depend mostly on their governance and on the quality of their economic policy, their demographic profile and their level of education.

The key factors in the economic development of Latin America will be natural resources, education and the ageing population. Brazil, Colombia, Peru, Ecuador, Chile, Argentina and Costa Rica are expected to see sustained growth. But the demographic dividend will gradually diminish and in the years between now and 2030 it will be crucial for them to take anticipatory action to boost their productivity. Their rich reserves of natural resources will not be sufficient to ensure sustainable economic development: investment in education, science and technology will be needed, over and above the efforts already being made in some sectors such as renewable energy⁽⁵²⁾.

A turning-point in the globalisation of trade

Globalisation and technological development have profoundly altered the balance and shape of global economic relations over the past 25 years. Worldwide, goods exports rose from USD 2 030 billion in 1980 to USD 18 260 billion in 2011, an average increase of 7.3 % a year, more than two percentage points higher than global GDP⁽⁵³⁾. Since 1989, more than a billion workers have joined the global labour market, mainly in Asia.

In the coming years, growth in traded goods could slow down for the first time since the early 1990s, while trade in services, investment flows and South-South trade could see a substantial increase. However trade will still concentrate around three industrial hubs (North America, Europe and Asia), where the value and production chains are tightly integrated.

Financial markets will probably undergo a paradigm shift: by 2030, the limited capacity of younger economies (India and Sub-Saharan Africa) to absorb the excess savings of ageing societies (with Europe and China at the forefront) will restrict the opportunities for investment. Therefore, new opportunities in the developed countries and greater risk control will be essential to ensure that a search of high returns does not lead to new speculative bubbles. The global attractiveness of European financial markets will depend not only on their stability, but also on the quality and diversity of financial instruments and products, and on the credibility of European financial regulations.

⁽⁵⁰⁾ See notably HSBC global research, *The World in 2050*, PwC economics, 2012. The BRICs and beyond: prospects, challenges and opportunities. 2013. Goldman Sachs. The BRICs 10 Years On: Halfway through the Great Transformation. 2011

⁽⁵¹⁾ PwC economics, *World in 2050, The BRICs and beyond: Prospects, challenges and opportunities*, 2013.

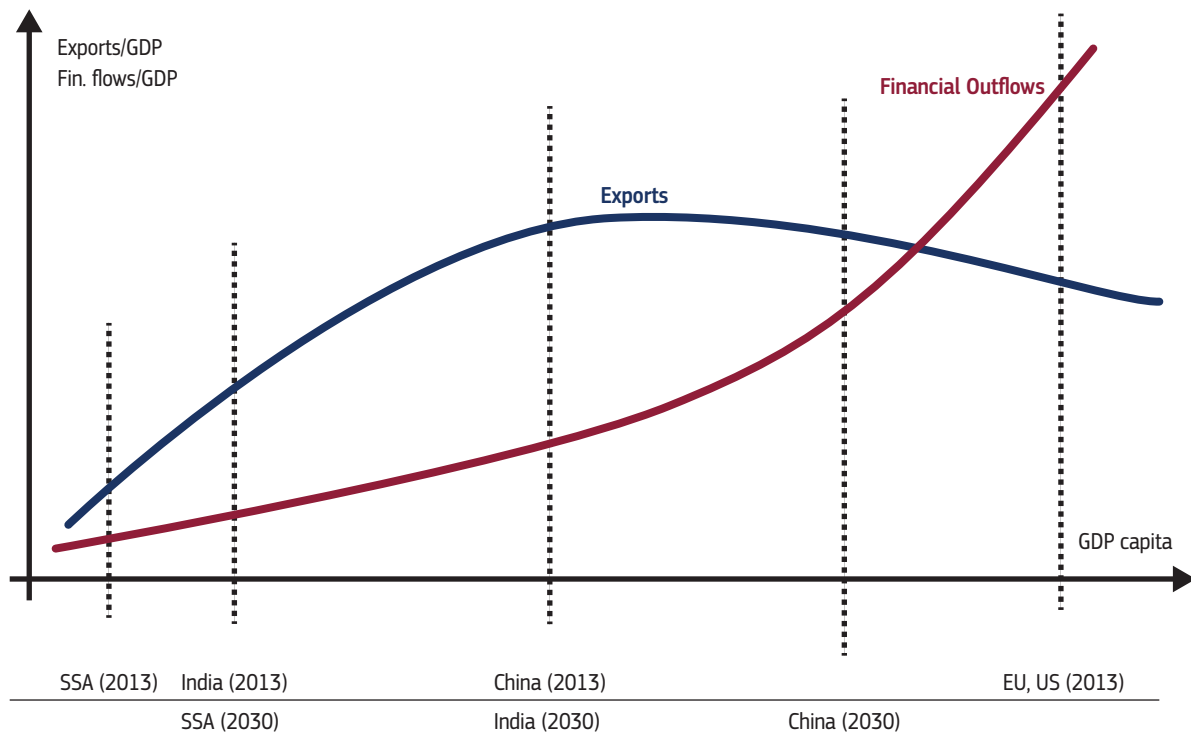
⁽⁵²⁾ Inter-American Dialogue, *The World of 2030: risks and opportunities for Latin America*, 2013.

⁽⁵³⁾ World Trade Organisation (WTO), *Report on World Trade*, 2013.

The capital markets will continue to play a fundamental role in distributing financial flows around the world. In a geopolitical context of uncertainty and insecurity, economies with a predictable, stable system of governance and administration of law will be favoured by investors. The effects of the 2008 financial crisis should progressively fade⁽⁵⁴⁾ and savings and investments reconnect with economic fundamentals. The balance of risk will be tilted towards emerging countries whose financial sectors will grow substantially. This may raise the possibility in the coming decade of saw-tooth cycles of expansion, instability and/or financial crises. Establishing an independent, efficient and resilient financial system will be a key factor for growth in such countries.

This evolution in globalisation will happen at a time of particular vulnerability for the emerging countries as they must carry out major domestic reforms to avoid the 'middle income trap' and set their development on a sustainable course. In this context, a possible slowdown or standstill in globalisation or a financial crisis would pose considerable risks of a rise in protectionism, particularly by countries that have not improved their competitive advantages through reforms. This is one key to explain problems recently afflicting Brazil, Russia and Japan. Moreover, rising geopolitical tensions may impact investment flows: witness the current decline of global investment in Russia and of Japanese investment in China.

Figure 8b. Trade and Financial flows across economic development



Source: CEPS report for ESPAS 2013

⁽⁵⁴⁾ CEPS report for ESPAS, 2013.

KEY GLOBAL TREND 3

A transformative industrial and technological revolution

Nothing will be less industrial than the civilisation born of the industrial revolution.

Jean Fourastié, 1963

THE WORLD IN 2030

Projections

- A technological revolution based on new industrial-production, bio-scientific, communication and digital processes will transform societies;
- The speed of technological change is accelerating;
- Autonomous decision-making processes will rapidly rise;
- Europe and the United States will remain world leaders in science and knowledge-creation, though worries persist about applied research.

Uncertainties

- The speed of convergence of technologies remains uncertain;
- Potentially fundamental impacts of technologies on people and societies at large could trigger unpredictable social reactions.

Wild cards

- Breakthroughs in extending life expectancy are possible;
- A major cyber-war would have systemic implications;
- Ethical, religious or social backlashes triggered by inequalities or focused on privacy issues may affect worldwide stability.

At the same time, a new digital divide may result from uneven infrastructure coverage, locking certain areas and regions out of full access to the digital society. This could be very handicapping to those concerned, since economic, social and political power in 2030 will increasingly depend on high performance integrated networks.

The digitalisation of markets began 20 years ago. Nevertheless, its reality has not been understood in the same fashion by all operators and different approaches taken have led to different results in connectivity and investments. In the United States, for example, the market approach for broadband has resulted in much greater investment, while the more regulatory national approach and service-based competition has left Europe's broadband system highly fragmented, ill-financed — with an investment shortfall larger than EUR 100 billion — and in great need of improvement.

In the near future, companies will face the additional challenge of big data management. If they do not master it, their competitive position will seriously weaken if it becomes the starting point of a genuine industrial revolution based on converging technologies.

A third industrial revolution?

To date, notwithstanding their undeniable social impact, the development of information and communication technologies has not yet given rise to an industrial revolution on the scale of the 18th and 19th centuries ⁽⁵⁵⁾.

The convergence of several future technological leaps forward may mark the launch of a true 'industrial revolution'. Existing value chains and their geographical breakdown could be transformed by requiring the reinvention of many current industrial business models. The economic order that could emerge would be based on a new structure of competition, change of performance across industries, a new energy system, new forms of capital accumulation, new forms of intermediation and a comprehensive reorganisation of trade.

Business environments should be significantly affected by new pressures on prices and margins, unexpected forms of competition, winner-takes-all dynamics, plug-and-play

The digitalisation of world markets

Core digital technologies are evolving and converging rapidly, fuelled by broad territorial connectivity and real-time, real-world data. We may be on the cusp of a real third industrial revolution. United States' digital exports are already close to EUR 500 billion. This makes them the third-largest category of exports, with the Europeans as the main clients. In the early 2010s, the Boston Consulting Group considered that 4 % of United States GDP could be related to the Internet and the economies or the new business opportunities it had generated.

This clearly indicates that the mastery, application and development of digital technologies will be key ingredients of economic and industrial competitiveness. Those companies ill-equipped with state-of-the-art digital technologies or with outdated capacities may just be cut off from global markets, with dramatic consequences for the less connected and agile.

⁽⁵⁵⁾ The first industrial revolution (from 1760 to 1840) was launched by the development of the steam engine, the mechanisation of textile manufacture and the use of coke instead of charcoal, followed by the mass production of steel and lastly the development of the railways. The second industrial revolution (from 1870 to 1914) was triggered by the mass production of steel, electrification, telecommunications, and lastly the development of the motor car and the production line.

business models, growing talent mismatches and converging global supply and demand ⁽⁵⁶⁾. To manage these changes, policies will have to be adapted to facilitate businesses tackling a more complex and dynamic environment, and to mitigate the possibly brutal implications on the employment of the unskilled.

This revolution may trigger a far-reaching reconfiguration of the locations of 'knowledge centres' and innovation and industrial production. At present, California is located at the epicentre of the largest area of innovation in the world ⁽⁵⁷⁾, is a transport crossroads and is benefiting from a dynamic industrial and financial hinterland.

In 2030, new regional innovation and production centres will be definitively established in North America, Europe and Asia. Their powers of attraction and development will depend on openness of the markets, university and technological infrastructure, trade and information circuits and the financial capacity available for business development. These locations will strongly affect the productivity, growth and wealth of the economies of the countries where they are sited. This revolution will profoundly change industrial fabrics by promoting flexibility, i.e. fluid cooperation between large companies, SMEs and entrepreneurs.

Coming technological breakthroughs

According to industry and other sources, the following technologies are expected to develop on a massive scale between now and 2030:

- The 'Internet of things': big data and data-mining, cloud computing and super-calculators, brain-machine interfaces and sensors.
- Multiplication of big data will affect and transform the whole of society. Collecting, purchasing and controlling these data will be regarded as an essential resource for the economies and societies of the future. The geopolitical and commercial requirements for competitiveness will be associated with access to resources, control of operating technologies and ethical questions relating to the fundamental rights and freedoms of individuals.
- In 2020, more than 50 billion items, ranging from cars to coffee machines, will be connected to the Internet ⁽⁵⁸⁾. The estimated global revenues could be in the order of

USD 14 trillion from 2013 to 2022 ⁽⁵⁹⁾. The mass of data generated could represent an incalculable resource for those who can access and interpret them.

- Cloud computing will revolutionise IT platforms while reducing operating costs, with very significant growth potential (with a turnover reaching EUR 174 billion in 2020, against EUR 30 billion in 2011). The economic impact of its use could be around EUR 1.2 to EUR 4.5 trillion in 2025.
- Intelligent mobility: in 2030, 75 % of the world's population will have mobile connectivity ⁽⁶⁰⁾ and 60 % should have broadband access ⁽⁶¹⁾. Energy, transport and information systems will be closely linked by sensors of all kinds.
- Modelling and enhanced (virtual) reality will be everyday design tools across a broad spectrum, including infrastructure, cars and aircraft, climate forecasting and peace-keeping operations.
- Ubiquitous sensors will govern communications devices (including future smartphones), clothes, houses, vehicles and drones. It will be possible to merge information with satellite data and to use it for predictive modelling of events, like pollution or traffic.
- Additive transformation (3D printers) will play a significant part in industrial production systems, with impacts on the costs and localisation of production and the potential for the recycling of raw materials to be systematic ⁽⁶²⁾.
- A combination of robots, nano-technology and artificial intelligence should replace humans engaged in repetitive production or even in household services. By around 2025, autonomous and even self-teaching algorithms will enable vehicles, mini-drones and anthropomorphic robots to operate autonomously.
- A combination of nano-, bio- and information-technology will revolutionise healthcare ⁽⁶³⁾. However, delivering high-tech, personalised forms of treatment while ensuring universal access to healthcare may create budgetary strains when shaping future health policy.
- Synthetic biology should enable many new applications through the industrial production of biomaterials, by replacing chemicals based on non-renewables with renewables (biofuels, including hydrogen) ⁽⁶⁴⁾.

⁽⁵⁶⁾ McKinsey and Company, *Strategic principles for competing in the digital age*, 2014.

⁽⁵⁷⁾ California is already the centre of the 'world-economy. The concept of 'world economy' was defined by the modernist historian Fernand Braudel as an economically autonomous section of the planet able to provide for most of its own needs, a section to which its internal links and exchanges give a certain organic unity. World-economies are centred on a city which represents their heart; thus in the 'West', Venice, Antwerp, Amsterdam, London and New York replaced each other in succession. The notion of world economy refers to a country's ability, at a given time, to exercise world commercial and financial domination from an economic heart centred on a city. Several different powers have been the world centre of gravity since the 1850s. Fernand Braudel, *Civilization and Capitalism: 15th-18th centuries*, 1967.

⁽⁵⁸⁾ Deloitte, *The Internet of Things Ecosystem: Unlocking the Business Value of Connected Devices*, 2014.

⁽⁵⁹⁾ Cisco, *Embracing the Internet of Everything to capture your share of USD 14.4 trillion*, 2013.

⁽⁶⁰⁾ European Internet Foundation, *The Digital World in 2030*, 2014.

⁽⁶¹⁾ Roland Berger Strategy Consultants, *The Trend Compendium 2030*, 2011.

⁽⁶²⁾ McKinsey, *Disruptive Technologies: Advances that will transform life, business, and the global economy*, 2013.

⁽⁶³⁾ Copenhagen Business School, *Automation, labour productivity and employment — a cross country comparison*, 2013.

⁽⁶⁴⁾ ERASynbio, *Next steps for European synthetic biology: a strategic vision*, 2014.

Space News 2030

The risk of a chain reaction of orbital debris in the 2020s was averted just in time thanks to heightened global awareness of the problem. It is impossible to imagine the economic and social cataclysm that would have been wrought by the destruction of half of our space potential following the chance collision of fewer than a dozen satellites, thereby creating 60 000 items of debris. But where are we now?

Space is still the stuff of dreams, as demonstrated by the first mineral asteroid captured by the crew of Orion, which was followed by more than four billion spectators in immersive vision. Not to mention the first moon tourist and the descent of the marsonauts into the Gale Crater, where nobody really expected to find colonies of proto-bacteria still alive; or the even more spectacular findings on Jupiter's moons. The icing on the cake was the chance discovery of the habitable extrasolar planet Gamma, which lost its atmospheric oxygen in less than three years. This enigma has forced us to completely re-evaluate our vision of humanity and the definition of life itself. But this is just the tip of the iceberg — now let us come back down to earth.

Space programmes were reinforced after stratosphere horizontal take-off rocket-powered aircraft made space — and airspace — more accessible. The same applies to real-time modelling of oceanic, terrestrial and atmospheric systems, which owes a great deal to the pooling of geo-synchron observations. It has also been necessary to put an end to private hegemonies by classifying the avalanche of satellite images as 'open access' world heritage.

Metsat's one-month air quality and precipitation forecast has enabled a qualitative leap in capacity to anticipate climate catastrophes. But the real revolution has been a massive increase in environmental awareness as a result of space, airspace (via swarms of pico-drones) and terrestrial data fusion modelling by crowd-sourcing millions of (non-activist) citizen sensors.

Various applications have been developed on that basis, like optimisation of eco-agriculture, multiple energy management or environment-dependent health. Pro-ecological virtual Arctic tourism has been made possible by a very high-resolution space video using low-altitude micro-satellites. Similarly, it took the synergy between satellites and balloon drones enabling broadband communications and precision tracking to make polar maritime transport, which cuts the distance between Europe and Asia by half, safe.

Some time ago, laser communications by real-time relay satellites and quantum cryptography enabled replacement of co-pilots and black boxes in aeroplanes or guiding of autonomous aerial and surface vehicles. But they proved particularly useful in resolving the cyber-crime crisis in 2024-25.

True, the merger of civil and military space programmes has tended to promote technological advances and streamlining of funding. Even so, the problems associated with using big data generated by the sensor society and independent decision algorithms have opened a new chapter in non-conventional asymmetric conflicts.

The emerging mobile revolution

Reshaping mobility is a key element to achieving a Europe of innovation and lasting competitiveness, and also of well-being. In future, 'mobility' will be a combination of physical movement and virtual presence. Major social changes may result.

Technological convergence will transform the transport sector in the near future. Combined progress in, inter alia, robotics, automatic systems, electric or hydrogen engines, sensors and satellite navigation systems ⁽⁶⁵⁾ will allow us to move in an autonomous vehicle while working or surfing online, or interacting with smart homes. Together with the use of mini-drones to transport objects, this evolution will revolutionise travel between and within urban centres.

Apart from safer roads (casualty numbers keep decreasing, but 26 000 were still killed and 200 000 injured in 2013 on the European Union's roads) and lower atmospheric pollution

(which causes 350 000 premature deaths at present), such autonomous transportation would generate considerable efficiency gains: congestion is estimated to cost 1.5 % of GDP in the European Union.

The resulting economies of scale will be significant, taking account of the convergence of holographic virtual reality and 5G, which will revolutionise tele-presence and therefore tele-work, including from autonomous vehicles.

These developments take place in the context of an ageing population and an increase of 'non-traditional' families. They will also enable greater mobility for minors and for older persons unfit to drive who will no longer depend on someone else for transport. Virtual presence and smart homes will also mean that the elderly can be better looked after in their own homes, thereby reducing the burden on the public purse. Smart mobility, seen as a multi-modal service to which everyone has access and which incorporates a fast broadband connection, could therefore be a pathway to a fairer society.

⁽⁶⁵⁾ European Commission, Space Exploration and Innovation Space Policy and Coordination Unit, 2010.

The mobility of the future will thus be an example of convergence between:

- humans and machines with vocal and digital interfaces;
- humans and humans (instant virtual communication);
- machines and machines, in which all mobiles (vehicles, drones, etc.) communicate with each other.

Technology convergence and its consequences

The multiplication of big data will affect and transform the whole of society. Collection of data, ownership of data, access to data and exploitation of data are becoming primary sources of economic and political power. In particular, the collection and analysis of large quantities of personal data, and the use of big data analytics, could invade privacy to an unprecedented degree and generate broader societal effects.

All aspects of society — such as politics, governance, education, science, lifestyles, collective intelligence networks, the setting-up of open systems, and health, including transformation of the human genome — will be transformed by technological breakthroughs. Divisions between education, work, leisure and retirement phases will be less clear-cut than today and training will be life-long for many.

- The digital economy combined with biosciences and new industrial processes and boosted by pro-education public policies may transform societies into knowing societies ⁽⁶⁶⁾ which are more able to adapt in a dynamic environment.
- Socio-cultural impacts. At a more fundamental level, digital technologies may affect our relations with other individuals and make it more difficult for some to distinguish between reality and virtual reality. An

ever-increasing abundance of information may impact cognitive and 'attentional' capacities, with implications for human interaction ⁽⁶⁷⁾.

- Human-technology fusion. Technology may have a transformative effect on human beings, by boosting not just their physical abilities, but also their intellectual capacity ⁽⁶⁸⁾. In addition to organ regeneration, stimulation of cognitive capacities, genetic choices, delayed ageing or even human augmentation may be possible. Over time, this could deeply affect intra-societal relationships, especially between the humans thus transformed and those who are not.

With the development of digital technologies, the volume of personal data will massively increase. People's concern regarding the difficulty in controlling their own data could lead to mistrust and aversion to technological innovation and the digital society ⁽⁶⁹⁾. Therefore constantly updated regulations will have to guarantee the integrity of these data and ensure that they are not manipulated.

Such a technological revolution could reverse the downward growth trend in developed countries and provide new answers to global challenges, from climate change to energy issues, as well as greatly expanding possibilities for individuals. However, ethical and societal dilemmas are likely to be sharp enough to spark debates about the usefulness of certain innovations and whether they ultimately benefit people and societies. Impacts on the labour market could be permanent in some cases and transitional in others: historians will recall that the last industrial revolution wiped out almost 40 % of jobs at a time of demographic growth, with serious social effects that lasted for decades. Technology has to be trusted as well as mastered to deliver real success in the 21st century.

⁽⁶⁶⁾ European Internet Foundation, *The Digital World in 2030*, 2014.

⁽⁶⁷⁾ N. Dewandre et al, *The Onlife Manifesto: Being Human in a Hyper-Connected Era*, 2013.

⁽⁶⁸⁾ Academy of Medical Sciences, British Academy, and Royal Academy of Engineering, *Human enhancement and the future of work*, 2012.

⁽⁶⁹⁾ *Data and Security Breaches and Cyber-Security Strategies in the European Union and its International Counterparts* — EP September 2013. World Economic Forum's Global Risks 2014 report. 2014

KEY GLOBAL TREND 4

A growing nexus of climate change, energy and competition for resources

THE WORLD IN 2030

Projections

- Large-scale exploitation of natural resources will remain concentrated in a small number of dominant countries and regions;
- Food and water supply will be about managing scarcity — a problem made worse by climate change;
- By 2030, 93 % of the rise in energy consumption will be in non-OECD countries.

Uncertainties

- The extent of rise in sea levels and ensuing natural disasters is uncertain while more than 60 % of the global population lives in coastal areas;
- Large-scale migrations triggered by floods, droughts and food shortages may affect Europe;
- Arctic icecaps melting quickly and opening up new opportunities for natural resources and transport but with incalculable consequences for biological balance and climate change;
- OPEC and Russia may lose market power because of United States shale gas production.

Wild cards

- Breakthroughs in nuclear fusion technology could change the energy landscape and in the long term put a stop to global warming.

Despite the slowdown in the world's population growth, global competition for access to natural resources will continue to intensify, as will the associated risks, in terms of market volatility, geo-political tensions and instability.

This is because large-scale exploitation and extraction of natural resources will still be highly concentrated in a small number of producer countries. Across 19 resources (including crops, timber, fish and meat, metals, fossil fuels and fertilisers) the three largest producers on average account for 56 % of global production. The eight dominant players are China, the United States, Australia, the European Union, Brazil, Russia, India and Indonesia⁽⁷⁰⁾. Faced with growing demand for raw materials, worldwide mining capacity should double by 2030. Volatility is likely to increase due to heightened 'financialisation'.

In 2030, managing scarcity will be the principal challenge for food and water supply. Demand for food is expected to

be 50 % higher than in 2008⁽⁷¹⁾. This rise is mainly due to the improving living standards of the fast-growing middle class in the major emerging economies. The availability of agricultural land will pose another major challenge, as will some agricultural inputs, in particular those based on potassium.

Without corrective policies in the next 20 years, drastic and irreversible changes are expected in global eco-systems affecting the climate, biosphere, continents and oceans. The World Bank estimates that by 2025 climate change will be responsible for shortfalls in food harvests or water that will affect 1.4 billion people. Shortages could seriously threaten South-East Europe, South America, Africa and Asia. Unless some significant technological break-through occurs, water shortages will have a major impact on agriculture: in some countries, such as China, 90 % of water consumption is for food production. In 2030, between 1.9 and 2.6 billion people are likely to suffer from a lack of water. In Europe, the supply difficulties in the south and east are likely to worsen.

The next two decades will see ever closer linkage between the problems stemming from climate change and scarcity of resources. Recent studies highlight the growing threat posed by sea-level rises, due to the accelerating melting of Antarctic glaciers⁽⁷²⁾. These contain enough water to raise sea levels by more than 1.2 metres, with probably dramatic consequences for the more exposed coastal areas, where more than 60 % of the world's population lives.

By 2030, the impact of climate change on the European economy will probably still be limited. However, the CO₂ concentration of 450 parts per million, long considered the absolute limit, could be exceeded shortly after that, so that global social impacts will be felt much more forcefully, with climate disasters, such as floods, droughts and food shortages, possibly triggering significant migrations and conflicts. The extent of effects on agricultural productivity, migration, infectious diseases and vulnerability to extreme conditions are still much debated at scientific and political level.

However, such effects are already appearing right across the world — as the fifth Intergovernmental Panel on Climate Change report, published in 2014, makes clear⁽⁷³⁾. It also warns that 'increasing magnitudes of warming increase the likelihood of severe, pervasive and irreversible impacts'. The risks are considered high to very high in the event of a mean temperature rise of more than 4 °C. Even an increase of about 2 °C could result in global income losses of around 2 %, reduce the productivity of the oceans and jeopardise food security.

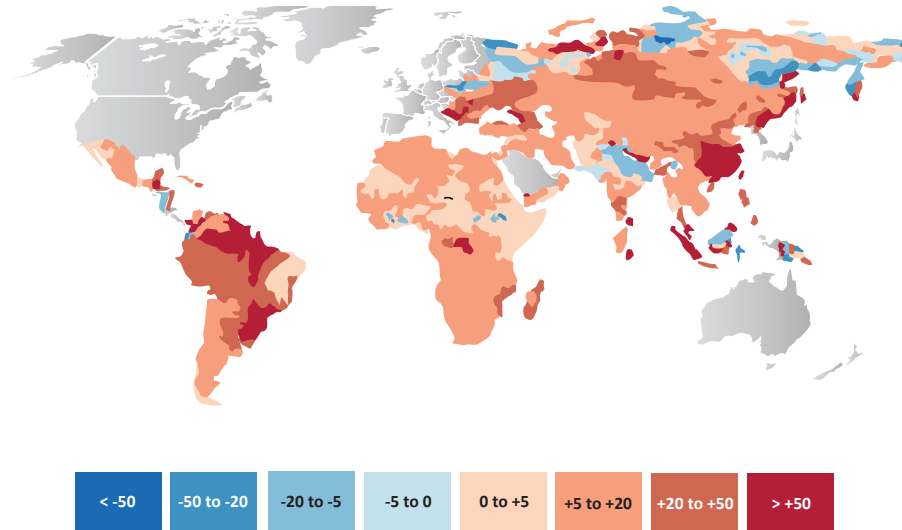
⁽⁷¹⁾ FAO, 2012.

⁽⁷²⁾ Ian Joughin, Benjamin E. Smith, Brooke Medley, *Marine Ice Sheet Collapse Potentially Underway for the Thwaites Glacier Basin, West Antarctica*, E. Rignot, J. Mouginot, M. Morlighem, H. Seroussi and B. Scheuchl, *Widespread, rapid grounding line retreat of Pine Island, Thwaites, Smith and Kohler glaciers, West Antarctica from 1992 to 2011, 2014*.

⁽⁷³⁾ IPCC Working Group II Contribution to AR5, *Climate Change 2014: Impacts, Adaptation, and Vulnerability*, 2014.

⁽⁷⁰⁾ Chatham House, *Resources Futures*, 2012.

Figure 9. Projected changes in water scarcity by 2030



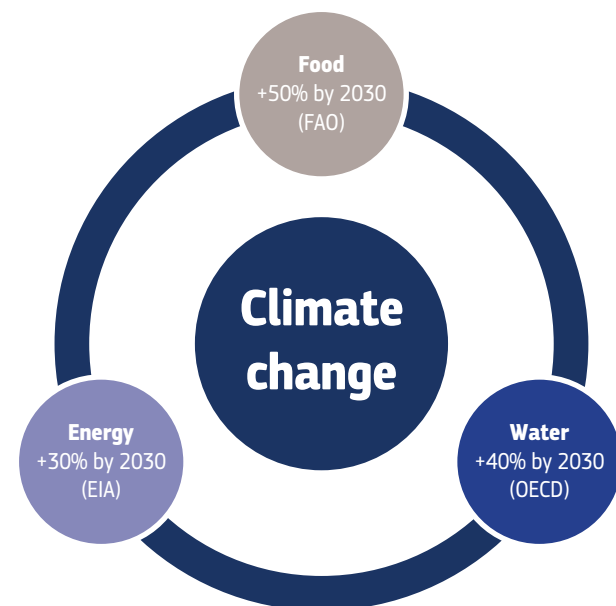
Source: Water and climate change: understanding the risks and making climate-smart investment decisions - 2009
Areas in grey were not included in the model analysis. © International Bank for Reconstruction and Development / The World Bank. Reprinted with permission.

The consequences of rising atmospheric CO₂ that are not directly climatic will gradually become more apparent and will attract growing media coverage, in particular acidification of the oceans and the resulting loss of bio-diversity. By 2030, some states that are particularly hard hit by certain effects of climate change might even attempt local geo-engineering operations, such as trying to seed clouds using sulphur compounds⁽⁷⁴⁾.

and adapting to climate change. And we have but 21 years to do it. And there are still enormous uncertainties remaining.'⁽⁷⁵⁾

The level of global mobilisation up to 2030 will depend on the international agreement on combating climate change due to be adopted in Paris at the end of 2015. The European Union, which by now accounts for only 10 % of global emissions of greenhouse gases, will struggle to influence global policies in this field. Without an ambitious agreement, keeping the average temperature rise to less than 2 °C above the pre-industrial level would seem unattainable. It will be a challenge to spur the key actors into resolute collective action. Failing that, combating climate change would then be more a matter for individual states willing to do so.

Figure 10. The natural resources perfect storm?



Source: adapted and updated from Beddington, 2009

'I have coined the point that we have got to deal with increased demand for energy, increased demand for food, increased demand for water, and we've got to do that while mitigating

Arctic zone — new opportunities for new rivalries

While there is little doubt that the ice caps are shrinking, there is uncertainty surrounding the rate of melting and how much scope there is to exploit the seabed or open new shipping lanes. However, the latest studies tend to yield higher estimates for melting than in the past, as the observed rate is well above modelling predictions⁽⁷⁶⁾. Recent scientific studies forecast that Arctic ice will disappear completely during the summer somewhere between 2020 and 2080, with a high probability that this will occur between 2020 and 2040⁽⁷⁷⁾. Profound impacts need to be anticipated: the environmental balance in the Arctic is unstable and thus susceptible to dramatic change, and given the fragility of its ecosystems, the consequences will be irreversible. Half the sea-level rise caused by global warming will be due to the melting of the Arctic ice caps and the Greenland ice sheet.

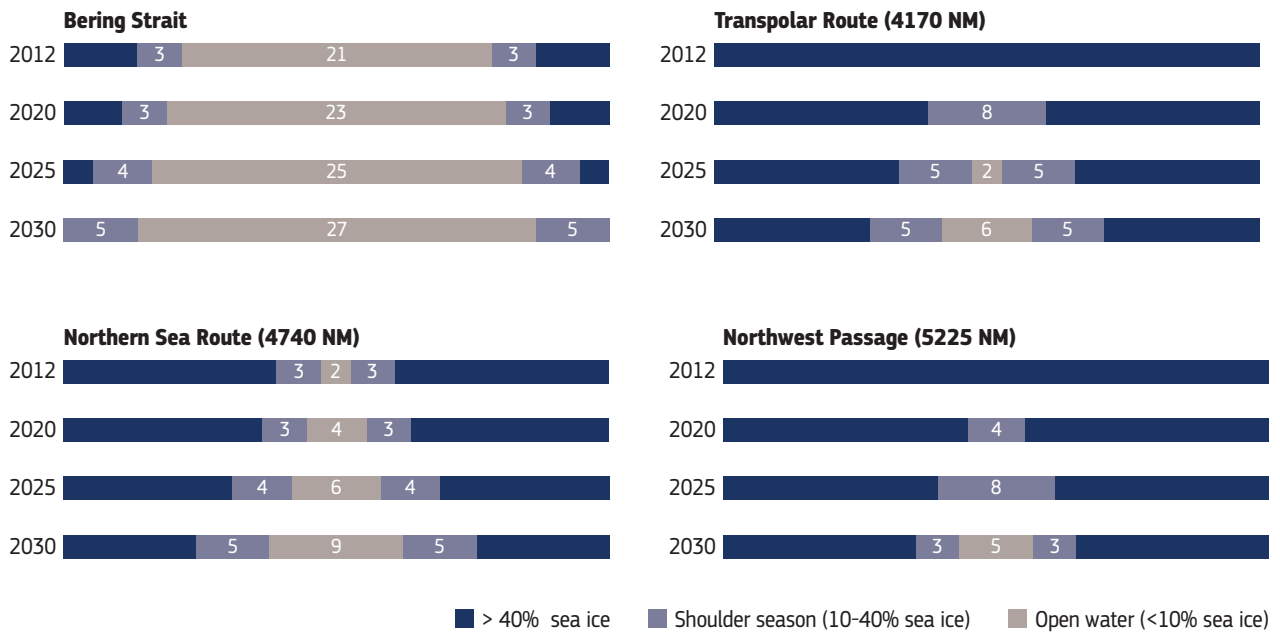
⁽⁷⁴⁾ The Chinese authorities are thought to have carried out very localised geo-engineering during the Beijing Olympics in 2008 to control local visibility and rainfall.

⁽⁷⁵⁾ Professor Sir John Beddington, chief scientific adviser to UK government, 2009.

⁽⁷⁶⁾ Intergovernmental Panel on Climate Change (IPCC) report, *Climate Change 2014: Impacts, Adaptation and Vulnerability*.

⁽⁷⁷⁾ James E. Overland and Muyin Wang, 'When will the summer Arctic be nearly sea-ice free?', *Geophysical Research: letters*, 21 May 2013.

Figure 11. Navigability of Arctic routes (weeks)



Source: United States Navy Arctic Roadmap 2014-2030.

Whatever the scenario, it is certain that the Arctic region will become gradually more accessible. This will provide opportunities but will also pose economic, geopolitical, environmental and human challenges. Europe and Russia will occupy a strategic position controlling access to the northern passage, which will be open for more than 50 days in the summer (Northern East route).

The Arctic region contains substantial natural resources — between 15 % and 30 % of undiscovered gas reserves — and mineral resources (zinc, nickel, graphite) ⁽⁷⁸⁾. Arctic waters are the richest fishing grounds in the world and global warming will prompt a number of economically attractive species to move northwards. The opening-up of semi-permanent shipping routes will bring considerable gains, in terms of the links between Europe, North America and Asia, especially as they will become navigable for longer stretches of time during the year. This could influence world trade routes, although the forecasts for traffic are still highly uncertain: the Arctic routes could account for between 2 % and 15 % of total cargo traffic by 2030. By then, at least 500 ships a year, totalling 1.4 million TEU (twenty-foot equivalent units), could be taking the northern route ⁽⁷⁹⁾.

Natural resources, the opening-up of shipping routes, and increased tourism and scientific research will make the Arctic a highly coveted space and a valuable transit route. Viewed from the Arctic, the frontiers between Russia, Canada, North America and Europe are much closer. However, governance is not yet up to the challenges. Tensions over exploitation of the polar region could well worsen under the impact of territorial and maritime disputes over use ownership of resources. Management of shipping routes and access to new resources

will need political cooperation, not least to avoid over-exploitation and irreversible damage to the natural environment. The existing forum, the Arctic Council, includes the states bordering the region; observers include key states such as China and possibly the European Union in the future. Its success will depend on the issues at stake and may be influenced by conflicts elsewhere between key stakeholders, namely Russia, the European Union and the United States.

A changing global energy landscape

Even in a best-case scenario, the effects of the present rising energy consumption will be lasting and even become a major problem in the more distant future. The increase in global consumption will be linked mainly to population growth and rising incomes. By 2030, 93 % of the rise in consumption will come from non-OECD countries. Energy savings and the development of renewables will not be enough to limit the growth of CO₂ emissions by 2030-40. The use of traditional nuclear power will remain controversial but it cannot, in any case, measure up to the magnitude of the problem. Progress in energy efficiency, CO₂ storage and demand management will probably not suffice either.

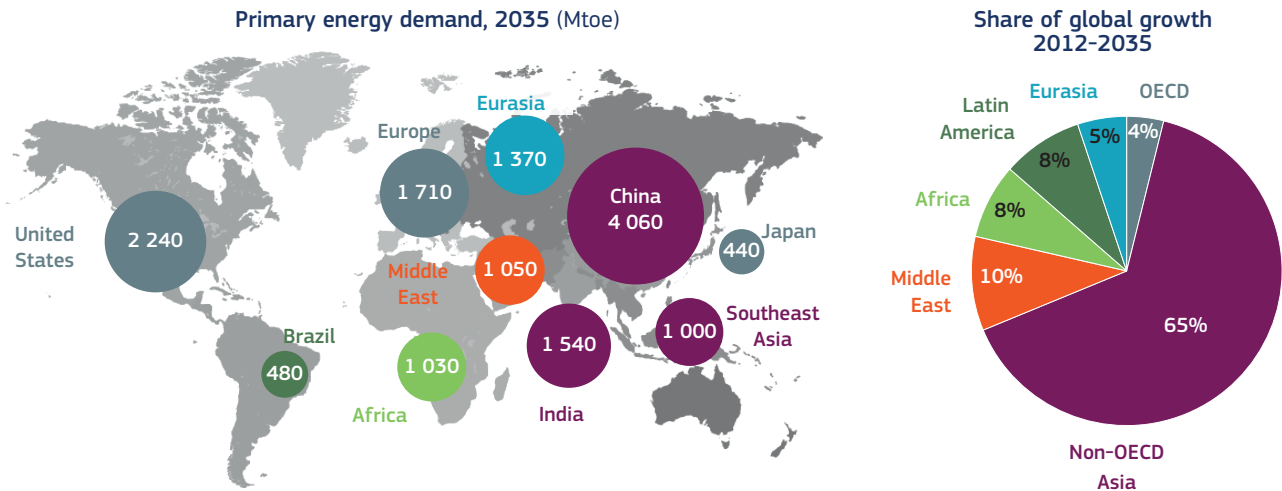
The global energy landscape will be determined more by a shift in supply flows than by reserves which are plentiful, including those from non-conventional sources such as shale gas.

New mining technologies will continue to transform the global politics of energy. Since the first oil crisis in 1973, the geo-politics of energy have reflected the balance of power between the producer countries, mainly OPEC and Russia, and the importing countries, notably the United States and Europe. This will change dramatically as the United States becomes largely energy-independent. Asia's share of global energy imports will further increase significantly. China, in

⁽⁷⁸⁾ US Geological Survey, *Circum-Arctic Resource Appraisal: Estimates of undiscovered oil and gas north of the Arctic Circle*, 2008.

⁽⁷⁹⁾ DNV, *Shipping across the Arctic Ocean*, 2010.

Figure 12. Global energy demand by 2035



Source: International Energy Agency, world energy outlook 2013

particular, will play an increasing role as importer, but also as a diplomatic actor in the oil producing region. OPEC might well decline in importance as its share of world production is shrinking. In many producer countries too, activity is shifting away from the large multinationals to domestic companies, sometimes with a return to a policy of 'resource nationalism'. This may impact on the search for and development of less accessible reserves, for which these companies lack the technical capability or investment resources.

Competition for energy resources will continue, with substantial shifts in consumption.

- According to the latest data, world energy consumption will be about 30 % higher in 2030 than in 2010 ⁽⁸⁰⁾. The proportion accounted for by fossil fuels is projected to remain roughly constant. In Europe, fossil fuels will still make up a large proportion, even if consumption stagnates, and imports will rise from 56 % in 2010 to almost 70 % in 2030. Natural gas will play a bigger role, replacing coal in electricity production, and possibly oil for some forms of transport.
- The natural gas market is expected to grow substantially — by around 50 % by 2035. Globalisation in this field will continue, at least for liquefied natural gas, and its share will increase even more strongly if the United States

decides to export some of its shale-gas production. Even more than the shale-gas boom, the outstanding feature in the coming decades will be the exploitation of gas resources in non-OECD countries, including in the Middle East, Africa and Russia. Europe's imports will likely continue to increase.

- The coal market is currently experiencing strong growth which is likely to continue until 2030. This is at odds with current targets for limiting climate change, unless there is rapid development and deployment of techniques for carbon capture and geological storage of CO₂.
- Nuclear and renewables are expected to account for 24 % of production and 40 % of the growth in energy demand by 2035.
- Finally, there could be a dramatic positive technological shift by 2030. Unexpected progress has recently been made in useable plasma confinement under the ITER international fusion project, which is due to come into service in 2025 for ten years' testing, up to 2035. Such a technological breakthrough could rapidly change the global energy landscape, and in the longer run slow down and even halt global warming attributable to 'traditional' energy consumption.

⁽⁸⁰⁾ International Energy Authority (IEA), 2013.

KEY GLOBAL TREND 5

Changing power, interdependence and fragile multilateralism

At the end of this peaceful century, forty years of peace had strengthened national economies, technology had speeded up the pace of life, and scientific discoveries had been a source of pride to the spirit of this generation. They honestly believed that the divergences and the boundaries between nations would gradually melt away into a common humanity, and that peace would be shared by all mankind.

Stefan Zweig on the period before 1914

When it comes to geo-politics, predictions are particularly hazardous. More than in other fields, the extrapolation of past trends is often belied by events. Witness the outbreak of the First World War, the fall of the Berlin Wall, the collapse of the Soviet Union or, more recently, the Arab Spring. None were foreseen by most mainstream observers even a few months before they happened. At this point in time, the need for caution is all the greater as there are signs of a radical geo-political shift that will mark a break with the steady evolution that has prevailed for 25 years.

Analysts agree that globalisation is moving towards a more polycentric and segmented system, with a bigger cast of players, more interconnected economically, financially and technologically. Globalisation will continue to increase interdependence between states and between public and private sectors.

As well as stressing how unpredictable and volatile the world is, the same analysts draw attention to stronger tendencies to pursue national interests and the fragmentation of decision-making⁽⁸¹⁾. This tension between interdependence and the increasing struggle for coherent common responses will lead to a proliferation of ad-hoc coalitions that are less vulnerable to internal disagreements that will block progress. Cooperation of this kind could be ill-equipped to deal with the systemic risks and protectionist crises that lie ahead.

THE WORLD IN 2030 AND BEYOND

Projections

- The world enters an age of insecurity, more interdependent, but also more fragmented, insecure and polarised;
- Key international relationships are likely to change, with the United States still dominant but challenged by the rise of China and other emerging powers;
- Multilateralism is weakening. Its tasks will be shared between multilateral organisations, regional alliances and other restricted structures;
- Convergence around values such as fundamental human rights, democracy and the social market economy may stall.

Uncertainties

- Systemic risks are on the rise, connected to the many challenges faced by emerging countries in their economic transition;
- Globalisation forces may become more and more divisive across and within countries;
- The future of democracy is uncertain worldwide;
- An economic and political realignment of key emerging countries could lead to them setting up rival multilateral structures;
- Degree of United States engagement on the global stage.

Wild cards

- A major conflict, possibly nuclear, that would have radical consequences;
- The collapse of a pivotal state in the EU's broader neighbourhood could destabilise the region and the European Union itself;
- Possibility of a new confrontation between two major powers, similar to the Cold War.

⁽⁸¹⁾ See notably EUISS report for ESPAS, 2012; FRIDE-Chatham House report for ESPAS, 2013; and NIC, *Global Trends 2030: Alternative Worlds*, 2012.

A globalisation that connects, but is also more exclusive

Because of its ability to integrate societies and economies, globalisation has been and still is one of humanity's great recent success stories. It is largely responsible for the collapse of extreme poverty, the spread of new technologies and of new ideas, and improved access to global knowledge. Ways of life, the level of and access to health and education services, as well as mobility patterns all dramatically improved in a few decades. It also brought about an unpredicted and unprecedented convergence in work habits and access to consumer goods and services for vast numbers of humans.

At the same time, however, the integrating ability of globalisation is challenged by a worrying and developing trend towards exclusion. The tendency of globalisation to shut out some countries (such as Congo), and even some large regions (such as the Sahel), is a major threat and a source of weakness for the international system⁽⁸²⁾. This process also strongly affects the poorest sections of the population even in developed and emerging countries that are well integrated into globalisation. It can also threaten territories and eco-systems by the destruction of natural resources, such as forests, and of biodiversity. These exclusions seem to increase in scale; in the process they alienate those directly hit in developing countries as well as citizens in developed countries, leading to reactions such as the 'Occupy' or 'indignant' movements, which could become stronger in any future crisis.

Defence spending as a marker of shift of power

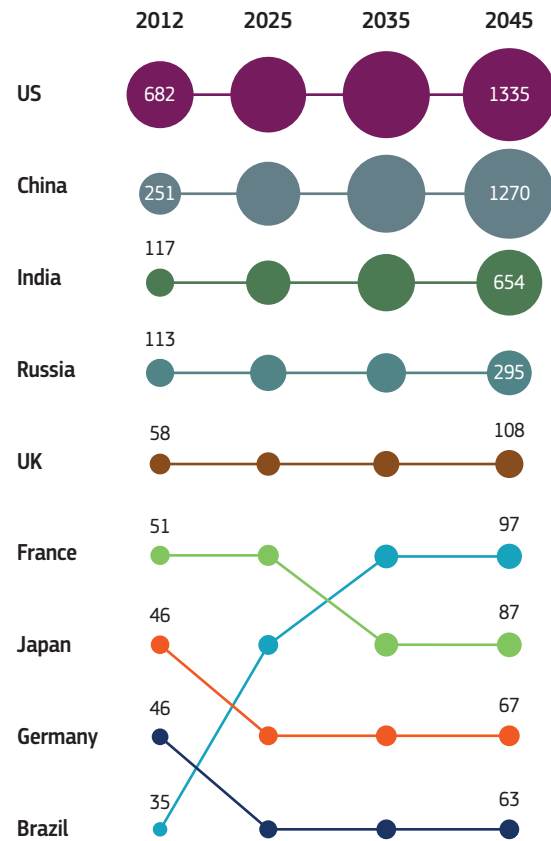
As already emphasised, the years up to 2030 are witnessing a shift in economic and political power towards emerging countries, especially China. There will no doubt be further shifts in the balance of economic, cultural and military power between the advanced and emerging countries. In 2030, Asia will account for nearly 50 % of world consumption, despite weaker growth. The explosive growth of defence spending in Asia is another important marker of this shift in power. It will not be matched by growing defence budgets in Europe, where spending looks likely at best to stagnate. This will not be a linear development and it will be subject to emerging countries' continuing success in maintaining their economic growth.

The increase in military spending by emerging countries contrasts with the declining defence budgets of most developed countries between 2004 and 2013.

From now to 2030, this trend will probably continue: increases in defence spending will be seen in Asia, Russia, the Middle East, North Africa and Latin America, but not in European countries, North America and Oceania.

Projections differ: some studies predict that military spending in China will overtake the United States as early as 2023. Even so, the United States will still be the world's top military power in 2030.

Figure 13. Defence Expenditure (adjusted for purchasing power parity), expressed in USD billion at 2012 values



Source: Stockholm International Peace Research Institute (SIPRI)

China's defence spending ranked second and accounted for 11 % of global expenditure in 2013; it has increased eightfold in the last 20 years and will rise by 35 % in the next eight years⁽⁸³⁾. Japan and South Korea were the eighth and tenth biggest purchasers of military equipment. Indonesia, the Philippines and Vietnam have all increased defence expenditure, following tensions with China over territorial disputes in the South China Sea. India, as the eighth largest spender, is predicted to spend the same as all European Union countries combined in 2045.

In Europe and its neighbourhoods, the trends are contrasting. Russia, now ranked third worldwide, will continue to invest heavily and remain the largest spender in Europe. By 2035, its defence budget could exceed that of the UK, France and Germany combined. In the Middle East, Saudi Arabia and UAE are the fourth and fifteenth largest spenders worldwide respectively. By contrast, European defence spending is diminishing. The UK, Italy, Spain, Austria, Belgium, Greece, Ireland, the Netherlands, as well as all countries in Central Europe except Poland, have cut their budgets by 10 % since 2008.

By 2030, states will probably invest much more in critical infrastructure (space, communications, satellite protection), while at the same time developing their offensive capability⁽⁸⁴⁾. The emergence of autonomous security and defence systems

⁽⁸²⁾ Saskia Sassen, *Expulsions*, Harvard University Press, 2014

⁽⁸³⁾ SIPRI, 2014.

⁽⁸⁴⁾ FRIDE-Chatham House report for ESPAS, 2013.

will probably be the most decisive factor in the development of military technology⁽⁸⁵⁾. Dependence on intelligent and connected technologies and systems (space, supercomputing, synthetic biology or the use of big data) will still tip the balance in favour of advanced nations — particularly the United States, the European Union and Israel — but here too the technological superiority of Western countries as a means of safeguarding their security and defence may be challenged.

Turning to nuclear military capability, it is likely that the number of countries possessing nuclear weapons will increase slightly by 2030⁽⁸⁶⁾. Also, it will probably be necessary between now and 2030 to negotiate an international agreement on weapons in space in order to avoid the destabilisation of the space environment.

The emerging countries arrive on the scene

The new power and economic success of emerging countries will impact the dynamic of the multilateral system, at least in three ways:

- Their increased economic role will translate into an increased assertiveness. Cooperation with them may become more difficult as they may challenge existing global norms. Territorial disputes are likely to exacerbate tensions.
- Some of these countries will be inclined to adopt strategies based on a narrow view of their national interests. This may impact bilateral and regional relations (e.g. Russia in Ukraine, or China in Tibet or the China Sea). It could also put at risk their involvement in the existing multilateral system, while they may sustain it when opportune, but stand ready to propose and realise alternatives when not, as with the creation of the BRICS' development bank. Strategies of single or groups of emerging countries, may include blocking collective decisions — for example on the Doha Development Agenda in the WTO or on Syria in the UN — in order to extend their influence or safeguard their interests.
- Emerging countries remain vulnerable to an economic downturn. The resulting domestic pressures — a nationalist or protectionist reaction — might lead to a shift in their priorities towards 'strategic sovereignty'. Seen in this light, the recent Ukrainian crisis might just be the first example of an emerging power reacting violently to its inability to modernise its economy and establish itself as a regional soft power. This means a major war, for example in the Middle East, Asia, or even on the fringes of Europe, might well be possible.

The need for new forms of leadership

There has been extensive and thorough analysis of the issues surrounding the re-balancing, fragmentation and diffusion of power⁽⁸⁷⁾. In the strategic sphere, nation states' power will probably remain constrained from above by increasing

interdependence and increasingly from below by local aspirations, sometimes of a separatist nature. We might therefore see a 'decentralisation' of public power towards hitherto peripheral actors able to exploit new technologies and influence public opinion. Nation states and multinationals will be increasingly vulnerable to hostile acts whose execution requires only limited resources⁽⁸⁸⁾.

The defining components of power will continue to change, affecting its very nature⁽⁸⁹⁾. Power will still depend on economic strength, resources and military capabilities⁽⁹⁰⁾ and nation states will remain the principal actors for international relations and security. However, the balance of power will be altered by the compartmentalisation of issues, by the emergence of new players and by greater attention and pressure from the media and communications empowered by the Internet. The growing constraints imposed by the management of information, and in particular the difficulties in coping with both confidentiality and demands for transparency will also play a key role, as the NSA/Snowden affair has shown. Finally, political-military 'entrepreneurs' without a shred of democratic legitimacy and lacking both ideology and external support may still challenge weak state structures. They can succeed if international cooperation cannot be organised against them and capabilities for foreign intervention are limited.

Democratic nation states will have to extend their capabilities needed to intervene effectively in world affairs and widen them. Military means, command structures and a large budget will not suffice any more. They must be complemented by intelligence capacities adjusted to the big data context, by intelligence resources on the ground and by an independent technology capacity. Only a very limited number of states may be able to muster these capacities and those that cannot do so will look to coalitions or alliances for strength.

Ultimately, this change in the nature of power will increase domestic constraints on international policies. These could manifest themselves as 'isolationism', where capacities such as budget, military instruments and adequate intelligence, as well as public support may not suffice to act. However, in such cases, facing security risks affecting daily life, the public may push to achieve a genuine pooling and sharing of capacities with fewer but more secure close allies.

The changing nature of power calls for new forms of leadership, capable of anticipation, flexibility, accountability and capacity to deliver effectively. Several dimensions are particularly important for effective leadership:

- Anticipation is enabled by the identification of long-term trends, preparing strategic contingency plans, and a focus on essentials;
- Long-term policy action is critical to give a sense of purpose and to build the incentives that will ensure that

⁽⁸⁵⁾ US Air Force, *Report on Technology's Horizons: a Vision for Air Force Science and Technology during 2010-30*.

⁽⁸⁶⁾ FRIDE-Chatham House report for ESPAS, 2013.

⁽⁸⁷⁾ Idem.

⁽⁸⁸⁾ Al-Qaeda spent a mere half a million dollars on the attacks on 11 September 2001, a derisory amount compared with the cost of the American response, estimated at USD 3.5 trillion, or a ratio of 1:7 000 000.

⁽⁸⁹⁾ Moises Naim, *The End of Power*, Carnegie Endowment for International Peace, 2013.

⁽⁹⁰⁾ Joseph Nye, *The Future of American Power*, 2010.

all actors public and private are contributing. New tools and methods need to be adapted to a rapidly changing environment;

- Experimentation and flexibility are essential;
- Accountability should be ensured, possibly notably by *ex-ante* and *ex-post* independent assessments;
- Inclusiveness is essential to maximise support for any decisions.

Multilateralism in peril?

The current global system is at a very critical juncture. It is under strain from opposing forces: on the one hand, the strengthening of interdependence and the need for international agreements and collective actions, and on the other a deterioration of the multilateral system, which is likely to worsen unless advanced and emerging countries demonstrate leadership.

Global economic and geopolitical issues will be ever more interlinked. Negotiations on climate change, cyber security, finance or trade will be increasingly influenced by the geopolitics of assertive new powers.

At the same time, geo-political action will be increasingly constrained by global interdependencies, as highlighted by the links between sanctions against Russia on Crimea and possible Russian retaliation on the energy, space or military fronts.

Globalisation increases both interdependence and risks for all actors. In a multi-polar world, it will therefore also increase the need for global public goods — for example, action on climate change, conflict resolution or free world trade. But delivering these goods will be hampered by both emerging and developed countries' increasing focus on domestic affairs, whether they be economic reforms, governance or cohesion. Many may find it increasingly difficult to exercise leadership in support of international cooperation to ensure access to natural resources and secure transport links, and to protect the global commons, such as the cyber area, space or the oceans. More specifically, international leadership may be lacking because of the reluctance of the emerging players to sacrifice their immediate national interests on the altar of common concerns.

It is still unclear whether in the next decades this tension will result in an expansion of the liberal democratic and market-orientated consensus as the predominant model, or alternatively, in a rising globalisation along mainly non-Western values across the globe ⁽⁹¹⁾.

The capacity to 'order' globalisation within a framework of multilateral decision-making is in decline. Following a decade that was broadly favourable to the development of international structures and rules (1990–2000), and one of rather more frustrated efforts (2000–10), multilateral negotiations and cooperation have suffered important recent setbacks. The international community failed to complete the Doha

Development Agenda, to keep pace with the climate change challenge, to adapt IMF governance to the increasing role of emerging countries, and to manage collectively the consequences of the Arab Spring, notably in Libya and Syria.

After two decades of heavy engagement in Afghanistan and in the Balkans, NATO's future role will again be under scrutiny, while the recent UN General Assembly vote on the Crimea crisis seemed to reveal ambiguous attitudes on the inviolability of borders, formerly a fundamental principle of the multilateral system.

Multilateral organisations will need to adapt to the new conditions of the 21st century and notably to the rise of emerging countries and the relative decline of Western power. In 2030, most of these organisations will still exist, but they will have to redefine their stakeholders, their purposes, and their capacities and efficiency, if they wish to retain credibility and legitimacy. Some institutions may well manage a soft transition; others may not.

Keys to responsible leadership

The future of economic multilateralism, given the numerous challenges facing it, will depend on the commitment and responsible leadership of the United States and the European Union and increasingly China. The following elements can be singled out:

- The founders of the existing arrangements need to be ready to reconfigure the international system to align it better with emerging countries' expectations and values and to ensure they shoulder more responsibility. The legitimacy and capacity of the system to function as a unified, although loosely integrated whole is at stake. In this respect, the establishment of the G20 represented progress, but the refusal of the United States Congress to ratify IMF reform suggests that there is still significant resistance to modifying the existing system.
- Countries need to live up to the implications of their new position and demonstrate willingness and capacity to take their responsibilities.
- The leading actors should identify and adopt well-defined, shared objectives with clear priorities and new agendas. This could apply, for example, to the area of Internet governance, space or cyber security, as well as development policies.
- The leading actors should display leadership, trust and a perception of fairness. These will be key to make international progress on current priorities, such as climate change and security, and the launch of negotiations on new issues, such as Internet and space governance.

Looking to 2030, neither a deep and rapid overhaul of the multilateral system nor its collapse seem likely. The future will probably see a division of tasks between some effective multilateral organisations and more restricted structures. For example, dispute settlement may be tackled by the WTO, or

⁽⁹¹⁾ FRIDE-Chatham House report for ESPAS, 2013.

by some variant of the G20, which has a limited membership, but nevertheless represents 85 % of world trade, two thirds of the world's population, over 90 % of gross global output and 80 % of greenhouse gas emissions. But functional coalitions and other working formats such as regional organisations, bilateral agreements, pacts, even public/private partnership at large scale — are also likely to appear and/or develop in parallel.

Alternatives: regionalism and ad-hoc coalitions

As the European Union's development shows, regional organisations and even ad-hoc initiatives can be very effective in promoting governance, rule of law and peace, or in just addressing specific issues. They may complement or even provide for an alternative to global governance in many policy areas ⁽⁹²⁾.

Some organisations have been gaining momentum for decades (Mercosur, ASEAN, the African Union, regional development banks); the proliferation of regional trade agreements concluded since the 1990s will speed up this process.

This sort of effort could also be mounted to re-energise multilateral initiatives. Progress in the WTO negotiations, for example, may depend on the pressure exerted by major bilateral agreements currently being negotiated, notably the Transatlantic Trade and Investment Partnership (TTIP), the Transpacific Partnership (TPP), an European Union-India agreement and by a possible free trade area negotiation between the European Union and China. The potential impact of TPP and TTIP could be especially important.

The risks of such regional processes are also well known: they can be an obstacle to multilateral rules and promote major geopolitical divisions and realignments. The success of the Doha Development Agenda will be the acid test of the determination of global actors to value common rules and standards. Equally, progress on TTIP could lay the basis in due course for a broader common approach to global economic standards between the United States, the European Union and other players, notably China. If so, a significant number of emerging economies might well follow, and the resulting new set of rules then might be applied globally in the framework of the WTO.

This prospect of a systemic realignment of the largest emerging countries as a counter-balance to the multilateral system is not excluded but still unlikely, since their interests remain very diverse. Moreover, globalisation and economic interdependence will continue to restrain all actors and may help to avoid profound divisions.

If a major geopolitical realignment were to materialise, multilateral institutions would be challenged on an existential scale. The Russia-Ukraine crisis could mark the beginning of such a reconfiguration of world geopolitics, with the emergence of a front that challenges the current system. Just as the West was welcoming Russia into the fold — for example by including it in the G8 or in a partnership with NATO — and Iran was embarking on a process of normalisation, Russia's decision to

confront the West over a perceived encroachment of its zone of influence could not only lead to its isolation and a long-lasting rift, but also be the basis for an anti-Western realignment, encompassing China, Russia and one or more of the larger regional actors, such as Iran or Egypt. Such a purely pragmatic 'alliance' would be solely based on shared interests, namely stability, a strategic economic role for an autocratic state, and access to resources. In particular, China might be tempted to lend its support, especially if it experienced a sudden drop in growth, a resurgence of nationalism and keener competition with the United States. Such developments would profoundly change perceptions of global risks.

Such a different balance of power could bring about a world order that differs considerably from the current system based on multilateral rules. It might well encourage the emergence of regional and/or multilateral structures to rival the Bretton Woods institutions. In a worst case scenario, this might even cause the break-up of the global financial and political landscape. The established multilateral institutions, for example the IMF, could renounce their global ambitions, and essentially become transatlantic organisations. Trade, investments and technological cooperation would then be reconsidered, not to say held hostage and reorganised according to new geopolitical affiliations aiming at developing their own mini-multilateral systems.

A less secure world as conflicts spread

Continuous erosion of security and the spread of violent conflict recur ever more frequently in literature on global trends. Disturbingly, parallels are often drawn between the present situation and the eve of the First World War. Observers note that historically, power transitions have often been precursors of, or accompanied by war. Currently there is a worrying combination of a multi-polar world, potential flash points for conflict and weak international governance. Among the main regions at risk are the wider neighbourhood of Europe including the Middle East, as well as East and South Asia.

Overall, a sense of disorder and feverishness in international relations is already perceptible and likely to increase, linked both to the internal dynamic of new powers and to the evolution of the global context. In Russia's annexation of the Crimea and China's increasingly aggressive stance in the Eastern and South China Sea, some see the first consequences of the United States' global withdrawal and relative reduction in power. By 2030, growing Chinese 'power projection' in East and South Asia — also in order to secure unrestrained access to the resources of the Middle East and Africa — could well increase tensions in the region. Some neighbouring countries, such as Japan, South Korea and the Philippines may feel threatened and invoke their security treaties with the United States. Miscalculation or a failure to manage crisis escalation could drag the United States into some regional conflicts of greater or lesser intensity.

Fragile or failing states are widespread; they can be found in Africa, the Middle East, South and South-East Asia, Central America and the Caribbean, and the Pacific. They are incapable of assuming a minimum degree of governance, or even of protecting and feeding their people and will remain

⁽⁹²⁾ EUISS and NIC, *Global Governance 2025: At a critical juncture*, 2010.

a major challenge for global security. Within these countries, the capacity gap between states and those that challenge their authority has narrowed. Wars waged in e.g. Afghanistan, Iraq or Mexico have not succeeded in eradicating all terrorist movements, criminal organisations and/or drugs and human traffickers, nor are similar endeavours in the future likely to solve all problems. Large parts of the apparatus of a number of states, large and small, are directly threatened or sometimes even controlled by 'illegal' actors. Their weaknesses trigger regional instability and sometimes civil war. Such simmering and multiform conflicts already account for half of the civil wars worldwide. They may increasingly include the use of cyber technology, drones and chemical and bacteriological arms. Thus, we face new systemic risks from the re-emergence and the empowerment of destabilising movements.

There is a risk that new inter-state conflicts might erupt alongside old territorial quarrels and frozen conflicts. Motives abound: competition for access to resources such as raw materials, food and energy; a recurrence of historic border tensions in Asia, the Middle East and Africa (e.g. China-India, Egypt-Sudan over the Nile); and migration, especially as a result of climate change and the existence of failing states. Regional wars stirred by religious extremists will probably develop, as illustrated by the open war that has exploded between Sunni and Shi'a fighters in Iraq and Syria. Such conflicts are likely to develop in Asia, but also in Africa, as the tensions between Christians and Muslims in Nigeria show. In addition, the mobility of some extremists could have important impacts on national security especially in Europe, with possible destabilising effects.

The risk of a major conflict involving resort to nuclear weapons cannot be discounted. Such a catastrophe scenario, even unlikely, is getting much more attention from experts and analysts than a decade ago, notably with regards to the huge potential effects including a nuclear winter.

Traditional multilateral instruments and 'soft power' could become less relevant to prevent, restrain or end conflicts. The danger increases that tensions or latent conflicts will be tackled by exploiting present weaknesses in the system. Ever more often, the use of force may be considered a viable, and even a legitimate, option to achieve political, territorial or even mere economic gains.

Ultimately this trend will probably compel state actors and their common organisations, such as NATO, to update their strategic planning, review their capacities and redefine their priorities to intervene — or not — in any conflict situations, in line with their interests and foreign policy objectives.

Convergence of values is faltering

The secondary effects of globalisation remain uncertain and possibly disruptive. Some are unavoidable and pose serious risks. The first phase of the current economic globalisation, which began in the early 1990s, had only a superficial effect on countries and economies, essentially by forging closer relations between the public and private sectors at global

level⁽⁹³⁾. More recently, globalisation has started to radically transform economies and people's everyday lives. There is little doubt that it has promoted the spread of resilient free-market economies and liberal regimes. However, far from making the world a uniform place, its impact is ambivalent, speeding up the movement of ideas, people and goods, but also prompting a return to local values and allegiances.

Economic globalisation and the growth of the middle classes spawned theories about a convergence of values that might transcend national and regional borders. This possibility must be treated with caution, as there are many examples of persisting and entrenched divisions and resistance to what many perceive a drive towards uniformity. There is no convergence of values, for instance, on the issue of gender in many parts of the world and there seems little prospect of immediate progress.

On the specific question of democracy and fundamental values — starting with human rights — sociological and political analyses have shown that the past growth of the middle classes has hitherto encouraged democratic reforms. But the new middle class that will have fully emerged by 2030 will be poorer, more vulnerable and less educated than today's middle classes in Europe and the United States. Its allegiance to democratic values may not be deeply rooted.

The current era could mark a turning-point. The spreading of democracy started to lose momentum over the last ten years and could continue⁽⁹⁴⁾. If China — the key factor — remains both authoritarian and economically successful, the combined GDP of non-democratic states will grow most in the next two decades⁽⁹⁵⁾. Such a development could make democracies ever less attractive and 'normative', since the link between economic progress and advances in rule of law, democracy and human rights would seem severed. It would also call into question the causal relationship between the emergence of an educated, healthy, global middle class and the rise of democratic values, including non-discrimination and gender equality.

Already today, sections of the middle class endorse, or at least do not oppose, varying degrees of authoritarianism in China, Russia or Kazakhstan. Similarly, in Arab countries, many members of the middle class subscribe to religious fundamentalism or conservatism.

Religion in peace and conflict

The global religious landscape will continue to evolve in the coming decades. The two largest monotheistic religions, Christianity and Islam, together make up more than half the world population and will continue to do so by 2030. Christians will remain the largest group, moreover still largely concentrated in the richest and most influential parts of the

⁽⁹³⁾ See in particular Krugman, *Growing World Trade: Causes and Consequences*, 1995.

⁽⁹⁴⁾ Freedom House, *Freedom in the World*, 2014.

⁽⁹⁵⁾ CEPS report for ESPAS, 2013.

world. Catholics will remain the majority, but the rapid growth of Protestants in Asia and Latin America should continue.

Muslims now stand at 23 % of world population. Growth rates have started to fall and will continue to do so over the next period. While Christians will continue to dominate the European landscape, Muslim populations will still grow — up to 58 million in 2030 — and will likely become more influential.

In the United States, religious influence on government policies is perceived as waning. This worries many Americans, 78 % of whom are Christian. While the number of non-affiliated people — now 17 % — could still increase, the number of those believing that (Christian) religious organisations should do more to shape government policies has now reached 50 % and is likely to keep rising.

As in past centuries, religious strife and dissent will continue to trigger and shape, often by political design, many conflicts worldwide.

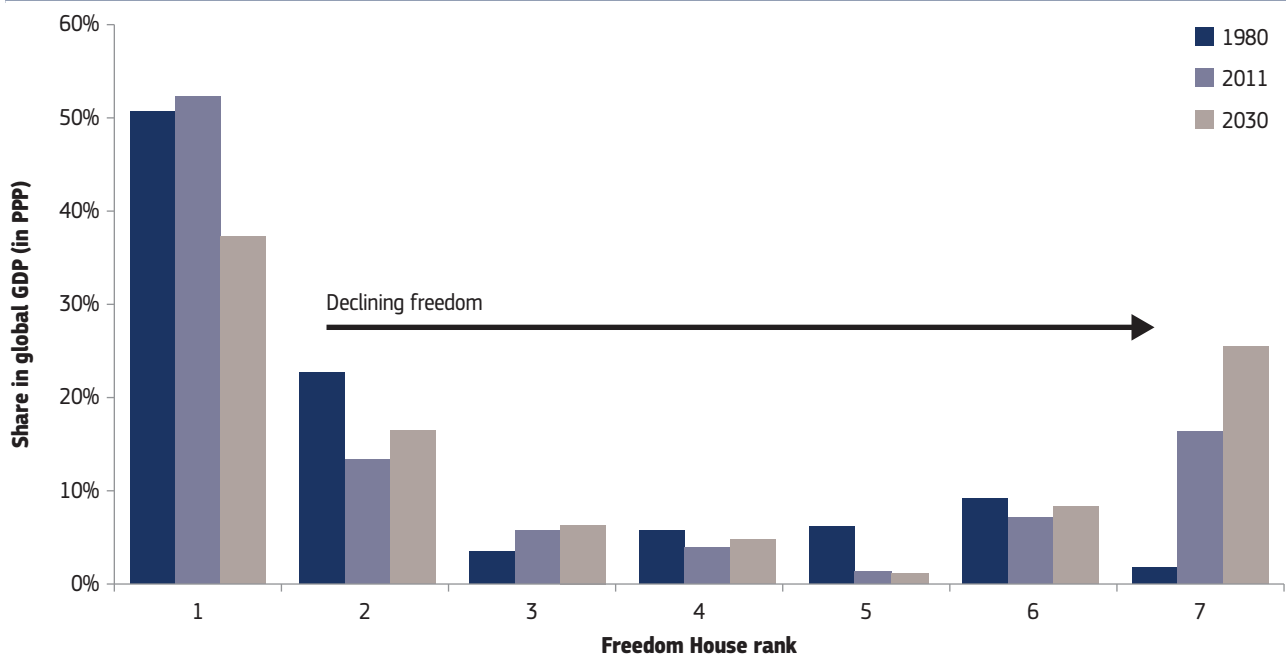
Religious sectarianism and conflict (politically manipulated or not) is likely to persist especially in the Middle East and North African region (MENA), and to continue to plague and shape states and societies there. Tensions and conflicts have a strong religious component, but the root causes also reside elsewhere, notably in centuries-old geo-strategic rivalries, as well as serious shortfalls in governance. Europe will increasingly face security challenges by importing these external conflicts within its borders, the carriers frequently being European citizens.

Sub-Saharan Africa, traditionally multi-faceted and tolerant, will increasingly be exposed to Islamic radicalism and extremism, often as a result of overspill from conflicts to the north. In general, underlying tensions between Muslims and others, mostly Christians, have strong economic, social and even tribal aspects, but religious extremism often works as the trigger for a conflagration — for example in the Central African Republic. The future of Nigeria, evenly divided between Christians and Muslims and facing an extremist Islamic terrorist threat, is a cause for concern. Other countries with sizable Muslim minorities in East Africa, such as Kenya and Tanzania, may also experience internal conflict, fuelled by Islamic extremists from Somalia and elsewhere.

The Asia-Pacific region and especially East Asia seems more immune to religious extremism, even if some regions may be affected by the rise of radicalism from Islam and Buddhism and sporadically from smaller scale religions. This could notably be the case in India, with a Muslim population about the same size of that of Pakistan (178 million). East Asia, for its part, counts by far the largest numbers of non-affiliated people (858 million); they form the absolute majority in China (52 %) and in Japan (56 %) and reach 46 % in South Korea.

However, simmering conflicts involving Muslim minorities in several South East Asian states (Philippines, Myanmar and Thailand) are expected to continue and possibly worsen in some places. China struggles with similar conflicts on a larger scale in Xinjiang and is also putting pressure on its fast growing Christian minorities.

Figure 14. Share of global GDP (PPP) among groups of countries according to their degree of freedom (1: democracies; 7: authoritarian regimes)].



Source: CEPS for ESPAS report, 2013.

Some potential 'game-changers'

In this climate of uncertainty, crisis volatility and systemic risk, the scope for possible game changers is huge: a financial crisis in the southern countries, a large-scale cyber-attack, inter-state conflict in the Middle East or Asia, climate crisis. However, some of these game-changers merit particular attention because their impacts – whether positive or negative – are potentially major:

- **A conflict resulting from the confrontation between China and the United States** in the Asia-Pacific region. This is most likely to be an indirect conflict involving China and one of its neighbours. Nonetheless, it could be sufficient to destabilise both the world economy and global security. In particular, China could find itself trapped by the popular nationalism that the government itself has exacerbated, leading it to commit major strategic miscalculations.
- **Increased political and economic integration in the EU:** The emergence of the European Union as an independent strategic player, able to guarantee its own security and to contribute decisively to conflict-prevention initiatives would greatly strengthen Western capacity to influence and lead the response to globalisation. Much will depend on the EU's ability to tackle the economic crisis and overcome the challenge of population decline. Conversely, the disintegration or fragmentation of the European Union would have a major impact on the global economy and might lead to a period of weak growth and deflation (the 'Japanese scenario').
- **Formation and deepening of an Atlantic economic and strategic space:** The development of an Atlantic partnership between the two sides of the Atlantic, connecting the North American and European powerhouses on the basis of shared values, particularly the basic rights of individuals, challenges in energy and trade, and an internal market with common standards and joint innovation could alter the geography of world trade and innovation and the dynamics of the global economy.
- **China's ability to manage both economic and political transitions:** The challenge is two-fold. On the one hand, it means ensuring that the development of its economic system continues to deliver sustainable growth and does not founder on the 'middle income gap'. The risk of over-investment is especially high, particularly in the context of an ageing population. Mismanagement of falling investment and a failure to offset it through adequate domestic demand could have a deflationary effect in Europe and cause a significant drop in global demand of around 3%. (CEPS for ESPAS report, 2013). On the other hand, there is a need to ensure that increasing levels of wealth are accompanied by levels of political and social progress that meet the expectations of the Chinese themselves. China's success or failure in managing these transitions will have undeniable structural impacts that will affect the world in 2030.
- **A major conflict**, nuclear or otherwise. With the spread of nuclear technology, which international rules are struggling to contain, a small-scale nuclear war could involve Russia and China but also medium-sized powers in the Middle East, South Asia or North-East Asia or even terrorist groups. A nuclear conflict involving dozens of strikes would not only cause immediate destruction but would also have serious, long-term global consequences for the climate (cooling), the ozone layer and hence agriculture (forest fires, less rainfall), leading to famine.
- **A major pandemic** of a magnitude similar to the outbreak of black plague (30 % of European population killed) or the 1918 Influenza pandemic which killed 20 million of people worldwide. As an example, an H5N1 pandemic with a mutated virus spreading to human could affect millions of people with an initial fatality rate of 50%, as it would take 5-6 months to produce a vaccine in large quantity. This could impact the global economy and up to half of essential services could be disrupted, including health, transport, banking and basic resources. Competitions for essential resources could lead to tensions within and between countries.
- **A major currency war between the renminbi and the United States dollar.** Could have systemic effect with potentially important economic effects but could also induce significant geopolitical tensions. While the magnitude of such a war would be difficult to assess, it might lead either to the return to a gold standard or to the domination of the stronger currency among the two. A third scenario could develop with an outcome where a basket of currency would be used as reference for global transactions. In any of the two first scenarios, the euro and the eurozone could be substantially affected.

Three global revolutions — the challenges for Europe

Part one of this report set out the five global trends that the authors believe may bring about three structural ‘revolutions’: economic and technological; social and democratic; and geo-political.

Part two sets out how these revolutions consist of a series of fundamental and ineluctable changes, which require all regions and all countries, including the European Union, to adapt and even radically transform themselves. The European Union, in particular, if it aspires to remain a force in the world, with a growing economy, low unemployment and

world-class technological capacities, must continue down the difficult path of structural reform — institutional, economic and social — while staying true to its values and beliefs in democracy, human rights and the rule of law.

The analysis below looks at the key challenges for Europe posed by these three ‘revolutions’. It is intended to provide a source of comparative information on future trends and their implications for the Union. As such, it seeks to be a useful tool for the new leaders of European Union institutions to chart the right course for Europe.

THE GLOBAL ECONOMIC AND TECHNOLOGICAL REVOLUTION — THE CHALLENGES FOR EUROPE

(1) Reshaping the economy

Modernisation is not a state of things; it is a state of mind.

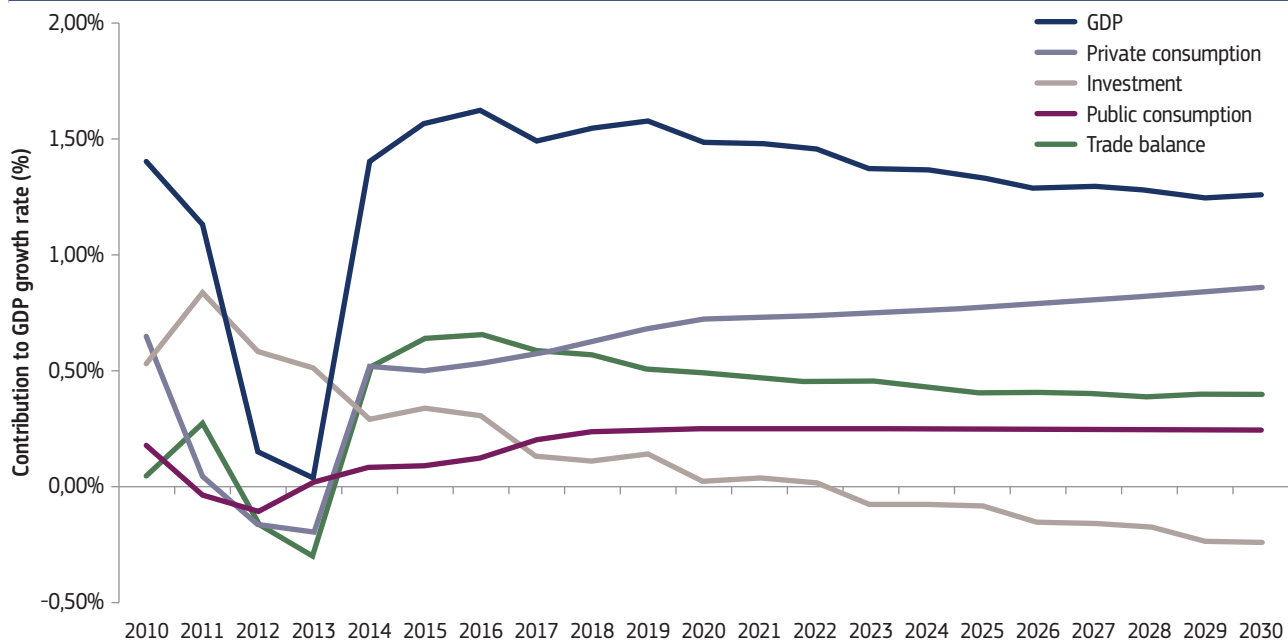
Jean Monnet

Europe's economic prospects to 2030: 15 years of lower growth

Economic growth within the European Union during the period from 2007 to 2012 was low compared to that of other major economies, including the US ⁽⁹⁶⁾. On current policies ⁽⁹⁷⁾, economic growth to 2030 should be positive, but quite modest — between 1.2 and 1.5 % per year — well below the level of the decade from 1997 to 2007, when it

reached 2.6 %. Two factors are closely related to this below-average performance: excessively low investment — only 15 % of GDP, an unprecedented low — and insufficient productivity gains — 1.32 % compared with 1.5 % from 1997 to 2007 ⁽⁹⁸⁾. The low level of growth will complicate the consolidation of public budgets: according to the above projections, debt reduction will be slow, from 90 % of European GDP in 2020 to 80 % in 2030.

Figure 15. Composition of the European Union economy



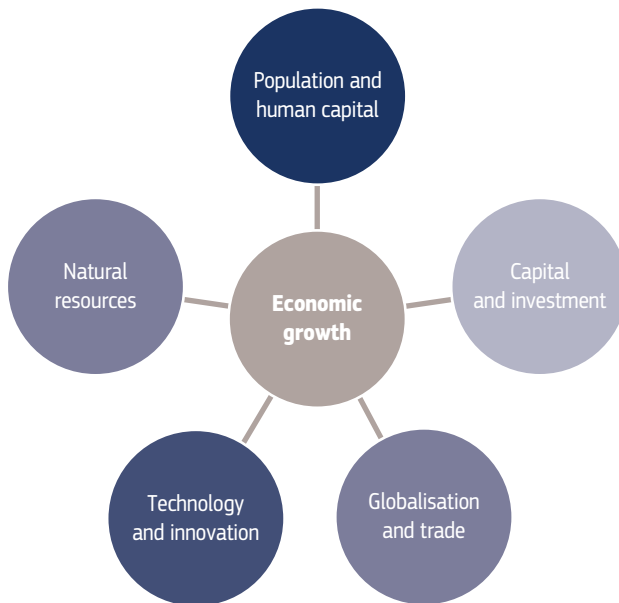
Sources: CEPS report for ESPAS, 2013.

⁽⁹⁶⁾ IMF, World Outlook, 2012.

⁽⁹⁷⁾ CEPS report for ESPAS, 2014.

⁽⁹⁸⁾ Most economists' less optimistic projections are based on linear gains in productivity. They contrast with the view of technology experts, who are far more optimistic as regards the growth potential of the new technologies.

Figure 16. The drivers of economic growth



Source: CEPS report for ESPAS, 2013

During the period to 2030, initially (2014-20), the European Union economies will converge (see graph above) driven by a positive trade balance, rising exports and increased consumption associated with a moderate rise in wages. Almost five million jobs will be created during this period. Then, from 2020 to 2030, increasing wage costs, coupled with low productivity gains, are likely to restrain the competitiveness of the European economy. The 6.5 million jobs created will be insufficient to absorb the very high unemployment rate in the countries of the south. Industrial employment will fall to 13 % of GDP in 2030, if the decline in competitiveness persists.

The low level of growth will probably prevent jobs from being created at a sufficient rate to bring about a swift reduction in unemployment. On current projections, unemployment will drop to around 6.1 %, fuelled by the creation of 6.5 million jobs and a contraction of the labour force during the 20 years from 2010-30. More generally, the low level of growth will

put the European Union development model under severe strain, against a backdrop of population ageing and a long and difficult recovery from crisis.

Since the 1950s, life expectancy has risen by 15 years, a trend that is set to continue, while retirement age has remained broadly steady. This ageing phenomenon increasingly will impact on the European labour force, which will fall by 5.2 million from 2020 to 2030, a reduction of 2 %, especially if it is not off-set by pro-active policies on families, immigration and technological innovation. (In the decade from 2000 to 2010, 70 % of the increase in the European Union's workforce was accounted for by immigration.) In the European Union, spending on pensions will initially drop by 0.1 % of GDP between 2010 and 2020, before increasing by 0.6 % between 2020 and 2030 ⁽⁹⁹⁾.

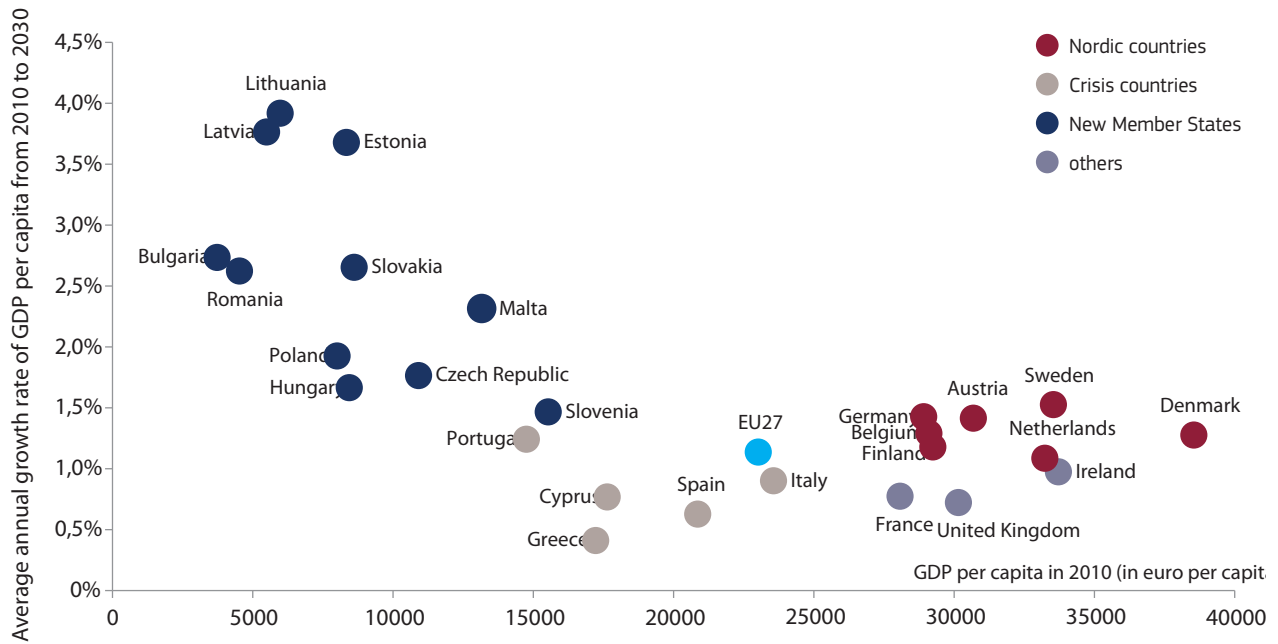
Ageing will cause a substantial build-up in savings that will have to be invested in the European economy and elsewhere. However, with ageing populations in most of the emerging economies, the European Union will not be able to benefit fully from its savings by investing abroad, as Japan did when emerging countries were booming economically. This situation implies the need for: (i) structural reform to increase returns on investment within the European economy, to develop profitable domestic investment opportunities; (ii) a strong economic partnership with key trade partners, which would include strong guarantees on foreign direct investment for European business. The significant increase in demand for and expenditure on health services that ageing implies will have to be met under these difficult circumstances.

The search for a better balance between inequality, redistribution and growth will continue to shape the political agenda. The links between rising inequality and the fragility of growth became evident in the last twenty years and will persist. Inequality undermines progress in health and education, deprives poor people of the ability to stay healthy, affects accumulation of human capital in the economy, generates political and economic instability and thus reduces investment, and makes the social consensus required to adjust to shocks and to sustain growth more difficult ⁽¹⁰⁰⁾.

⁽⁹⁹⁾ European Commission, *The 2012 Ageing Report: Economic and budgetary projections for the 27 European Union Member States (2010-60)*, 2012.

⁽¹⁰⁰⁾ Jonathan Ostry, Andrew Berg and Charalambos Tsangarides, *Redistribution, Inequality and Growth*, International Monetary Fund (IMF) Research Department, 2014.

Figure 17. GDP per capita in 2010 and annual GDP per capita growth between 2010 and 2030



Source: CEPS report for ESPAS, 2013

Towards a new vision for 2030?

A post-crisis growth and recovery strategy for the European Union ought to be built on a common analysis of the causes of the crisis and a view on how to avoid its repetition. There is a strong case for taking a broader view of economic growth than one based entirely on measuring GDP. After all, services such as education, health social security and public administration account for some 50 % of GDP in European Union countries. Raising their quality and productivity can deliver both economic gain and quality of life improvements for society as a whole.

The European Union has to make a reality of the single market, drawing the financial sector into the real economy and requiring efforts to reshape the high-risk, short-term gain culture that has prevailed in recent years. The sector has to play its part in financing investment for the long term which will need to give priority to building the digital society and trans-European networks.

Completion of the single market will also mean facilitating the emergence and growth of more flexible organisations whose prospering would be much helped by appropriate taxation and regulation. Young people need to be enabled through training and encouragement to make the best possible creative use of these and other new opportunities and jobs that will be created in the network economy.

The new economy could also lead to more sustainable, environmentally friendly and low-carbon growth if it harnesses the full benefits of scientific and technological advances. Societies as a whole will then be in a position to exploit innovation and change.

With more people empowered by technologies and a context more favourable to investment, scientific advance could generate more rapidly new products and new services, as well as new processes and practices in business and social care. Collaborative work, open sourcing and social innovation in a large number of domains might be important components of the complex 'innovative ecosystems' of the future.

Drivers of growth without debt

Banking

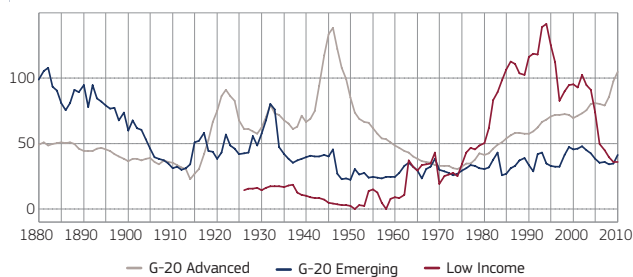
The improvement in the situation of European banks and the development of direct financing by the market will play a critical role to assure the availability of the capital that businesses need. Unlike their American counterparts, European banks have maintained a high debt ratio. Its reduction will impact on future financing capacity. Nevertheless, stress-testing by the European Banking Authority in mid-2014 concluded that the vast majority of systemically

important banks had restored their capital to safer levels, following the damage done by the 2008 financial crisis. This should enable them to play an important role in the European Central Bank's (ECB) strategy for strengthening the continent's financial system and raising the flow of funds to small and medium-sized enterprises.

Public and private investment

A stronger banking system should help to check and ultimately turn around the alarming fall in investment by European companies — now at the historically low level

Figure 18. Debt-to-GDP Ratios Across Country Groups, 1880–2009
(Group PPPGDP-weighted average, in percent of GDP)



Source: Historical Public Debt Database, IMF

Source: HPDD <http://www.imf.org/external/pubs/ft/wp/2010/wp10245.pdf>

of 15 % of GDP. Prospects for economic recovery would be boosted by an alliance of public and private investments that would attract private savings, stimulate job-creation and sustain the European social market economy. Analysts see two main causes for the shortage of investment: the growing importance of the financial sector and the lure of short-term profit. More specifically, regulatory and management incentives encourage actors to look for fast returns by means of financial instruments, rather than productive investments. This is also indicated by the priority given to quarterly reports and the increasing proportion of direct-gains related bonuses and incentives compared to fixed salaries.

Productivity

The main drivers of growth will be international demand, demography and productivity⁽¹⁰¹⁾. Current policies to enhance productivity growth — mainly through research and development, human capital (education) and information and communications technologies — will not be sufficient. Structural reforms — to increase competition and improve the operation of the labour market — will be needed to support knowledge policies. Simulations show that such policies could result in a 4 % drop in unemployment and a 2 % rise in the annual average growth rate between now and 2030⁽¹⁰²⁾.

Western Europe has caught up with the United States in terms of productivity in the post war period. But this process came to an end in the mid-1990s. Since then the productivity gap with the United States has widened again to more than 10 % on average. Differences in the functioning of the product market are among the main causes of productivity differentials between the United States and the European Union. Another important obstacle to higher productivity in Europe are entry barriers in the innovative sectors. Reducing these would both increase the R&D share and labour productivity in the long run.

Some analysts also agree that a relative failure to invest in, and adopt information and communication technologies is another cause of Europe lagging behind in growth productivity. This is true for the entire economy, including for the non-market sector of government, public administration and public services.

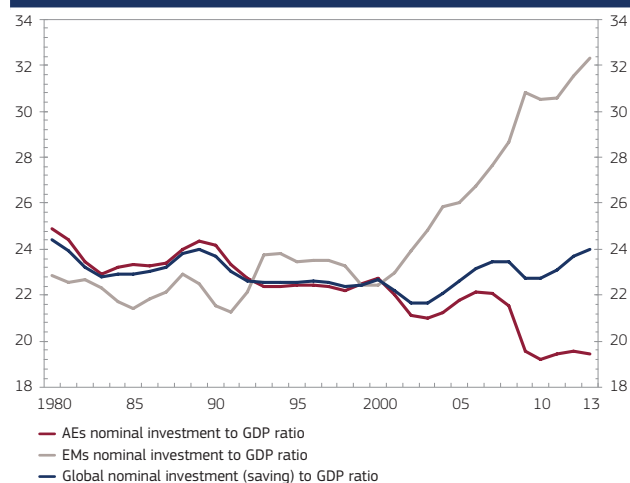
⁽¹⁰¹⁾ CEPS report for ESPAS, 2013.

⁽¹⁰²⁾ Ibid.

In the market sectors, the capacity to rely on the internal market and new export opportunities combined with some productivity gains explains why European companies have so far managed to hold on the 20 % share of the world exports and 28 % of the global income generated by the production of manufactured goods, against 18 % for the United States and a bit less than 16 % for China. The European Union share of this income has remained stable while those of the United States and Japan have declined sharply.

The issue of productivity growth potential in Europe nonetheless remains. While modern electronic communications and online services, including e-government are important in their own right, they are also crucial levers of growth and productivity for the economy as a whole. Lower investment in and use of ICT in Europe accounts for some part of the labour productivity gap between the European Union and the United States. European Union investment in state-of-the-art communications infrastructures is also lagging behind that of its main competitors, especially as regards mobile infrastructures. The average mobile data speed in the European Union is about half of that of the US⁽¹⁰³⁾. Europe has only 6 % of the world's 4G mobile subscriptions, reflecting different investment choices of the two continents⁽¹⁰⁴⁾. 62 % of European households have access to the next generation networks, able to deliver 30 Mbps. In the new, data-based economy, European companies are almost absent from the business-to-consumer market value chain. While the European Union punches below its weight in the ICT sector, it still has strong assets, notably with the highest Internet penetration rate in the world (75 %) and with local champions such as Ericsson or Alcatel in the business-to-business market.

Figure 19. Investment to GDP ratios (% of GDP) 1980 – 2013



Sources: World Economic Outlook, April 2014, IMF

Low productivity gains in the non-market sector have become a serious weakness of the European economy. The most important remedy lies in the rapid introduction of the Digital

⁽¹⁰³⁾ 'The state of the Internet', Akamai (Q4 2012), Cisco VNI Mobile forecast (2013). Sanford C. Bernstein, based on Bernstein Analysis and ITU.

⁽¹⁰⁴⁾ GSMA intelligence, 2014.

Single Market, potentially to be combined with appropriate incentives for ICT-users and ICT-investment. The purpose of any new digital policy mix will likely be to encourage digital catch-up and the digital transformation in both market and non-market sectors of the economy. The challenge of completing Digital Single Market regulation will be to strike a balance between concerns about issues like privacy and security while enabling a globally competitive and unified ICT development environment in Europe.

More generally, attitudes that are open to and supportive of change, a more systematic pursuit of quality in public spending and more strategic thinking may help. This will also require the users (clients, patients, families) to endorse and use new and more efficient information and communication technologies and far more decentralised management investment strategies. This more inclusive and more local management of public services already exists in more advanced countries such as Denmark and Estonia, and it has already had positive results, particularly on cost control and spending efficiency.

The reduction of administrative hurdles for citizens can boost client satisfaction and reinforce social and political cohesion. Innovation within the public sector itself is thus an essential condition, not only for responding more effectively to public expectations, but also in making the European economy more competitive as a whole.

The substantial productivity gains required to face Europe's economic and social challenges will require structural changes. In particular, the powerful forces of competition should be mobilised to incentivise innovation. Patterns of mixed competition-cooperation are likely to develop and will need to be supported, notably on some high-tech sectors. The influx of savings, related to the ageing of a largely educated population, should also be harnessed to contribute to the investment efforts in new technologies and services.

European single market

Further efforts to complete the single market feature in every recommended strategy for improving Europe's economic performance. It is still not completed. The single market for goods is still hampered by uneven application of European Union regulations and non-tariff barriers, whilst only 20 % of service markets operate across intra-European Union borders. Elimination of the remaining barriers to trade in goods and services would help to triple the gains already achieved during the last 30 years, with a revenue gain around 15 % and a doubling of internal European Union trade.

Formulating and implementing the right policies at European Union level may be made more difficult by centrifugal forces that could be increasingly at play. These forces could impact on support for the single market. Some are linked to societal tendencies, such as a growing consumer demand for local products, for ecological or ethical reasons and others to economic trends notably on trade and finance. For example, although European internal trade has developed in parallel with European foreign trade, its share in 2030 will decline from 50% to 40%, mainly to the benefit of trade with the emerging economies. This growing share of European Union

foreign trade compared with European Union internal trade is likely to impact Member States' interests. The fragmentation of financial markets could continue to upset the single market. If the Banking Union is not fully implemented, the inter-banking market will remain segmented, and north-south European investment flows might be very slow to recover, particularly when there is a strong aversion to risk. Finally, tensions are likely to remain on the diagnosis and options to be adopted to solve definitively the public debt crisis.

European energy market

The European economy's dependence on energy and natural resources contribute to the vulnerability of industry and threaten its competitiveness. By 2030, the European Union may likely still need to import 65-70 % of its energy needs ⁽¹⁰⁵⁾, and will remain a net importer of raw materials for its industry. The European Union will thus remain very vulnerable to disruptions in supply and price volatility, within a tight global situation — the availability of resources will be under worldwide pressure from an increased population and higher living standards. Water will become a precious commodity, particularly in Southern Europe, while continuing to be used predominantly in farming and the energy sector.

Among energy resources, the share of fossil fuels should remain stable. With a dependency rate of around 83 %, natural gas should become more important within the energy mix, partly replacing oil for some means of transport. Nuclear power may return to the forefront, both globally and in certain European Union Member States, as a result of political decisions, with investment mechanisms involving state aid. This could follow the present UK model for the electricity market, where prices for operators are negotiated with the state and guaranteed for up to 35 years ahead.

The share of renewable energies will likely surpass the European Union target of 20 % in 2020, but growth may slacken: high costs due to sub-optimal and dispersed support mechanisms and the sporadic nature of solar and wind energy production are to blame.

A truly European energy market pre-supposes a true physical market at European level, which is far from achieved at present. The electricity and gas markets are still highly fragmented; less than 10 % of electricity production currently crosses borders. Market conditions can only converge and balance out in the medium and long term if the physical infrastructure allows genuine interconnection and trade. Better infrastructure for larger volumes of trade is the best means of bucking the current underlying trend towards de facto renationalisation of energy policies. It is also the best response to the problem of security of supply, not least in the case of natural gas, an acute issue, as recent events in Ukraine have highlighted. More and better integrated pipelines are needed, including north-south connections and pipelines that allow two-way flows; as well as more storage infrastructure and more terminals for liquefied natural gas (LNG). In short, the European Union needs a competitive, integrated and fluid internal energy market to ensure the optimum circulation of gas and electricity.

⁽¹⁰⁵⁾ FRIDE-Chatham House report for ESPAS, 2013.

Such a fully integrated and well-functioning market will also be important for the transition towards a low-carbon economy ⁽¹⁰⁶⁾. Currently, obstacles remain: attitudes towards shale gas vary, mechanisms for remunerating electricity producers based on capacity are introduced locally, a variety of approaches is used to support the introduction of renewables, and the low level of the price charged per tonne of CO₂ in the ETS scheme is contested. Large-scale public investment and/or public mechanisms to support private investment in energy infrastructure may provide solutions.

The cheapest energy will still be the energy that is not needed any more. The improvement of energy efficiency is currently the poor relation of the post-2020 energy and climate goals. Efficiency strengthens the Union's energy independence and competitiveness, while at the same time reducing its emissions of greenhouse gases and the contribution of energy resource imports to the trade deficit. This win-win strategy has not been pursued with sufficient determination so far, and short-term approaches sometimes still prevail.

Enhanced governance of the euro area

Economic and Monetary Union (EMU) is a fundamental element of the European integration process and one of the most far-reaching achievements of the European Union. Its success is crucial to the economic, social and environmental well-being of the continent's citizens. By 2030, 26 out of the current 28 Member States may well have joined the euro area ⁽¹⁰⁷⁾. The accession of new members to the EMU could entail an increased focus on reducing market fragmentation and on disciplined budget consolidation.

However, many analysts consider that unless and until the European Union manages to lift EMU to the level of a more mature currency union, with a higher level of policy integration and risk-sharing, its construction will remain vulnerable and the European economy will not be able to reap all its potential benefits.

A sustainable EMU calls for further integration within the euro area. The sovereign debt crisis highlighted a series of shortcomings ⁽¹⁰⁸⁾, and a lot has already been done to address many of them: fiscal discipline has been more deeply enshrined in European Union and national law, a Banking Union has been created, and the European Stability Mechanism now provides a framework for managing Member State sustainability and solvency. These measures allowed the European Central Bank (ECB) to provide liquidity support to solvent Member States, while preserving the single market. Nonetheless tensions are likely to remain on the diagnosis and options to be adopted to solve definitively the public debt crisis.

In the next decade, further risk-sharing mechanisms are likely to be necessary, as for any successful monetary union. They

⁽¹⁰⁶⁾ European Commission, 2013. *Energy Roadmap 2050*.

⁽¹⁰⁷⁾ To date, all Member States, except Denmark and the United Kingdom, have either adopted the euro or are legally bound to do so once they fulfil the criteria.

⁽¹⁰⁸⁾ European Commission, *A blueprint for a deep and genuine Economic and Monetary Union*, 2012.

could take various forms: for example, a common fiscal and/or deposit insurance back-stop to the banking system, orderly debt restructuring of banks and national/regional/local authorities, fiscal transfers or partially common social security systems, and more effective labour mobility. In particular, the development of an autonomous fiscal capacity to protect the euro-area Member States from asymmetrical shocks and to facilitate adjustments is likely. As a final stage, as the European Commission argues, a 'deeply integrated economic and fiscal governance framework may then allow a common issuance of public debt, which would enhance the functioning of the markets and the conduct of monetary policy' ⁽¹⁰⁹⁾.

Policy implications

However, ultimately, the future of the EMU will depend on the balance between solidarity and responsibility in managing sovereign debt, on the impetus and effectiveness of structural reforms, and on the political reforms that would improve both the governance of the euro area and its democratic legitimacy.

Europe's policy agenda for reshaping its economy is a long list of actions that are mostly necessary, rather than optional. Acknowledging the impact of technological and social change will require a broader view of prosperity than only GDP figures. Sustainability, access to education and quality of life should also be taken into account.

Modernisation of public administrations in many countries through better use and applications of ICT, public-private partnerships, completion and reform of the single market, life-long education for a meaningful life in the digital society — these and other policy prescriptions have been analysed, debated and are in various phases of implementation across the Union. However, the political will to apply them comprehensively and strategically is still relatively weak. The consequences of insufficient implementation could be serious in the long run.

Key questions

- What are the key elements of a strategy for promoting growth without debt?
- How is it possible to ensure that the public sector will contribute fully in the EU's efforts to increase its competitiveness?
- How is it possible to encourage greater productivity through the use of ICT?
- With rising life expectancy, how is it possible to ensure an economically and socially sustainable balance between working time and retirement?
- What will be the impact of continuing urbanisation?

⁽¹⁰⁹⁾ Ibid.

THE GLOBAL ECONOMIC AND TECHNOLOGICAL REVOLUTION — THE CHALLENGES FOR EUROPE

(2) Towards a society of change and innovation

The difficulty lies not so much in developing new ideas as in escaping from old ones.

John Maynard Keynes

The technological revolution

The technological revolution is likely to have a profound effect on societies, individuals, their working life and their social relationships. It will radically change the traditional economic categories and the concepts of work, training and retirement. Individuals will alternate between successive phases of work, training and periods out of the work force throughout their adult lives. Moreover, the interweaving of technologies into the fabric of our everyday lives — employment, education, health, leisure and social relationships — will require a judicious balancing of individual privacy rights against public interest.

Technological innovation will act as a force and driver of change ⁽¹¹⁰⁾. Europe's future economic growth, employment and social cohesion will depend on our ability to understand, embrace and exploit all aspects of an innovation society. Its impact, driven by ever-accelerating innovations, is ever stronger and puts public policy under serious stress because effective action is needed across a very broad front. The areas in which the next major innovations will occur are mostly known, though surprises may, as ever, occur ⁽¹¹¹⁾: big data, nano-technologies and bio-sciences, including synthetic biology, advanced robotics and automation, and super-computers. Core digital technologies are evolving and converging rapidly, fuelled by real-time and real-world data.

Many experts argue that completing the European Union's digital single market, underpinned by its 500 million consumers, is the single most powerful policy instrument for the European Union and its Member States to stimulate innovation, growth and create jobs. However, the accelerating change triggered by these disruptive new technologies also raises fundamental challenges for the economy, society and policy-makers. The flexibility of the labour market and the adaptability of individuals will be tested, and risks of exclusion may increase. Anticipating and managing change will become an important part of the strategic activity of public and private structures.

Strategies to maintain Europe's leadership in knowledge-creation

A dynamic future for Europe will depend on the quality of its science and its technological innovation ⁽¹¹²⁾. Together with the United States and Japan, the European Union is currently a lead player in innovation and research, accounting for 24 % of world research and development expenditure and 32 % of patents in 2009 ⁽¹¹³⁾.

Technological innovation will continue to depend on investment in research and development (R&D). This should remain stable in the advanced economies and increase in China. On the basis of current trends — a European R&D investment rate of 2.2 % of GDP, a US rate of 3 % and a Chinese rate of 3 % — Chinese investment should overtake the European Union in total expenditure in 2022 and be twice as large by 2030.

However, more than quantity, it is the quality of innovation and patents that will make the difference. In that respect, the efforts made by the European Union, Japan and the United States have so far enabled them to retain a comfortable lead.

But the European Union is not helped by the fragmentation of its R&D activities and investments — more effort could be brought to bear on mobility of scientists and researchers, in favour of more inter-disciplinary cooperation, as well as reinforcing an education system to promote STEM (science, technology, engineering, mathematics).

Challenge 1: Industrial policy, research and development, and entrepreneurialism

Europe will remain a leading area of research and development (R&D), though its knowledge and high-technology sectors account for a mere 30 % of GDP in Europe compared with 40 % in the United States and Japan (and currently 20 % in China, but growing) ⁽¹¹⁴⁾.

However, unless changes are made, Europe will continue to suffer from a mismatch between the high level of its scientific and technological achievement as such and its poor record in transforming knowledge into innovation, new products and new

⁽¹¹⁰⁾ CEPS report for ESPAS, 2014.

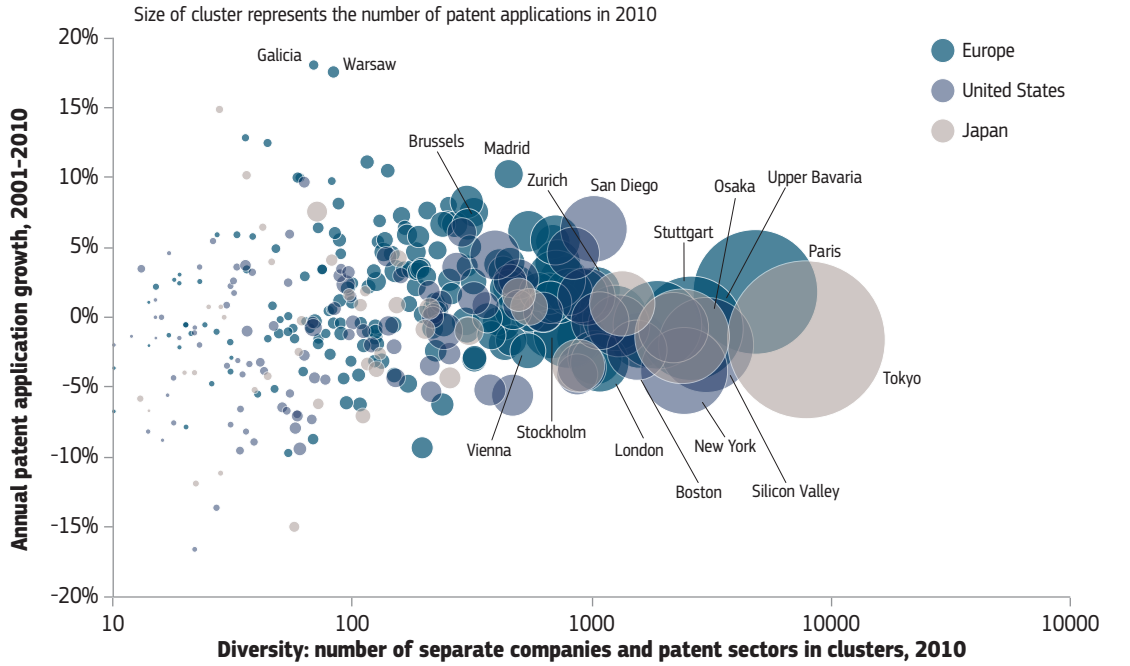
⁽¹¹¹⁾ McKinsey, *Disruptive technologies: Advances that will transform life, business, and the global economy*, 2013.

⁽¹¹²⁾ *The Future of Europe is Science*, Report of the Science and Technology Advisory Council, 2014.

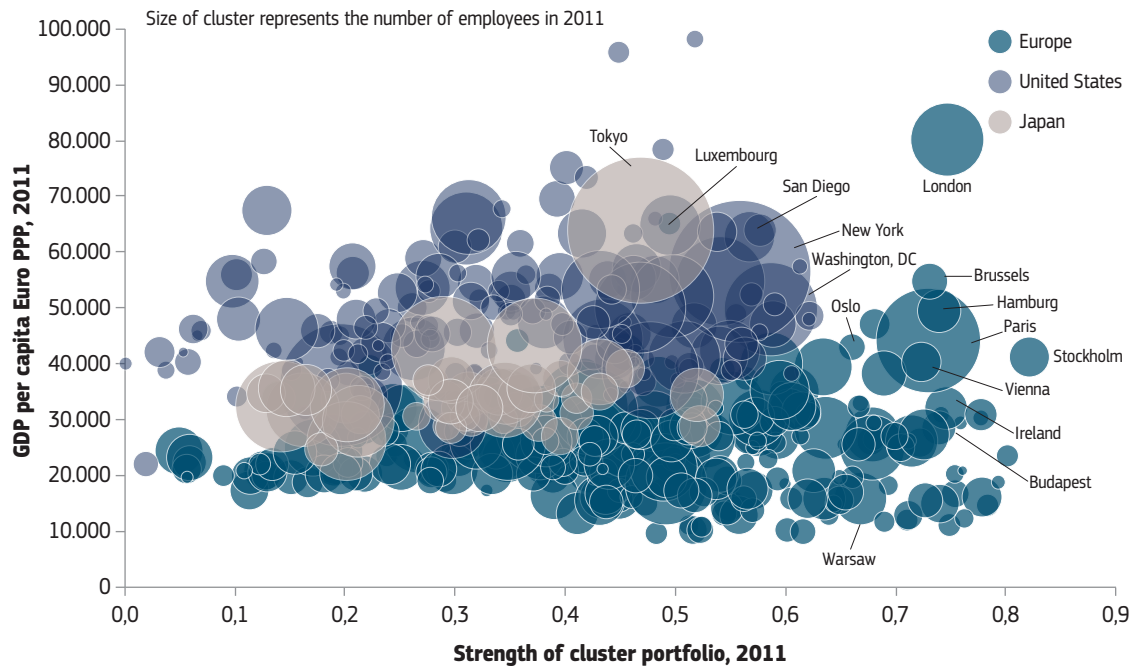
⁽¹¹³⁾ FRIDE-Chatham House report for ESPAS report, 2013.

⁽¹¹⁴⁾ National Science Foundation (NSF), *Science and Engineering Indicators 2012*, 2012.

Figure 20. Centers of innovation in the world



Comment: Tokyo is still the place with the most patents in the world, from more companies, but Paris, Upper Bavaria and Stuttgart are next with indexes similar to those of Silicon Valley, New York and Osaka.



Comment: many European capitals and other cities figure among the most dynamic centres of innovation in the world in terms of employment and cluster portfolio. The diversity of the clusters is an important feature of the European innovation landscape.

Source: European Commission, 2014. European Cluster Observatory

services — for example, there are virtually no European operators active on a global scale in the field of the Internet.

The development path of technologies and the increasing power of new centres of innovation around the world represent challenges to Europe’s research capabilities, handicapped as they are by stagnating public investment in research and development, and the continuing low levels of private investment compared with other large developed economies, notably the United States.

European research and development programmes have succeeded in strengthening cross-border and sectoral cooperation. However, these policies have largely failed to rationalise and integrate European research⁽¹¹⁵⁾. Due to fragmentation, funding at national level is just sufficient to keep certain projects and certain teams afloat, but not enough to place the European Union as a whole at the forefront of global research. All Member States

⁽¹¹⁵⁾ Elsevier SciVal Analytics Team, Comparative Benchmarking of European and United States Research Collaboration and Researcher Mobility, 2013.

are the victims of this lack of cooperation. Better coordination of European research requires an analysis of infrastructure, human resources and education, in order to create a critical mass through increased cooperation and open innovation.

For example, Europe will find it difficult to compete in the global digital society without high-speed, high-quality access to broadband across the entire continent. Public policy could focus on the development of innovative eco-systems, the incorporation of financing, infrastructure (centres of excellence), better connections between industrial and academic R&D, and simpler regulations. The issue is no longer solely cross-disciplinary; it must be 'co-disciplinary', creating the possibility of interfaces between economists, entrepreneurs, scientists, other academics and society itself.

Europe's innovation strategies have been only moderately successful. The challenge is to see innovation policies in the broader context of a society for change. This suggests that a more systematic and comprehensive approach is needed for relationships between business, regulators, public and private sectors and education. Can Europe develop a new innovation model?

The Horizon 2020 framework for European Union funding includes a number of important public-private partnerships (PPPs) intended to raise European competitiveness in digitally based innovation. Social innovation can provide a better response to social and societal challenges. Information and communication technologies in particular will facilitate social innovation through their simplicity of use. Ever more intelligent, accessible and large-scale networks will emerge ⁽¹¹⁶⁾.

The crucial role of entrepreneurs to foster growth and job creation should be encouraged. The risk-averse cultures still found in many parts of Europe hamper this role. Many countries on the continent are considered bureaucratic and unforgiving for risk-takers if they fail. The conditions need to be created that embrace innovation and harness technological progress to the needs of economic and social life (organisation of work, education and teaching) at the heart of an innovation-based entrepreneurial society.

Challenge 2: Social effects of the technological revolution

Europeans have a positive view of the value of science and technological advance as a means of addressing future societal challenges, notably in healthcare ⁽¹¹⁷⁾. This is just as well, given that the technological revolution is likely to have a profound effect on societies, individuals, and the latter's working lives and social relationships. It will introduce a radical change in the traditional economic categories and in the meaning of the concepts of work, training and retirement: it is becoming increasingly clear that individuals will alternate between successive phases of work, training, and periods out of the work force throughout their lives.

More fundamentally, the challenge for European society is to adapt and change its structures and rules while maintaining its values. This requires a strong and inclusive social dialogue, openness to risk, and clear public policies at the service of individuals, so as to ensure their acceptance. The citizens of the knowledge economy cannot be satisfied with the same level of information and participation as those of the 1960s. As European Union decisions impact them much more directly, corresponding progress in democratic accountability and legitimacy is required for the Europe system.

Improving the education system is crucial, in particular to ensure that as many citizens as possible acquire the necessary skills and tools to cope with this new order. Recent modelling of demand in Europe points to a gap in the supply of e-skills of about 900 000 people by 2020. Moreover, this is likely to be a global phenomenon; therefore in an age of increased mobility Europe will have to compete in the world market place to attract and keep people endowed with these skills. More scientific and technical skills will be needed. Everybody will need to be proficient and knowledgeable in the use of these 'tools of our time'. Students will need to 'learn how to learn', in order to adapt to new skills and ever changing job opportunities. New jobs, like those involving big data, require enhanced science skills and new mind-sets adapted to sharing information in a context of co-disciplinary thinking.

Key questions

- How can we ensure the rapid completion of the digital single market?
- How can the European Union contribute to change risk-averse culture in Europe?
- How can the European Union leverage private and public investment to support the third industrial revolution?
- How can the European Union regain leadership in the mobile communication sector with advanced 4/5G?
- How is it possible to strike a balance between the needs of the digital economy and personal privacy?

⁽¹¹⁶⁾ RAND Europe report for ESPAS, 2013.

⁽¹¹⁷⁾ Eurobarometer, *Public perceptions of science, research and innovation*, June 2014.

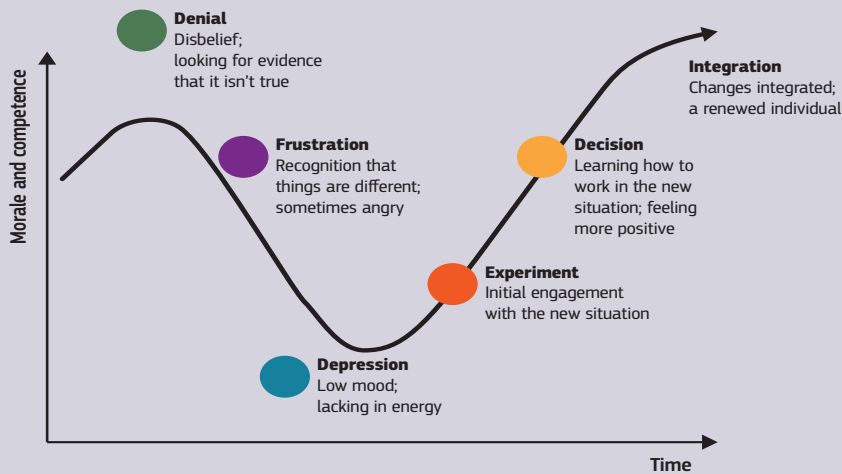
The Change Curve

Policy measures to promote and accompany change could take their inspiration from the work of a famous Swiss psychiatrist, Elisabeth Kübler-Ross, who described the different psychological stages we pass through in difficult times, from denial, via resistance, to renewal (see the Change curve below).

This analogy is helpful in that it emphasises the importance of the relationship between decision-makers and the citizens experiencing the change at first hand. In particular it calls for:

- transparency,
- the creation of a calm, pro-change atmosphere, seeking to develop trust and common anticipation while minimising conflict,
- the strengthening of good and effective governance at every level (local, national, European) to go together with an adequate citizens' representation at those levels, in order to capture and address their concerns throughout the transition.

The Kübler-Ross change curve



- Create Alignment
- Maximize Communication
- Spark Motivation
- Develop Capability
- Share Knowledge

THE GLOBAL SOCIAL AND DEMOCRATIC REVOLUTION — THE CHALLENGES FOR EUROPE

(1) Dealing with inequalities

Prometheus, now completely unbound, to whom science has granted unprecedented powers and for whom commerce is an incessant driving force, calls for a code of ethics that, through voluntary restraint, can prevent his power bringing disaster upon mankind.

Hans Jonas

Inequalities on the rise

As analysed in the global trends chapters above, inequality between countries is likely to decrease globally — with notable exceptions — while inequalities within countries are likely to increase worldwide.

The studies conducted under the ESPAS project all corroborate this continued rise in 'internal' inequalities, including in relatively egalitarian countries, with potentially serious repercussions. A well documented 30-year trend is thus set to continue ⁽¹¹⁸⁾.

The rise in inequalities is well documented. It benefits the wealthiest members of society and the hyper-profitable sectors. The current and future global upturn does not belie this trend, since the gains it yielded have been — and likely will be — mostly reaped by the capital-rich. In the OECD countries, inequalities are traditionally less marked than in emerging countries. Nonetheless, we are witnessing an upsurge in relative poverty, a deterioration in equal opportunities and a re-polarisation of society as regards access to employment, credit, housing and entrepreneurship, and even education and health.

The main characteristics of the unequal societies emerging in Europe are:

- New forms of exclusion or marginality are appearing: poor workers, the qualified unemployed, precarious workers ⁽¹¹⁹⁾.
- The informal sector — the 'black economy' — is growing throughout Europe and the United States following the financial crisis. It is a means of escaping taxes, controls and barriers to business (legal, linguistic, educational). However, it offers no up-skilling, no professional recognition, no protection and no social guarantees. The informal economy, which initially was perceived as a way out of poverty, in many cases increases it and makes it a durable condition.

- Revenue and productivity gains tend to be concentrated in the upper section of societies. Strong and increasing competition for unqualified jobs is exerting downward pressure on wages ⁽¹²⁰⁾. Experts highlight the risk of long-term unemployment for young people with no school-leaving certificates and for older workers (over 55s), as well as for immigrants and their children.

Challenge: coping with social and generational inequalities

On present trends, by 2030, inequalities between European Union Member States will not have diminished in many cases. Within Member States themselves, socioeconomic inequalities will grow and two particularly significant divides will emerge: a generational divide and an educational divide ⁽¹²¹⁾.

- The crisis will continue to affect the most vulnerable members of society. A 45 % rise in unemployment, an increased risk of poverty affecting nearly 130 million Europeans, the exclusion of young people — of whom 14 million are neither in education nor in work, all these call for strong measures. Otherwise there may be greater dangers of social radicalisation.
- Young people (15 to 24 year-olds) will be particularly affected by inequalities: one in four is currently unemployed and in some Member States, the ratio is one in two. Worse still, most of these young people are failing to take advantage of the crisis to get training or acquire skills: nearly 20 % of 24 to 29-year-olds are both out of work and out of education/training.
- More generally, vulnerable members of society — young people, women, end-of-career workers and immigrants — will be most affected by the rise of inequalities in Europe.

European society will suffer strong intergenerational tensions, in particular between the 'Baby Boomers' (1946-67) and 'Generation X' (1967-80), on the one hand, and the 'Millennials' (1980-2000), on the other. In addition to different cultural stances (attitude towards norms, use of social

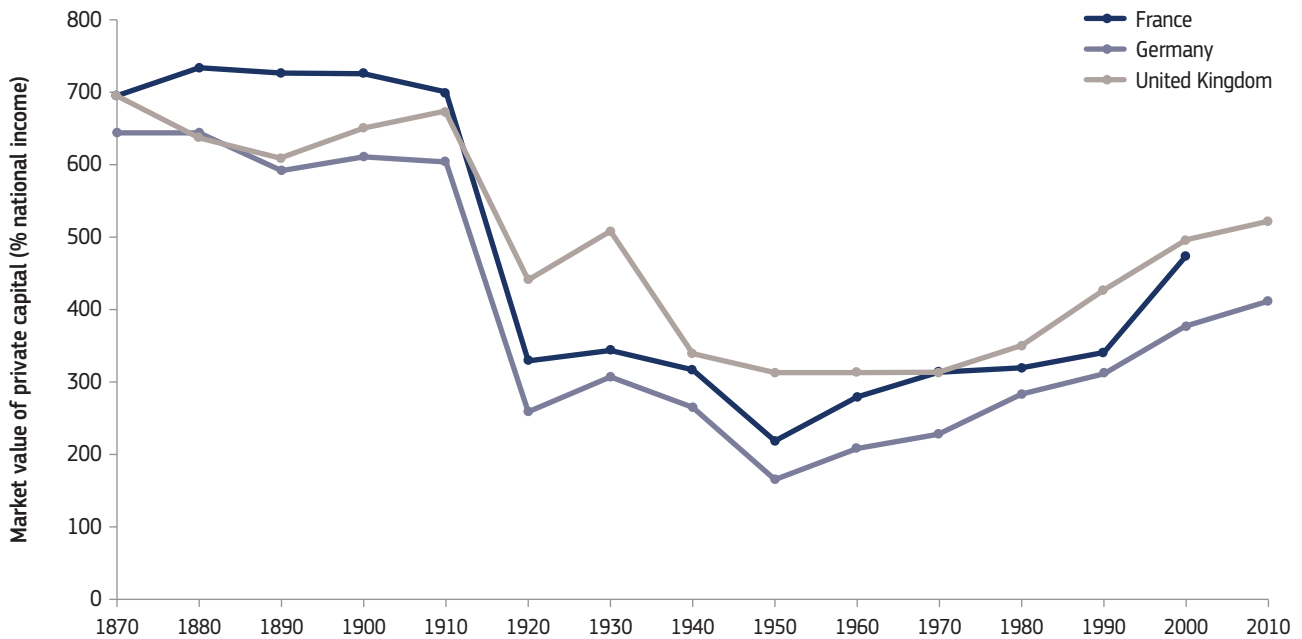
⁽¹¹⁸⁾ OECD, *Making Inclusive Growth Happen*, 2014.

⁽¹¹⁹⁾ RAND Europe report for ESPAS, *Europe's Societal Challenges: An analysis of global societal trends to 2030 and their impact on the European Union*, 2013.

⁽¹²⁰⁾ This development was countered by Germany by introducing a minimum wage in 2014.

⁽¹²¹⁾ EUISS report for ESPAS, 2012; RAND Europe report for ESPAS, 2013.

Figure 21. Evolution of the wealth-income ratio for three European countries

Source: Thomas Piketty, *Capital in the Twenty-First Century*, 2014

networks and technology), this divide will have an increasingly significant economic dimension, with uneven distribution of wealth and a social protection system benefiting older generations. Already today, the 'baby-boomers' (50 plus) make up 25 % of the population but control nearly 70 % of disposable income and account for 40 % to 60 % of consumption (EIF).

Effects of Inequalities

The combination of demographic trends — ageing and increased longevity — and economic trends — slow growth favouring capital over work — is compounding the growing generation gap, possibly with damaging social and political consequences. The most highly educated will continue to work for longer and maintain higher productivity levels. In the United States, only 32 % of unqualified 62 to 74-year-olds are in work, whereas the figure is 65 % for people with professional qualifications in the same age bracket ⁽¹²²⁾.

The reality and perception of a European society managed 'by the old for the old' may be a cause of significant frustration, which could trigger social tension and 'avoidance behaviour' — alienation of the young from politics, protest movements outside social dialogue structures — which could further weaken Europe's democracies. This trend is already visible: in 2014, 72 % of young voters did not participate in the vote ⁽¹²³⁾.

Moreover, this divide will make for an even more risk-averse environment, which could significantly constrain innovation. In a rich and ageing society, change is perceived as doubly

negative and the temptation to limit the impact of change for fear of suffering minor inconveniences could lead to much more disastrous breakdowns.

Inequalities will also seriously affect immigrant communities which include relative newcomers, first generation migrants as well as those born and raised in the country of settlement. In most European Union Member States, they are an integral part of society and provide a necessary contribution to the labour market. Although far from forming homogenous groups, immigrant workforces tends to be younger and less skilled than average. Education is the best tool to avoid ethnic segmentation and exclusion, alongside effective diversity and non-discrimination policies.

Challenge 2: the technological revolution sharpens inequalities

Some inequalities are being compounded by the current technological and industrial revolution. The possibility of mass unemployment linked to the emergence of new technologies is perfectly plausible ⁽¹²⁴⁾.

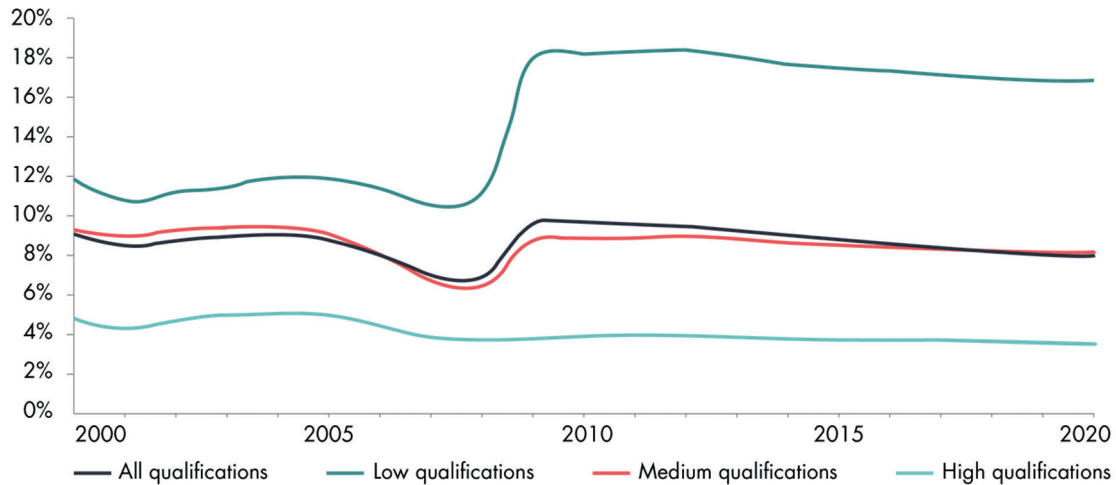
The technological revolution to come, like previous industrial revolutions, is likely to lead to new monopolies and to new patterns of redistributions of wealth and status which will require bold political responses comparable to Bismarck's introduction of employer's contributions for social welfare in Germany and Theodore Roosevelt's promotion of anti-trust legislation, in the United States. Whether today's technological revolution exacerbates or mitigates social inequalities will depend in part on the success of comparable measures to keep the market open, to widen access to technology and to devise strategies for digital inclusion.

⁽¹²²⁾ Gary Burtless and Barry Bosworth, *Impacts of the great recession on retirement trends in industrialised countries*, 2013.

⁽¹²³⁾ European Parliament Eurobarometer, 2014: European Union wide turnout for 18-24 year old voters (Austria: 16-24).

⁽¹²⁴⁾ *España en el Mundo 2033*, PWC.

Figure 22. Unemployment rates by qualification category in the EU, 2000-2020



Source: Cedefop, *Skills supply and demand in Europe: Medium-term forecast up to 2020*, April 2010 (IER estimates based on E3ME, EDMOD and BALMOD).

As a consequence of Europe's demographic profile and of the 'technologisation' of the economy, skills-related inequalities will be exacerbated by the lack of skilled workers and the surplus of unskilled workers over the supply of unskilled jobs. Owing in particular to the inadequacy of the teaching and education system, young people, women and the over 55s will be at high risk.

Inequalities and social protection

Under current healthcare and pension conditions, demographic change, especially population ageing and a fall in the active population, will make European Union Member States' financial situations more onerous by 2050. Off-setting or corrective measures — such as raising the statutory retirement age, reducing benefits, introducing additional contributions and prohibiting overlapping benefits — are already under way in nearly all Member States ⁽¹²⁵⁾.

Some of these measures could have a positive long-term effect on inequalities, but structural factors will continue to take their toll if the system remains unchanged. Europe is still the continent where the GDP share of public expenditure for social and welfare support is greatest. But Europe's population and electorate will grow physically older, whilst enjoying an above-average share of movable and immovable assets, accumulated in particular during the last third of the twentieth century.

Combating inequalities calls for comprehensive solutions

Long-term analyses confirm that more attention needs to be paid to the impact of inequalities on economic and political systems. Inequalities not only affect those who suffer from them but also the overall economic performance and political stability of states and societies. These effects can be magnified by a lack of social mobility, which limits opportunities and prospects for improvement for the most deprived members of society.

The technological revolution, with its ensuing destruction-cum-creation effect, is likely to exacerbate already severe inequalities and will call for ad-hoc redistribution systems to reduce the consequences of such inequalities. Growing inequalities pose an additional challenge for the sustainability of European social protection policies ⁽¹²⁶⁾. Excessive inequalities can damage social cohesion and economic efficiency, namely by jeopardising the sustainability and durability of a system of social protection that should remain a European hallmark and key political and economic asset.

Two essential levers to combat increasing inequality are redistributive fiscal policy, which sets the conditions under which income from growth is shared, and education, which determines people's ability to evolve in society. Actions are also needed to ensure social inclusion, to stimulate social innovation, to generate higher quality jobs, and to enhance living standards, beyond merely economic criteria.

⁽¹²⁵⁾ CEPS report for ESPAS, 2013. RAND Europe report for ESPAS, 2013.

⁽¹²⁶⁾ RAND Europe report for ESPAS, 2013.

THE GLOBAL SOCIAL AND DEMOCRATIC REVOLUTION — THE CHALLENGES FOR EUROPE

(2) Restoring trust in democracy

*One should never be afraid of having too many subjects or too many citizens,
for the strength of the commonwealth consists in men.*

Jean Bodin

A number of observers have highlighted the difficulties faced by democratic systems around the world in adapting both to current realities as well as expected future developments⁽¹²⁷⁾. The local and regional side-effects of globalisation, the technical nature of many economic debates and of ethical debates may contribute to feelings of insecurity among the general public. Policy-makers are under such constant pressures from 24-hour news cycles and social media that they have too little time to work on long-term strategies.

Though trust in governments has diminished, citizens still expect them to deliver⁽¹²⁸⁾. New demands for transparency and fairness challenge politicians and institutions. The gap is widening between a world in rapid transition, with ever more citizens permanently connected and the relative backwardness of a body politic whose rules frequently date from a previous age.

This could carry real dangers. Democracies are likely to make efforts to reform and to try to be more inclusive. The more people feel distant from their governments, the more their expectations are not met, the greater the risk of repetitive political crisis and social tension.

In Western democracies, a growing mutual suspicion has developed over the last 30 years between the people, who feel ignored and misunderstood, and the political elites. This crisis of trust may well be fuelling the population's alienation, increasing polarisation and weakening society's capacity for collective action⁽¹²⁹⁾.

A vital element in popular disenchantment with politics is a scepticism that elections can actually bring about genuine change, not only in the leadership, but also in policies. Only 4 % of the public are members of a political party and there has been a 40 % drop in political party membership from 1980 to 2000 in 13 European Union Member States. Populist parties and falling voter participation are the more visible signs of this disaffection.

⁽¹²⁷⁾ See notably the Oxford Martin Commission for Future Generations, 2014. Securing the long term in national and international decision making. EUISS report for ESPAS, Global Trends 2030 - Citizens in an Interconnected and Polycentric World, 2012. RAND Europe report for ESPAS, Europe's Societal Challenges: An analysis of global societal trends to 2030 and their impact on the European Union, 2013.

⁽¹²⁸⁾ EUISS report for ESPAS, 2012. RAND Europe report for ESPAS, 2013.

⁽¹²⁹⁾ FRIDE-Chatham House report for ESPAS, 2013.

Lack of trust in well-established national political institutions is often greater than the lack of trust in the more distant European institutions, at 71 % for national governments, 68 % for national parliaments, 59 % for European Union institutions and 53 % for the European Parliament⁽¹³⁰⁾. Polls indicate that citizens in many European countries believe their political classes are corrupt and political parties ineffective. This separation between the political elites and the people they represent is likely to grow⁽¹³¹⁾.

Hence the wish in many places to shift decisions back to the lower levels of governance, not only for the sake of identity, but because they seem to be closer to the citizens or more likely to be accountable to them.

Whether attitudes to European integration are driven by feelings about European Union institutions or by a baseline level of trust in national institutions remains disputed by scholars. Perceptions of national identity and of the utility brought about by the European Union institutions are also known determinants⁽¹³²⁾. On the other hand, the opportunities to be informed and to participate in political life have all become much easier with the development of new technologies.

At the European Union level, asserting the capacity to change not only the executive in charge but also its policy orientations might help to enhance confidence in the institutions. The nomination of 'lead candidates' for the function of Commission president at the European elections, with the nominee presenting an explicit and verifiable programme, may also serve that purpose.

Challenge: confronting weakening attachment to the European Union

Launched to put an end to Europe's internecine wars, the European Union is facing a generational change. The younger generation largely feels that the aim of lasting peace in Europe has now been achieved and as such no longer justifies further deepening the European project. Increasing numbers are ill at ease with moves towards further integration. A more comprehensive narrative would be needed. Defining it is a key challenge for the next decade. One possibility would be to

⁽¹³⁰⁾ Eurobarometer, 2014.

⁽¹³¹⁾ EUISS report for ESPAS, 2012; RAND Europe report for ESPAS, 2013.

⁽¹³²⁾ <http://www.palgrave-journals.com/ap/journal/v42/n2/abs/5500191a.html>

A central role for the citizen on energy

Energy is an area in which the citizen could and should play a central role, subject to the availability of the infrastructure ('smart' meters and networks). If users were aware of the way in which electricity prices fluctuated during the day between times of low consumption and peak times, they could adapt their consumption to prices, for example by putting their refrigerator on stand-by between 5 pm and 7 pm, when electricity prices are at their highest. Another way of giving consumers a more central role in the field of energy is to promote access by local groups to decentralised means of production, for example by encouraging the emergence of cooperative structures for the production of renewable energy — wind, solar or other — at local level. This would greatly increase acceptance by local populations of decentralised production plants, such as onshore wind farms. With the development of smart networks and electricity storage techniques using the batteries of electric vehicles, every citizen would be able to make a visible contribution to solving the problem of the intermittent nature of renewable wind and solar energy sources. Private vehicles are moving for 5 % of the time, which means that the remaining 95 % could be used for storing or feeding electricity into the grid, to smooth out demand and make it more compatible with intermittent production.

focus on the European Union as the specific vehicle for dealing with the great challenges of our age such as trade, immigration, employment, competition and security.

Policy-makers need to consider how to revitalise representative democracy, at local, national and European levels. This could involve encouraging greater participation by use of the new technologies. Politics is one of the areas of life that has been the least affected by the technological revolution, yet this revolution offers ways of modernising the mechanisms of democracy by introducing new forms of representation and of direct consultation.

The European Union — a front runner in the new democratic age

As already highlighted, democracy is facing a two-fold challenge: it has to come to terms with populism and with the growing power of non-democratic states on a global scale. This context is also a two-fold opportunity: to restore the citizen to the heart of policies, by adopting new approaches and by making better use of new technologies, and to use Europe's strengths to modernise its political structures and processes.

The European Union has a claim to be a front-runner in the new democratic age, because of its diversity, transparency and political experience acquired over decades of cooperation, compromise, coalition building, social dialogue and an active and respected civil society.

The new information and communication technologies, and a better awareness of the needs of the public, thanks to the use of big data, should enable delegation of more responsibilities to the people and facilitate their choices as individuals and consumers. This issue could be central to policy planning and priorities at all levels — local, national and European.

Modernising the relationship between the individual and politics is a more sensitive matter, however, as it comes up against the complexity of political systems and vested interests. And yet, new avenues are opening up once again thanks to technology, which makes elections and popular consultations easier with electronic voting, allows online fora for discussion and decision-making, and enables authorities to disseminate information more effectively. Experiments in participative democracy using these changes are already being conducted locally, in towns and cities and even nationwide.

Key questions:

- How is it possible to ensure that the European Union delivers effective democracy for its citizens? How is it possible to increase European Union delivery in different policy fields? How can citizens perceive these results?
- What does the increasing importance of non-state actors imply?
- How should we handle individual empowerment, and new opportunities to participate in governance?
- What is needed to make the European Union a platform of experimentation and innovation for 21st century democracy?

THE GLOBAL GEO-POLITICAL REVOLUTION — THE CHALLENGES FOR EUROPE

Enhancing the international role of the European Union

There is no reason for us not to succeed in achieving our goal and laying the foundation of a United Europe. A Europe whose moral design will win the respect and acknowledgement of all humanity, and whose physical strength will be such that no person will dare to disturb it as it marches peacefully towards the future.

Winston Churchill, Strasbourg 1949

The European Union's geo-political influence

Despite a process of relative decline, both sides of the Atlantic — Europe and the United States — will continue to wield considerable influence as economic power-houses, military and technological forces and soft powers⁽¹³³⁾. The European Union is only one facet of Europe, but a crucial one, both as a source of economic prosperity and as a model for rule-based integration. Its economic success will largely depend on the dynamism of its single market⁽¹³⁴⁾, the consolidation of Economic and Monetary Union, and the cohesion of its middle classes. Taken separately, many European Union Member States will still have diplomatic influence and military clout which, although not decisive, could play an important role in regional crisis prevention and management in specific cases.

However, the uncertainties surrounding the future of Europe are also great⁽¹³⁵⁾. Europe's perimeter is not firmly established. There is no clear consensus on where enlargement should stop. Moreover, the possibility of one or the other Member State leaving the European Union cannot be discarded altogether. The parameters of enlargement will obviously depend on developments within the countries surrounding the European Union, but factors internal to the European Union will be equally decisive, in particular the dynamics of European integration.

The outcome could be threefold: regression; status quo with the current hybrid union and a primarily economic integration process; or progress towards a 'US of Europe'. In our assessment, in 2030, the European Union will probably retain its hybrid nature.

Some see the further development towards a two-or-more speed Europe as inevitable. They argue that more intensive integration of the euro area is virtually inevitable, to address the weaknesses of an incomplete economic governance

⁽¹³³⁾ Transatlantic Academy, *Liberal Order in a Post-Western World*, 2014.

⁽¹³⁴⁾ A CEPII study from 2011 concluded that removal of remaining barriers to the single market would lead to a 14 % increase in Europe's annual income. Vincent Aussilloux, Charlotte Emlinger and Lionel Fontagné, *What Benefits from Completing the Single Market?* 2011.

⁽¹³⁵⁾ See notably European Commission, *Global Europe 2050*, 2012. Three scenarios — 'nobody cares', 'European Union under threat' and 'European renaissance' — are presented by some of the Europe's leading foresight and macroeconomic modelling experts.

framework as revealed by the recent crisis. At the same time, some Member States, especially but not only outside the euro area will have difficulties to continue the course of an 'ever more integrated' Union. The euro area is likely to evolve, both quantitatively and qualitatively. The non-members of the euro area would be affected by this evolution. At the same time, debates about internal immigration and the mobility of citizens are likely to continue between 'new' and 'old' Member States, and indeed within and among 'old' Member States. Serious fragmentation would certainly negatively affect the European Union's and indeed all single Member States' economies and societies, their collective and individual clout on the world stage, and the effectiveness of their external policies.

Global context: a more insecure world

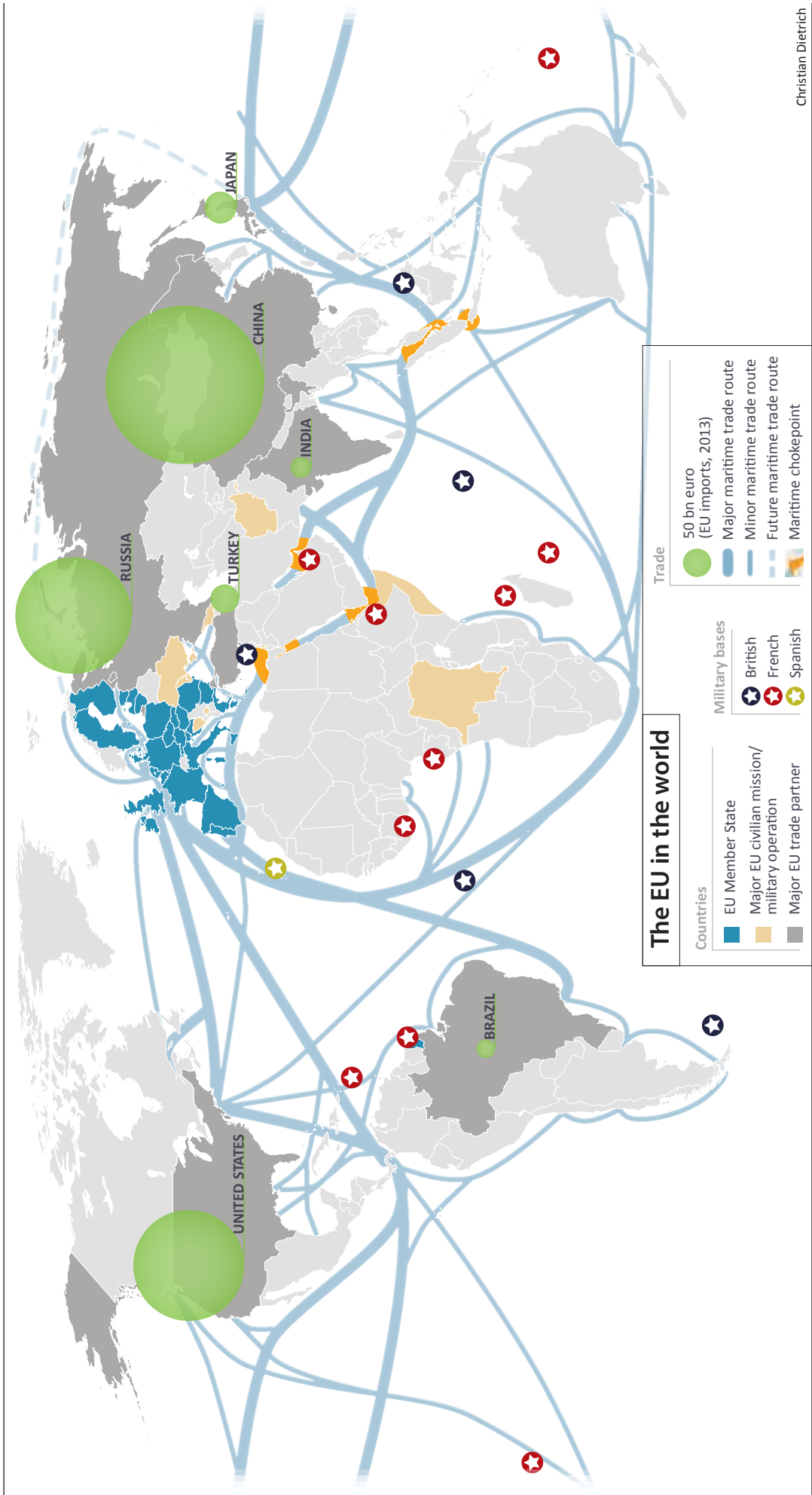
The increase in emerging countries' power, driven by globalisation, is changing the verities of the post-Cold War world, in which the 'West' dominated the global institutions and defined the policies that led the global agenda. The institutions established after the Second World War remain the main instruments of global collaboration, but little results have been booked on the main global challenges in the last decade. There has been no significant agreement on climate, trade or finance or on any major conflicts from Darfur to Syria.

The prospect of a linear progression towards greater democracy, more open markets and increasingly peaceful international cooperation seems to be receding and is unlikely to be the dominant paradigm by 2030. The universal validity of the values defined by the 'West' is increasingly being called into question.

The long-term weakening of the multilateral system could persist until 2030 and puts the emphasis back on a precarious balance of power, rather than on processes to settle conflicts and lay down common rules and disciplines.

Moreover, the challenges will be more complex, inter-connected and rapidly changing. The relative decline in United States power is likely to continue, as will its effort to focus its power by pivoting to Asia. The rise of political tensions in Asia, the Middle East and Europe could lead to a major realignment around Russia, China and some Middle East and

Figure 23. The European Union in the World



Christian Dietrich

Source: EUISS

South American countries. While its cohesion will be incomplete on many challenges, it would more consistently and more potently contest policy initiatives of the 'West'.

This could build tensions and develop into a more structural confrontation between blocs. Such a confrontation could morph in to smaller regional conflicts, short of industrial war, but further disrupting global political, economic and financial stability. The European Union could find itself at the eye of a cyclone of disorder, unable to insulate Europe from the external challenges, and with limited policies and tools needed to project stability beyond its borders. Its resilience and cohesion will be tested, as it will face regional and global challenges, and their immediate consequences, concurrently. Ambiguous, slow and diluted responses will meet stronger or asymmetric forces and be found wanting.

Global nature of the European Union geo-political interests

The European Union's awareness of its global interests has increased in the recent past and is reflected by the increasing importance of foreign policy in European Union Treaties since Maastricht: in particular the foundation of the European External Action Service (EEAS). Member States are more aware than before that common positions and a common voice can make a difference on the world stage.

With the Lisbon Treaty, the European Union established for itself a clearer roadmap of objectives on the international scene, based on democratic values, promotion of peace and defence of European Union interests ⁽¹³⁶⁾. The achievements

⁽¹³⁶⁾ See in particular Article 21 and Chapter 5 of the Treaty on European Union (TEU).

of this treaty have, however, so far been only partial: crisis management activity and the foreign-policy positions adopted have still been largely dominated by the expression of national interests, frequently resulting in lowest common denominator positions.

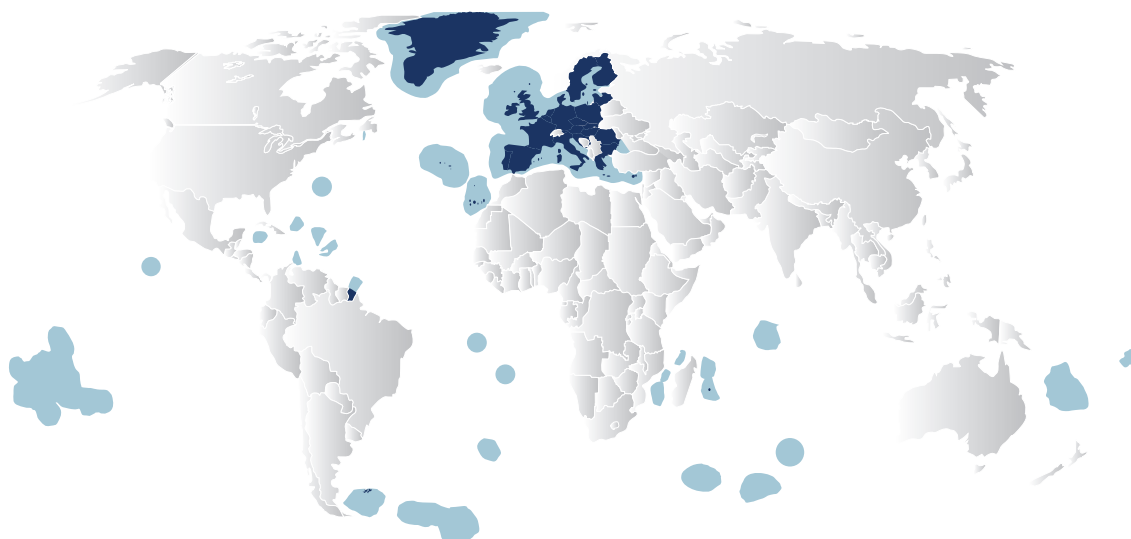
Moreover, the European Union still does not have a global, comprehensive and operational approach to external relations — for example, in the field of energy security. A global vision is becoming more necessary since:

- trade policy is increasingly 'geo-politicised';
- the fragility of failing states increasingly affects Europe's own security and their proliferation challenges the budget, since more than 50 % of European Union development funds are intended for such countries;
- the issues of development and sustainability join up: For example, in the post-2015 agenda and the merging of the Rio and Monterrey UN processes for sustainable development and fight against extreme poverty.

Certain underrated aspects of the European Union's influence and power could also be developed — for example, in maritime security. The European Union's Member States collectively have the world's largest exclusive economic zone, EEZ (25 million km²), including six million km² in the Asia-Pacific region, as well as numerous military and scientific bases in all three oceans.

By 2030, the European Union's strategic interests should probably be expressed more clearly, since fragmentation and global insecurity may well force the Union to take on more responsibilities for its security and possibly its defence.

Figure 24. World map of European Union Exclusive Economic Zone (EEZ)



EU Member States and Outermost Regions and their EEZ

Challenge 1: turbulence and chaos in our neighbourhoods

The Eastern Neighbourhood: dealing with Russia's ambitions

To the east, efforts to develop a common area of stability, prosperity, democracy and the rule of law in countries lying between the European Union and Russia have met with strong Russian opposition. Russia is attempting to establish itself as a pole, distinct from the European Union, and to organise Eurasian geography around its own interests and values. Given its economic weaknesses, it is uncertain whether Russia will succeed in its Eurasian project, but the latter will impact considerably on the nature of relations with the European Union, whatever happens.

On Ukraine, the contest within the country and between Russia and the West looks set to continue. The pattern of Russian activity seems to show that it is determined to use its levers of power so that Ukraine remains firmly within its sphere of influence. Russia could continue to increase pressure on the European Union and make relations more febrile by reiterating its right to 'protect' Russian minorities elsewhere in the region, including within the European Union's Baltic States. This could also impact on European Union cohesion, as any perception that calls for increased European Union solidarity were not met would undermine both the confidence of some Member States and outside perception of the European Union's collective will. Gas stoppages in the coming winters cannot be ruled out. Trade and economic cooperation could continue to erode, with both Russia and the European Union seeking alternative customers for their goods, and so increasing their structural separation. Moreover, Russia will try to retain, and whenever possible enhance, its traditional influence in the Balkans.

This crisis could thus mark the beginning of a new geo-political era in which Russia is less cooperative on global issues and emerging powers are realigning. Russia has already taken steps to strengthen relations with China, including through provision of energy on beneficial terms. The recent agreement to establish a BRICS' development bank, with USD 100 billion backing and a reserve currency pool worth over another USD 100 billion, points towards a looming challenge to the existing global 'Western' institutions of the IMF and the World Bank. Confrontation between Russia and the West is also likely to increase the existing international governance gap, between the scale of global challenges and the capacity to agree sufficient collaborative responses.

The Southern neighbourhood and beyond: scene set for further unrest

To the European Union's south and south-east, many countries are in a fragile state and there are multiple sources of instability. The main challenge will be to create the conditions of sustainable peace between the key regional actors — Turkey, Iran, Saudi Arabia and Israel — and to promote some cooperation between them, so that the region can stabilise with improved governance, economic prosperity and social development.

Over the last decade, major and often violent shifts have occurred, which have deeply affected the governance of many and the very territorial integrity of some countries. From Somalia through Sudan and the Central African

Republic to Northern Nigeria, then up to Mali and Algeria, and across Libya, Egypt and Syria to Iraq, institutions of statehood have either collapsed or become increasingly fragile.

While the demand for accountability and change which sparked the popular movements of 2011 remains mostly unanswered, setting the scene for further popular unrest, the threat of radicalisation and violent extremism is on the rise. This is fuelled by the contest between principal regional protagonists, Saudi Arabia and Iran, which has deepened the Sunni/Shi'a sectarian divide, and reduced the space for political moderation throughout the region.

On top of this, the effects of climate change, demographics and almost region-wide weak and corrupt governance add up to make the entire region a tinderbox, and one which could be lit from a number of different places, leading to a wider conflagration.

The European Union's relative influence will likely decrease: in addition to the increasing involvement of non-Western players such as Russia and China, citizens' empowerment has lowered tolerance of abuse of power domestically but also decreased acceptance of externally imposed conditionality.

Civil war and intra-state conflict

Civil wars and intra-state conflict have become increasingly common, affecting Syria, Iraq, South Sudan, Somalia and Yemen. The Central African Republic and Mali are in fragile post-civil war conditions: large-scale military conflict between the opposing groups has been avoided in the short term, but the political peace processes are not self-sustaining. Libya's trajectory, with militias competing for power, and with Al Qaeda building its capacity and network, has the potential to create regional instability for years to come. The export of arms from the country has fuelled conflicts from Sinai to Mali, and it has become the main departure point for refugees and illegal economic migrants alike on the central Mediterranean route to Europe.

Fragile regimes

Post-revolution Tunisia is seen by many as the best hope for a progressive model that manages to balance the competing demands of Islamists and secularist liberals. Moderates won the 2014 elections but challenges remain, with the threat of violence from radical wings, and Al Qaeda affiliates lurking close to the borders. Success is far from guaranteed.

Egypt, despite a relative stabilisation of the country in the short-term, will face significant destabilising pressures in the next term in the form of a deteriorating economy, an unstable social situation and deep polarisation over the crackdown against the Muslim Brotherhood. The Muslim Brotherhood itself, while disrupted in the short-term, will play a longer game and build its support through social support programmes at the local level. The security situation will be contested by jihadist groups: at present, much of the Sinai is outside State control. Egypt is a pivotal Middle-Eastern state due to its location, size, cultural influence and relations. Significant destabilisation or worse would have strategic consequences for the entire region, including for Israel's security and the nature of United States engagement.

Elsewhere in the Arab world, Saudi Arabia's future is uncertain. Questions remain about political succession. Despite increased payments to large sections of its population following the first Arab uprisings, considerable poverty and discontent persist. Jordan and Lebanon have complex internal political and social environments, with large refugee populations creating instability. The economic situation in Algeria and Morocco, along with the sense of political stagnation, has fed a slow build-up of frustration, especially amongst the millions of urban youth. These have been contained, but will persist without significant economic growth and fairer governance systems.

Regional game-changers

An internationally brokered nuclear agreement with Iran would have many side effects. Much depends on its reception amongst its regional neighbours, and Iran's behaviour elsewhere. A deal could well lead to positive change in Iran's relationship with its neighbours, to the benefit of all generally, and to Iran specifically, over time. Drawn out negotiations, a perceived bad deal, or — in the worst case — no deal at all would maintain tensions and raise the chances that Israel will at some point seek to reduce Iran's nuclear capability by military means, with serious risks for a wider confrontation in the region.

In the short term, the Middle East Peace Process (MEPP) has missed another deadline, and with renewed clashes between Israel and Hamas in Gaza, and increased tensions in the West Bank, it is unlikely that there will be progress in the short term. The Arab revolutions and the war in Syria may have reduced the focus of Israel's neighbours on the old conflict. But they have raised the prospect that Israel may be confronted with several hostile Islamist regimes or non-state actors in its close and wider neighbourhood. Any important

confrontation, would draw in the United States, and increase pressure for European Union engagement.

Immediate and longer-term risks for Europe

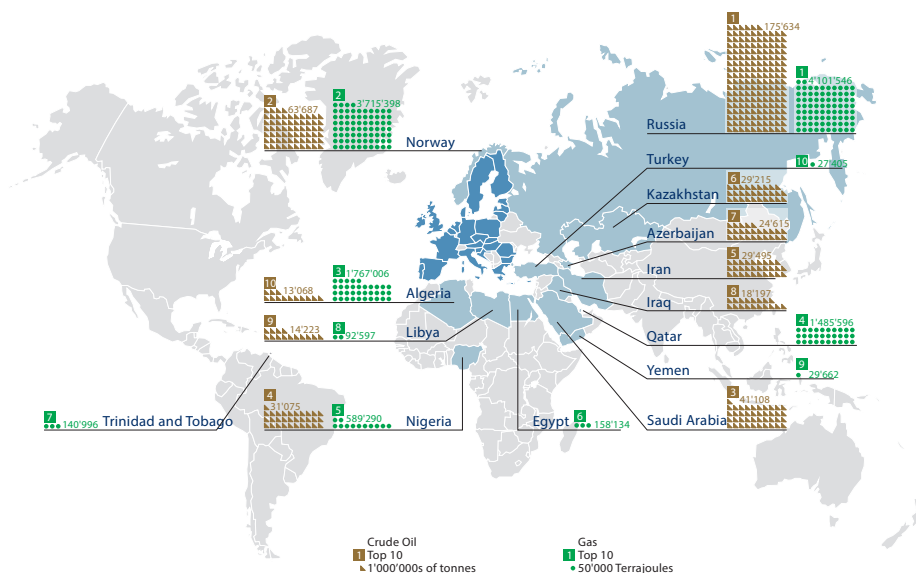
At the moment, the European Union's neighbouring regions already contain more refugees than at any time since the Second World War. The global humanitarian system shows signs of reaching a breaking point. According to political developments, new waves of migrants to Europe should be expected. Jihadist terror groups and Al Qaeda have not been suppressed; of the over 2 000 European foreign fighters in Syria, many may return, with direct and serious security implications. Spreading violence would exacerbate existing tensions affecting Muslims in key European Member States. The conflicts between Sunni and Shi'a may well also have knock-on effects on domestic security within the European Union, bearing in mind that by 2030 the Muslim population in the European Union will stand at 58 million, some 8 % of the total population.

Climate change, war, famine and state failure — in particular the collapse of a pivotal state in the Middle East — could lead to a very large increase in migration, with potential dramatic consequences⁽¹³⁷⁾. All these forces may increase the internal political pressure on the European Union to try to fix its frontiers more definitively regarding immigration flows, both legal and illegal. The likely direction of the debate beyond the short term is unclear, but any further restrictions on immigration could well impact on the European Union's relations with MENA states negatively.

⁽¹³⁷⁾ The greatest pandemic of the 20th century, the H1N1 influenza of 1918, was spread by the demobilisation of millions of soldiers from the mass conscription armies at the end of the First World War, which killed up to 50 million in the first year. See notably Ian Morris, *Why the West Rules — for Now: The Patterns of History and What They Reveal About the Future*, 2011.

Figure 25. Top external energy suppliers to the EU, 2011

Top 10 External suppliers to the EU, 2011.



Source: Eurostat

Source: Iana Dreyer and Gerald Stang, "Energy moves and power shifts: EU foreign policy and global energy security", Report n°18, EU Institute for Security Studies, Paris, February 2014

Challenge 2: Security of energy supply and transport routes

The United States growing energy self-sufficiency will contrast with the European Union's continued dependence on imports. In this context, the unstable Southern and Eastern neighbourhoods are hugely important for Europe's energy provision, as they contain 60 % of proven global oil reserves and 80 % of proven global gas reserves. United States self-sufficiency will open up a competitiveness gap between European Union industry and that of the United States, particularly in the case of heavy industries that are energy dependent. Even if the gap between the two continents will close in the future, there is a risk that significant parts of relevant industries, particularly refining and the chemical industry, which are major energy consumers, may relocate to the other side of the Atlantic.

Security of supply will remain dependent on transport, distribution and storage infrastructures, which allow flexible recourse to markets, in order to eliminate the risks associated with a particular supplier. The risks are many, major, difficult to reduce and diverse. It is possible, for example, to imagine a supplier cutting off deliveries as a way of exerting pressure on Europe, as well as terrorist-type attacks on infrastructure. European supply could also be compromised by a broader, global supply insecurity risk. A classic but relevant example is the potential control of the Straits of Hormuz — where 30 % of the world's oil transported by sea still passes — by a power hostile to European interests, for instance as a result of a Middle East conflict.

Most energy sources have their weaknesses in terms of security of supply. The export of shale gas by the United States to European Union and the development of infrastructures in the European Union to exploit its own reserves could lead to diversification of the EU's sources of supply and less dependence on traditional suppliers, in particular Russia. The development of the Southern Corridor pipelines coming from the Caspian Sea, which should be able to start deliveries towards 2018, should further boost competition and reduce gas supply risks. The oil market is global but its weakness lies in bottleneck transit points, such as the Straits of Hormuz or the Suez Canal. The coal market is global and can be more easily reorganised to resolve a localised problem. Uranium comes from a relatively limited number of sources, which are sometimes located in unstable regions, where a rapid and efficient military deployment might be necessary to protect supply. Against this mixed background, renewable energies seem to be a highly significant source of diversification.

Challenge 3: Multifaceted immigration

The rise in the global middle class and expansion of communication technologies is likely to provoke a worldwide increase in diverse forms of human mobility: professional mobility, circular migration and short-stay migration, alongside classic settlement models of immigration. As mentioned, short-term immigration pressure on the European Union from the Southern neighbourhood, including from refugees, may well further increase, with correlated security risks. However, global labour migration flows are set to alter in the longer run according to economic development patterns, demographic changes and political instability. An overall decline in

South-North migration will see Western Europe no longer the destination of choice it once was ⁽¹³⁸⁾. Migration trends could see Europe fall further behind in the 'global race for talent', with new competitor regions such as Asia and South America providing attractive alternative destinations for skilled workers. Europe may also witness an increase in the numbers of European citizens who choose to emigrate to seek alternative professional and lifestyle opportunities abroad.

The European Union's migration policies by 2030 will have to be reshaped to adapt to this new situation, which will affect the evolving labour needs of the European economy. Else, the European Union will face considerable difficulties to exploit the links between human capital, migration, employment and economic development. Present short-term, security-driven migration policies may not suffice.

But its capacity to do so may be jeopardised by the economic and social context. Rising populism and inequalities could make the European Union and its Member States increasingly unreceptive to immigrants, skilled or not, despite expected labour-force shortages resulting from declining active populations.

Therefore, coordinated measures to articulate the economic, social and cultural benefits of migration and mobility must be combined with a common, fair and effective security policy.

Living with religious diversity

Given the change in demography and the increase of migration to Europe over the past centuries, the role of religion, believed as declining in the second half of the previous century, has gained visibility again at the beginning of the 21st century. The 9/11 attacks in New York and Washington were only one expression of this trend. While the vast majority of Muslim citizens adhere to a peaceful version of their religion, Islamic extremists may well remain a rising threat to Western societies. The practice of recruiting Western Muslims and converts, who lead a so-called religious fight in the Middle East and then return home highly radicalised, will continue to pose serious problems.

Countries with a high rate of migrants adhering to other beliefs than their mainstream religions will step up their integration policies in order to uphold a societal consensus of 'living together'. This will pose a challenge in particular to Europe and the United States. New ways of accommodating different faiths and corresponding views on the social consensus in largely secularised societies and state systems will have to be found in full respect of freedom of religion and belief, but also in respect of the large numbers of those who do not adhere to any faith and do not wish states to be marked by them.

Regarding our relations with our neighbourhoods, in order to create a 'ring of friends', rather than a 'ring of fire' around Europe, religious issues, alongside more conventional geopolitical, economic and other strategic considerations, will need to be factored into Europe's developing foreign policy.

⁽¹³⁸⁾ CEPS Report for ESPAS, 2013.

Challenge 4: need for a renewed soft power

For several centuries, Europe was at the centre of the world's concerns: as the dominant power and the cradle of the industrial revolution, human rights and democracy, or even as a key factor in the power struggle between East and West during the Cold War. For reasons to do with 'negatives' such as a lack of leadership, weak economic growth and pressure from its neighbourhoods, but also simply because of the rapid development of the rest of the world, the coming period could be one of gradual marginalisation for Europe,

witnessing a relative, though by no means an absolute, decline on the international stage.

The main question is whether Europe will be able to preserve its influence and continue to shape the world of the future. Despite its demographic decline, Europe will still count in tomorrow's world. The European Union will still have the world's third-largest population, after China and India, with 450 million inhabitants by 2050. It will still be more populous than the United States, even if the gap is set to close with the United States population increasing

Overall mapping of trade relations by 2030

Since it takes at least a decade to negotiate and fully implement a trade agreement, the EU's trade environment in 2030 will depend primarily on the agenda of the negotiations currently taking place (see table below). **In 2030, the European Union should be at the centre of a network of trade agreements that is densest in the world in terms of the size of the partner countries (United States, Japan, India, MERCOSUR, Canada, etc.), the number of agreements and the scale of their ambition, since they seek to reduce regulatory and tariff barriers.**

But beyond this, the European Union will be faced with a number of major policy questions in terms of new directions. Four choices will be especially important: they concern the WTO, China, Russia and Africa.

- **The possible resumption of WTO negotiations could be on the cards, particularly if the Doha round is concluded in the coming decade.** The setting of a new agenda that includes questions of importance for globalisation — competition, state aid, services — would be an European Union priority.
- **Most analysts identify China as the market with the greatest growth potential for Europe.** China appears

prominently at the top of the list of countries with high potential for bilateral negotiations and investment owing to the major barriers that hinder the entry of foreign businesses into the Chinese market.

- **Besides the efforts to resolve the many trade disputes, the resumption of negotiations with Russia, or even with the Eurasian Economic Union, would be a major development in stabilising the neighbourhood by 2030.** Beyond strictly economic interests, **the relationship with Russia will become increasingly important from a geopolitical standpoint**, by reason of links with the neighbourhood, energy-related questions and the challenges of modernising the Russian economy.
- **Africa could be a major trade priority for Europe.** An economic take-off of North and Sub-Saharan Africa could cause the European Union to revolutionise its approach to these regions: development objectives would gradually give way to economic interests related to market access and economic integration. Thus, ambitious bilateral negotiations targeted at countries with considerable promise — Nigeria, Angola, Kenya, DRC — could be launched by 2030 in Sub-Saharan Africa. With the south Mediterranean countries, the objective could be to establish a free trade area — a sort of 'Euro-Mediterranean NAFTA'.

The free trade agreements under negotiation — the stakes for Europe in terms of GDP, exports and employment

	USA	Japan	Canada	ASEAN	India	Mercosur	Investments China	Sum	ProductivityEffect	Sum (incl. Productivity Effect)	Jobs (1000)	For the record: Korea
GDP (%)	0,52	0,34	0,08	0,035	0,03	0,17	0,03	1,2	0,8	2,0		0,075
(€ billion)	65,7	42,9	10,1	4,4	3,8	21,5	3,8	152,2	103,1	255,3		9,5
Exports (%)	1,40	1,20	0,69	1,60	0,55	0,65	0,07	6,2			2164	1,20
(€ billion)	29,4	25,2	14,6	33,7	11,6	13,7	4,1	129,6				25,2
Imports (%)	1,35	1,20	0,39	1,40	0,55	0,66	0,06	5,6				1,10
(€ billion)	29,0	25,8	6,0	30,1	11,8	14,2	1,3	118,2				23,6

Sources: Commission Staff Working Document: External sources of growth — Progress report on European Union trade and investment relationships with key economic partners, July 2012

from 300 to 400 million. Europe can also count on its specific political and social experience to develop uniquely open relations with the rest of the world, in a way perhaps more sensitive to the diversity of cultures and the historical depth of geo-political issues than other major players.

Since 1945, the defence of the European Union's interests has been based on two pillars: the outsourcing of its ultimate security to the United States, in particular through NATO; and investing in the multilateral system, in developing international rules and in stabilisation of its neighbourhood, by developing its 'soft power'. In this field, the European Union excels and remains a strong and respected player.

Through its weight and influence, the European Union will remain a soft power of the first order. The European Union has risen to the top spot internationally for trade and investment, as well as for development aid. Its standards are an international reference-point, as is its capacity to project its values. The euro is the second most widely used currency for exchange reserves.

The European Union's capacity to project its standards and to access external markets will remain essential if it is to seize the opportunities in this emerging world: in 2030, emerging countries will account for 50 % of global consumption. With North America, the challenge will be to integrate two of the three major global powerhouses; with China, to increase access to a market that will probably be the largest in the world; with Sub-Saharan Africa, to engage in a fair partnership so as to gain mutually profitable benefit from its dynamic growth; lastly, with North Africa, the Middle East and Eastern Europe, to create a zone of stability and sound governance, so as to pave the way in the longer term for economic and social integration favourable to all parties.

But the changing world scene will require political adjustments. In the field of development aid for example, the parameters have changed because of China's emergence as a global player, which is based on a different approach, namely tied aid geared directly towards governments, without democratic conditionality; and because of changing patterns of growth and increased risks for the most vulnerable countries.

If the European Union wants to keep control of its destiny, it will have to update its coalition building and to broaden it, in the context of a multi-polar setting ⁽¹³⁹⁾. This means notably a review of the existing strategic partnerships, extending and completing those that work well — such as with the United States and many other partners, from Brazil to Australia — reviewing, and where needed, downgrading those that are dysfunctional, and building new ones with emerging countries on a flexible and open basis.

Challenge 5: Security, defence and the need for hard power

This should be seen in the light of the broader European Union security context. The linchpin that is the United States is likely to force Europe to assume a larger share of the regional security burden in its Eastern and Southern borders, by reviewing its priorities and policies ⁽¹⁴⁰⁾. Faced with the diversification of the risks — terrorism, destabilisation at its borders, leveraging of force or coercion — and with a possible renewed 'classic' threat — depending on evolutions in Russia — the European Union will not be able to defend its interests by relying solely on deployment of its soft-power 'tool kit'. The integration of 'hard' defence forces or at least tasks — and a reversal of the downward expenditure trend — as well as an effective common diplomacy, will be just as needed. However, in a context of the multiplication of security and defence issues, it is far from clear whether the European Union will equip itself with the policy tools and military instruments to face these new responsibilities.

Spending and capabilities

European Union Member States spent 31 % of non-US global defence spending in 2013, with 1.6 million soldiers in uniform. But this figure does not translate into equivalent capability. European Union Member States spend 55 % of defence budgets on personnel salaries and pensions, which is about 20 % more than the United States. There are probably only five Member States that have a full spectrum capability and by 2030, only two, namely the UK and France, are likely to maintain it, though to a lesser degree.

Capability shortfalls identified in 2001 ⁽¹⁴¹⁾ have not been mended. These capability shortfalls were again demonstrated during the Libya air campaign: the European Union Member States had to rely on the United States for air-tanker refuelling, C4 (command, control, computers and communications for coordination between national contingents), ISTAR (intelligence, surveillance, target acquisition and reconnaissance) and precision munitions.

European Union Member States have too many capabilities in some areas, such as antiquated third and fourth generation combat aircraft and mechanised fighting vehicles. They have over 5 000 main battle tanks, which is only slightly less than the United States. In addition, military experts largely agree that European Union Member States still have sufficient capabilities, but this confidence is being eroded by continuing and uncoordinated cuts.

At the NATO Summit in Wales in September 2014, the Allies agreed to meet certain key targets: spending a minimum of 2 % of GDP on defence and a minimum of 20 % of this sum on major new equipment, including related to Research and Development (R&D). Nevertheless, the gap between allies on next-generation capability is likely to increase.

⁽¹³⁹⁾ Secretary General of European Parliament, *Preparing for Complexity, European Parliament in 2025*, 2013.

⁽¹⁴⁰⁾ UK Ministry of Defence, *Global Strategic Trends out to 2045*, 2014.

⁽¹⁴¹⁾ Source: Helsinki Head Line Goal and the Headline Force and Progress Catalogues.

The United States is likely to further develop robots and nanotechnology in weaponry which will reduce direct human engagement in combat. It will also continue to lead in the militarisation of space and will be the first nation, by a significant degree, to establish an anti-missile capability⁽¹⁴²⁾. Directed energy weapons (such as lasers) for precise strikes and for wider area defence and denial are already at advanced stages of trial⁽¹⁴³⁾. All this will further change the United States appreciation of risk relative to its allies, and will most likely further increase the gap between the United States and its allies in their willingness to employ force.

The first consequence of these developments could be that the European Union's contribution to global security, at a time of increasing tension and continued interests, will decline. This will have a number of important secondary and tertiary effects, such as lasting dependence on the United States for its overall security umbrella, and a certain unwillingness to take a clear stance on security developments, for instance in relation to the South-East China Sea and in the Pacific region.

European Union Member States need to communicate better on the state of their armed forces and on their future spending intentions. A 'European Semester' style process to ensure a good information basis for cooperation has been suggested⁽¹⁴⁴⁾. Questions such as the anticipated defence budget for the next three years, the top major equipment development priorities and the balance between spending on research and development and personnel would be answered and discussed by Member States together.

All in all, the intensity and level of collaboration between European Union Member States will determine their overall capacity to act. There may be a period of increased risk in which the most capable Member States will no longer be able to act globally in a unilateral capacity but Member States have not yet learnt to do so collectively⁽¹⁴⁵⁾.

Meanwhile, the capability of non-Western countries will not remain static. Projected figures suggest that defence spending will increase in Asia, the Middle East, North Africa and Latin America, and diminish in Europe, North America and Oceania. Remote-controlled weapons systems for surveillance, targeting and strike are among the most significant areas of capability development for several non-NATO countries. This would change the current virtual monopoly of their use and could lower the threshold and change the nature of conflict.

The future of the European Union/NATO security framework

It is likely that in 2030 NATO and the United States will remain the provider of last resort for European Union security. Defence and military operations will likely increasingly be operated by coalitions, as European Union Member States may not have the capacity to carry them out alone,

even if supported in the framework of NATO or of a coordinated European Union operation.

The nature of NATO will remain unclear even if the Cardiff summit has opened new prospects⁽¹⁴⁶⁾: NATO is likely to endure and to have a global importance, but it will face important challenges. As well as declining spending, these include: internal dissension on its role in the future; the lack of missions after two decades of important activity in Afghanistan and in the Balkans; and an eventual disengagement by the United States, if it would prioritise Asia. As noted in the UK Ministry of Defence's report focusing on 2045: 'NATO is likely to remain the key security alliance for Northern American countries, although United States (and possibly Canadian) commitments elsewhere in the world may mean that European countries will have to take on more of the burden of maintaining security in their region'⁽¹⁴⁷⁾.

The differing nature of defence and security threats and how institutions need to distinguish successful approaches to them is at a nascent stage. Defence requires the defeat of a patent threat, whereas security requires preventing a latent threat, or time to mount a defence. Defence has a unilateral outcome, whereas security threats require a continuous process, and multiple tools. The crisis management and security threats are still basically being addressed by 'defence institutions' and approaches which will limit their effectiveness⁽¹⁴⁸⁾.

European Union/NATO relations will remain important. For the European Union, the main challenge will be to find solutions to overcome its internal divisions, in order to provide collective responses to future threats. The issue of the institutional organisation of European defence and security will probably continue to be complicated by debates over the delineation of roles between the European Union/CSDP and NATO. These have so far proved intractable. The European Union has developed its Comprehensive Approach, drawing on its wider range of tools and embedded in a political strategy to align the instruments of the Member States and the Union. However, military force is almost always absent or reduced to capacity building. The majority of CSDP missions are still civilian and the European Union battle-groups have not so far been used.

Discussions over the delineation of roles have provided little clarity at the strategic level, and political disputes between some Alliance nations and Member States have hindered cooperation at the operation and tactical levels. Additional efforts to improve European Union/NATO relations may be required.

⁽¹⁴²⁾ Ian Morris, *op. cit.*

⁽¹⁴³⁾ UK Ministry of Defence, *Global Strategic Trends out to 2045*, 2014.

⁽¹⁴⁴⁾ Nick Witney, *How to stop the Demilitarisation of Europe*, 2011.

⁽¹⁴⁵⁾ Radek Sikorski, Munich Security Conference, 2014.

⁽¹⁴⁶⁾ Although leaders confirmed their support to the Strategic Concept, with its three components of collective defence, crisis management and cooperative security, the collective security element most reinvigorated NATO's purpose. Russian behaviour in Ukraine and continued uncertainty of its future intentions give real meaning to the commitment to 'continuous air, land and maritime presence and meaningful military activity in the eastern part of the Alliance... the enhancement of the responsiveness of the NATO Response Force... (including) a Very High Readiness Joint Taskforce that will be able to deploy within a few days to respond to challenges that arise... (and) preparation of infrastructure, prepositioning of equipment and supplies and designation of specific bases'.

⁽¹⁴⁷⁾ UK Ministry of Defence, *Global Strategic Trends out to 2045*, 2014.

⁽¹⁴⁸⁾ Remarks by General Rupert Smith at ESPAS conference, 2014.

Need for priorities

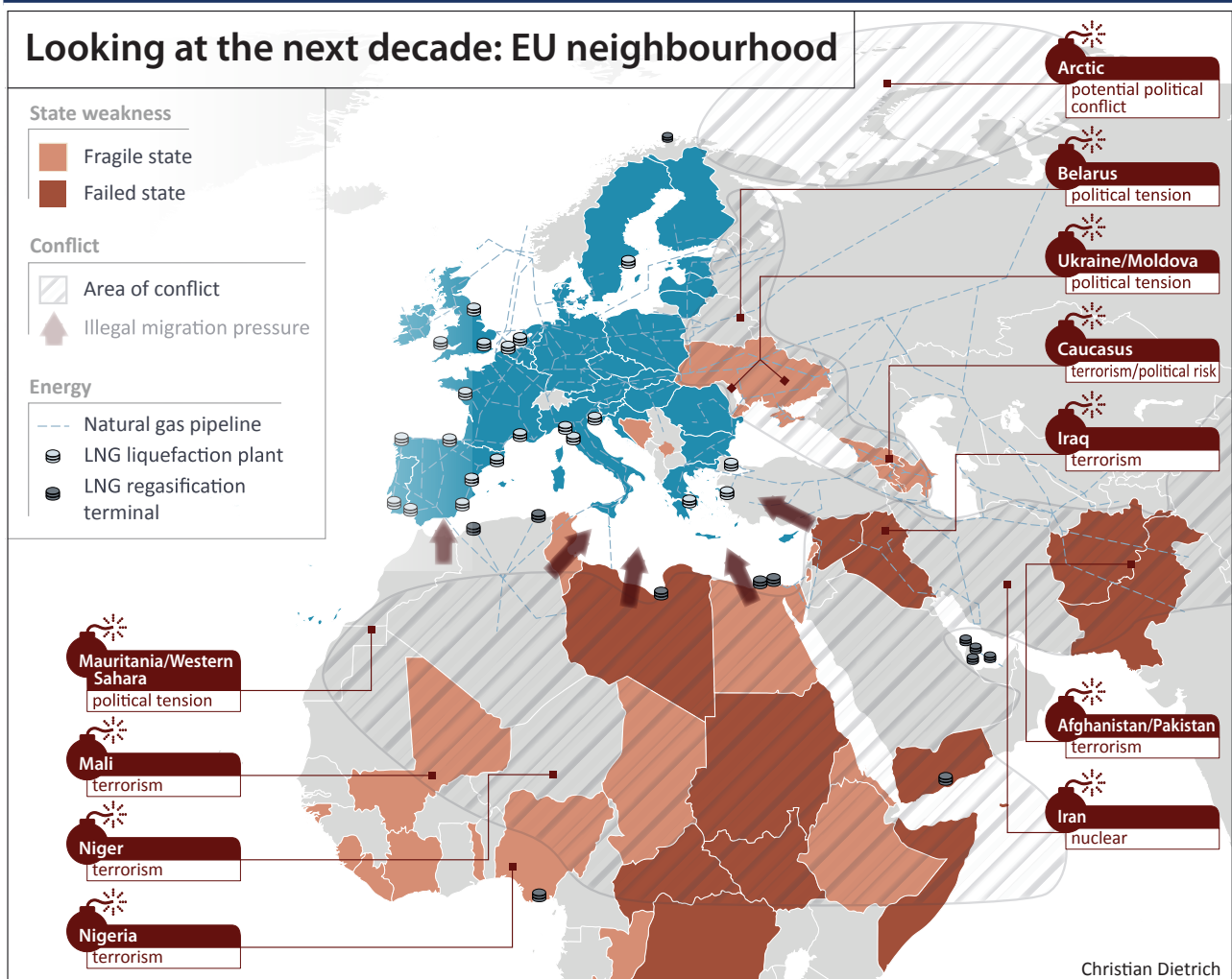
Although the European Union has developed a number of regional strategies, its single overarching strategy remains the European Security Strategy of 2003 (revised in 2008). An update to that strategy might offer a renewed sense of direction and prioritisation, enabling an improved alignment of Member State and Union resources.

Big shifts in the international system, when some of the key norms have changed, raise big questions. What does the emerging United States doctrine of 'leading from behind', as exemplified for the Libya campaign, mean for the European Union? Is it a new model for United States engagement in European defence and security issues, and have most European Union Member States accepted it as such? What

does this mean for European Union-NATO relations? Will there be disagreement between Member States from Central and Eastern Europe, who wish to focus their efforts and capabilities on territorial defence, and Member States closer to the Mediterranean, who may prefer to think in terms of establishing sufficient expeditionary capabilities to deal with challenges in the Mediterranean Sea and the MENA region?

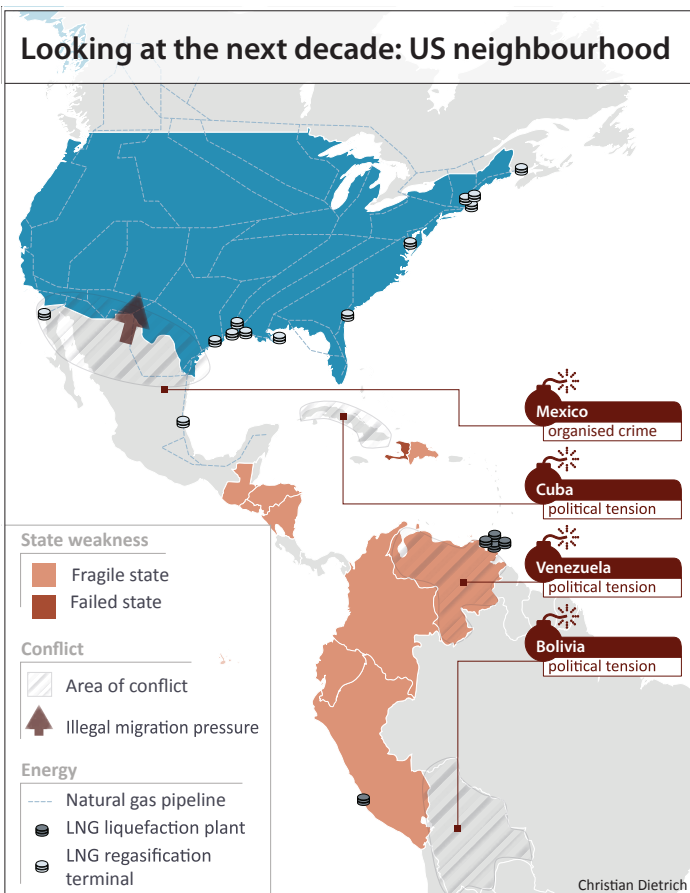
Beyond Europe's immediate borders, with Europe's maritime trade accounting for more than a quarter of transcontinental shipping traffic, can Europe remain unaffected by conflict in the South China Sea? Does the European Union have policies and tools commensurate with its interests and vulnerabilities? Could the European Union do more to engage with and help build the capability of regional organisations? A discussion on the range of threats faced by the Union, and possible

Figure 26. Looking at the next decade: European Union neighbourhood



Data: based notably on OECD Fragile State 2014 ; World Bank Fragile and Conflict Affected Situations List (FY14) (PDF); Fund for Peace "Failed States 2014; and " Failed States: A Paradigm Revived" Robert I. Rotberg, Mar 11 2014

Figure 27. Looking at the next decade: China's and US neighbourhoods



Three different neighbourhood contexts

These three maps illustrate the difference of the geopolitical context between the United States, China and the European Union for the next decade. They highlight in particular the difference between, on the one hand the European Union and China's neighbourhoods, rich in political tensions and existing and potential crises and conflicts; and on the other hand the United States, with a much more peaceful situation in its near surroundings.

Data: based notably on OECD Fragile State 2014 ; World Bank Fragile and Conflict Affected Situations List (FY14) (PDF); Fund for Peace "Failed States 2014; and " Failed States: A Paradigm Revived" Robert I. Rotberg, Mar 11 2014

policies and tools to address them is urgent. However, any discussion on specific threats should not undermine the understanding that just having military power is going to be useful in an unstable and insecure world.

Confronted with these questions and by an insecure and rapidly changing world, the European Union will probably have to conduct a more comprehensive review of its interests, clarify its objectives and tools employed by the Member States. In particular, it should be clear that the European Union will not be able to defend its interests or citizens by relying solely on deployment of its 'soft power' tool kit. Furthermore, the European Union has developed its Comprehensive Approach — fundamental to its added value as a security and defence actor — drawing on its wider range of tools and embedded in a political strategy. However, military force is almost always absent or reduced to small and limited capacity building.

Key questions:

- How quickly will militarisation and economic development in Asia have a real effect on the EU's near neighbours and globally?
- How far will Russia be successful in establishing an independent Eurasian pole possibly in competition with Europe and the United States?
- How far will the European Union develop its own security and defence capacity within the current treaties to act collectively, notably in its neighbourhood?
- How can the EU, within current Treaties, progress towards energy self-sufficiency?
- How far can the transatlantic partnership generate common effective global action on a wide range of issues?
- Should the whole system of strategic partnership be overhauled to better reflect the overall interest of the European Union notably vis-à-vis emerging partners?
- Should the European Union reach a final agreement on its external frontiers by 2020?
- How can the European Union improve cyber security governance?

Conclusion

In politics, you have to know what you want, when you want it, you must have the courage to say it, and when you say it, you need the courage to carry it out.

Georges Clémenceau

Powerful forces of globalisation will continue to transform the world. Poor adaptation and fragmenting multilateralism are making it more difficult to forge collective approaches to resolving problems in a peaceful fashion, despite manifestly increasing interdependence.

The world is becoming more complex and more insecure: the steady decline of Western power and the rise of competing Asian countries, China foremost, increasing political tensions and conflicts in the Middle East and possibly in Asia, a possible major realignment around Russia, China and the Middle East. Together these factors could generate an atmosphere of insecurity and conflict reminiscent of pivotal moments in the early 20th century.

Policy options

From the global trends and challenges set out in the form of questions in the first part of the document, we identified trends and implications for Europe as well as options for European Union policy-makers over the period 2014-19. They are presented here in conclusion, as three related sets of policy options for the European Union to help shape the coming debate, both for internal and external policies.

1. Economic catch-up is urgently required to avert a lost decade

The European Union needs an economic renaissance. The outline agenda includes a revised regulatory environment that favours investment in human capital and encourages innovation in the productive economy. More efficient social safety nets are needed to underpin market flexibility and combat rising inequality. There is also a clear need to reinforce and extend the euro area, while fighting against fragmentation and the undermining of the EU-wide internal market.

The completion of the single market in goods and services is far from complete because of resistance by vested interests wanting to maintain the status quo. There is a growing imbalance within the Union between mainly service-based and more industrial economies, since the latter are able to derive greater potential benefit from the single market as it stands today.

Core digital, industrial and bio- technologies are evolving and converging rapidly, fuelled by real-time and real-world data. They create the foundation for a proliferation of innovative software platforms and other digital tools available and affordable to all, everywhere and for virtually any purpose. Combined, they drive toward a 'knowing society'. In economic terms, we may be on the cusp of a real third industrial revolution.

The return on investment in education will have to be reassessed thoroughly throughout Europe. Notwithstanding massive budgets in nations and regions, important skill mismatches, digital illiteracy and early school dropout persist, resulting in the exclusion of many young or aged workers from the labour market. Inadequate linguistic training remains a brake on labour mobility. Lasting excellence and participation of all in the labour force should become the main objectives of education and life-long training.

The European Union has a role to play and specific responses could include:

- Mobilising more public and private investments to boost growth and job creation.
- Digital Europe: while both Asia and the United States invest heavily in new communications technologies, the European Union lags behind in updating its digital infrastructure. To a significant degree, the future economy is the digital economy. The completion of the digital single market will thus be essential to promote efficiency, connectivity and competitiveness. Public sector and government institutions for the 21st century should be equipped to drive these new long-term evolutions. Furthermore, they could stimulate local initiatives, reward innovation and make a more intensive use of new technologies, such as 'big data' and e-government.
- Energy Union: innovations such as smart grids, as well as improved connectivity and completion of the single market in energy, could pave the way towards a genuine 'Energy Union'. National energy mixes should be respected, but not at the expense of enduring dependence on outside sources, which represents a structural strategic weakness, however market prices, actors and new technologies may define the future.
- Euro area: the management of public debt in the euro area and other Member States, as well as the definitive repair of the banking system, will remain a considerable challenge requiring political energy, commitment and resolve. Massive public borrowing is no longer an option; 'growth without debt' will likely remain a major leitmotiv for the European Union in the years ahead. The coordination and delivery of major economic reforms and the completion of a fully-fledged monetary union with budgetary prerogatives are key tasks in the short- and mid-term. The longer-term agenda could include better coordination of tax and labour policies to match enhanced budgetary and economic surveillance, and progress towards euro bills and project bonds. In completing these tasks, it will be essential to maintain the cohesion between euro area and non-euro area members.

2. 'Business as usual' in Europe will be unacceptable to citizens

To avoid 'business as usual' responses that will fail to rise to the occasion and be unacceptable to Europe's citizens, policy-makers will need to:

- Engage with empowered individuals and focus on delivery: in a complex, interconnected economy and in highly sophisticated societies, change has to be progressive and fully inclusive. The successful participation of citizens cannot be separated from the modernisation of political parties, trade unions and all other groupings involved in representative institutions. These forces will need to renew themselves actively at all levels and in accordance with the best democratic standards. The more direct link between the choice of the President of the European Commission and the European Parliament elections — introduced by the Lisbon Treaty — is seen in some quarters as an opportunity to make the European agenda more visible, its political backing more transparent and its early delivery more stringent.
- Address inequalities as they affect the EU's cohesion and undermine its economic strength. An increasing number of citizens are excluded from the economy, and this situation could worsen, for the European Union is inadequately prepared for the coming technological revolution. This could accentuate the differences between winners and losers in society, and further increase economic and social inequalities. The focus should be on improved primary and secondary education, inclusive but affordable healthcare, less rigid labour markets and fewer barriers to initiative and competition. The purpose remains to ensure more flexible careers and appropriate incomes. The new tools are life-long learning, an open job market, and longer participation in the labour force, by more citizens, as well as retirement practices considered in the light of life expectancy lengthening. Adequate incentives should be further developed to ensure that cyclical down-turns, managerial changes, strategic redeployments and capital restructuring have as limited an impact as possible on job security, using means such as retraining, part-time work and internal mobility.

3. The need to act more effectively together in meeting global challenges

The European Union can no longer afford to focus mainly on its domestic problems. External challenges encroach on its borders and enter into its societies, threatening its cohesion. But the European Union is not yet fully equipped to deal effectively with these threats from a more insecure world. While it has developed a number of regional strategies in recent years, there is a need for a broader strategic vision.

This should include a focused strategy for promoting the stabilisation and prosperity of the Union's 'strategic neighbourhood' — Russia, North Africa, the Sahel and the Middle East — as a top priority. This would first require a thorough reassessment of the European Union and its Member States' relations with and aims for this area, which encompasses 1.2 billion people and 62 % of oil and 80 % of gas reserves globally. Such a strategy should include the trade, development, finance and security dimensions.

Reinforcing the global system by ensuring that the multilateral framework is suited to a newly multi-polar world is the second top priority. In a multi-polar world, the EU's interest is that global multilateral governance remains inclusive and based on values such as democracy, rule of law, respect of

human rights, free and fair competition, and separation of private and public spheres.

The European Union should also look to bilateral relationships while ensuring that they reinforce and do not undermine the global system:

- **Foster and develop alliances.** Large emerging powers such as China should not be isolated but on the contrary engaged with and encouraged to take up their global responsibilities. As a prerequisite, multilateral organisations should demonstrate flexibility to better integrate these new players. Alliances with partners that share our values and support the multilateral system are also key: achieving a successful and balanced TTIP should be used as an opportunity to revitalise the WTO and pave the way for the progressive integration of other major actors.
- **Update the concept of strategic partnerships,** first among them with the United States as Europe's key partner. In addition to promoting economic integration, partnerships should be reinforced where applicable and appropriate with security and defence dimensions, cross-investments, and better public administration and management of circular migration flows. The rise of China is a fundamental game-changer and calls for a reassessment of European Union relations, matching the country's present and future importance.
- **Reshape the migration debate.** The EU's migration policies by 2030 will have to adapt to the evolving needs of the European economy and the contemporary nature of mobility patterns. Without a fundamental re-framing of the migration debate, resulting in a balanced and sustainable migration strategy, the European Union will face considerable difficulties in trying to derive benefits from human capital, migration, employment and economic development. New mechanisms to govern mobility from the EU's Southern neighbourhood could be tested and developed to increase a better acceptance of controlled migration. This could include recognition of qualifications, partnerships between education institutions and the private sector, or the setting up of a common European labour immigration programme for highly qualified workers.

The future of the European Union depends on stronger leadership

Unquestionably, external threats and risks are likely to constrain the EU's plans for its own development. But the principal policy challenges for the European Union are not external: they are internal. The overarching priority for the new European Union leadership over the next five years is to rebuild trust in the European Union and to ensure that the European Union delivers concretely and effectively. In this context, it will be ever more vital for the European Union to anticipate problems ahead, and to avoid major difficulties through developing strategies on the basis of continuous updated foresight.

The European Union must deploy better 'policy innovation' capacities and adopt more efficient tools and methods to justify its leadership. Long-term strategies should monitor progress and incentives to ensure the alignment of public and private actors. Flexibility should be a key policy principle to deliver tailor-made policies for the EU's numerous diverse constituencies.

Experimentation can play a central role to test new ideas, extending those deemed valuable while rejecting those that do not deliver. Ex-ante and ex-post assessments are necessary at all levels to optimise the cost-benefit efficiency of policy measures, as well as better monitoring and a readiness to abandon a course of action when justified. The principle that action should be taken at European Union level only when this adds more value than action at Member State or lower level, should be retained.

Finally, a principle of inclusiveness should be recognised: any decision should be the result of a process starting with information, followed by knowledge-sharing, increased awareness, participation and mobilisation of stake-holders, and ending with action. A deeper and more open relationship between the EU, Member States and citizens should frame such processes.

Better strategic thinking through ESPAS

The quality of policy, at any level, not only depends on the capacity for decision and action, but also on the quality of analysis and insight into identifying what matters, now and in the future. It is impossible to predict the future wholly accurately, but it is certainly feasible to identify and analyse, at any given time, the more important current trends, conscious always that these may evolve in new directions, become irrelevant or even be reversed. If anything, the increasing speed and complexity of global change means that the pace and depth of the strategic analysis must also intensify.

On this basis, the ESPAS process, reflected in this report, has sought to identify some of the main global trends that look set to shape the coming decades, and to trace some of their potential implications for the emerging policy debates, both at European Union level and beyond. Such forward-looking analysis should help generate and nourish a richer, more continuous and more pluralistic debate about the Union's strategic priorities and the choices ahead — with greater focus on the medium and long term. The aim is to give European Union decision-makers a better understanding of the global context in which decisions have to be made, and of the resulting challenges and choices that we face. ESPAS aspires to undertake such research and to reach out to global trends partners, including through the ORBIS website, which is becoming one of the most comprehensive repositories for foresight studies in the world. Through this process, the European Union may help put the analysis of global trends more directly at the service of its leaders, institutions and citizens.



European Strategy and Policy Analysis System

An inter-institutional EU project with the participation of the European Parliament,
the Council of the European Union, the European Commission and the European External Action Service.

