PREDICT

PROJECTIONS AND RELEVANT EFFECTS OF DEMOGRAPHIC IMPLICATIONS, CHANGES, AND TRENDS

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“PREDICT - Projections and Relevant Effects of Demographic Implications, Changes, and Trends”

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NOTE ON THE PREDICT PROJECT

This is the final Report of “PREDICT - Projections and Relevant Effects of Demographic Implications, Changes, and Trends” - a project sponsored by NATO Allied Command Transformation (ACT).

The research project was lead by the University of Bologna (Italy), with the participation of the Bruno Kessler Foundation (Italy) the University of Warwick (United Kingdom), Sabanci University (Turkey), and Johns Hopkins University - SAIS (United States/Italy).

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ACKNOWLEDGEMENTS

The PREDICT Research Team would like to express its profound gratitude to:

• NATO Allied Command Transformation’s Strategic Analysis Branch and the Strategic Foresight Analysis Team lead by Mr. Mehmet Kinaci for their insightful contributions and constant support;

• The local organizers and all the participants to the Workshops held at the University of Warwick and at the Fondazione Bruno Kessler in Trento;

• All the respondents to the anonymous questionnaire, the Scientific Advisors and the many colleagues who have provided suggestions, comments and insights in specific moments of the research project.
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Executive Summary

The research project Predict was organized in four main parts: (i) the analysis of demographic trends out to 2035; (ii) the analysis of the interaction between these trends and trends in other dimensions (economy, energy, the environment, health, technology, and politics); (iii) the preparation of regional scenarios out to 2035; (iv) and the evaluation of the security challenges posed to NATO by the scenarios and the analyzed trends at large.

Demographic Trends

The analysis of main population change projected to 2035 points to some major trends:

- **World population** is projected to increase to 8.7 billion in 2035, that is 1.6 billion people more than in 2013. Most of this increase (1.5 billion) will occur in the less developed areas of the world. Population growth rate, however, will slow down nearly everywhere, and more than 40 countries (included Russia) will experience an overall decline in population.

- At the global level, **total fertility** is projected to decrease by 2035 (from 2.53 to 2.30 children per woman). Fertility decline will take place independently of ethnic or religious differences. However, fertility levels in Africa will be on average more than one child higher than in Asia or Latin America.

- Changes in **population composition** by 2035 will be mostly related to age composition, with an overall trend towards the increase of the proportion of older people and the reduction of the younger (ageing), particularly in developed regions.

- Worldwide, no major changes are projected in the **ethnic composition** of population by 2035. Changes in ethnicity are most likely to be confined to the developed world, as a consequence of immigration.

- Concerning **religion**, the overall trend is that of an increase of 35% in the Muslim population by 2035, though the rate of growth is expected to slow in the subsequent two decades.
• At the global level, life expectancy at birth is expected to increase to 74.5 years (from 69 now), although discrepancies will persist among different geographical areas. In particular, this trend will materialize only if the diffusion of HIV and other diseases is lowered in the least developed countries.

• By 2035, urban population will have surpassed rural population in all regions, while Asia and Africa will account for almost 78% of the world urban population.

• Migration is set to be a major determinant of population change, impacting not only population growth but also population composition, fertility rates, life expectancy and urbanization dynamics. Although highly unpredictable, the ongoing mutation in migration trajectories, with the increase in “South-South” flows, will significantly affect both developing and developed countries.

TRENDS IN OTHER DIMENSIONS AND THEIR INTERACTION WITH DEMOGRAPHIC TRENDS

The analysis of the interaction between demographic trends and trends in economy, energy, the environment, health, technology, and politics, highlights the following tendencies:

• Economy - The future global economy will be particularly influenced by developments in education, technological progress, and labor force participation. Over the next three decades, developing nations will become much stronger economically, wealthier, and more central to the global economy, although with different regional and national prospects. Population composition will have particularly salient implications for the labor force. Flows of migrant workers will substantially alter the distribution of income in sending and receiving economies alike. The shift in the economic balance toward the East and the South of the world will influence urbanization in emerging markets.

• Energy - As emerging countries continue to grow, both economically and demographically, non-OECD regions will acquire ever more relevance in global and regional energy markets as well. Urbanization will have a direct impact on energy demand: on one hand, urbanized citizens tend to consume more energy; on the other, urbanized countries tend to be more efficient in the allocation of their energy supply, and to consume less energy per unit of gross domestic product. Energy availability can have direct and indirect effects on demography: for example on a country’s healthcare levels (thereby affecting mortality and life expectancy), while global patterns of energy production can influence migration flows, as poor workers tend to move from energy-poor countries to energy-abundant ones.

• Environment - Climate change is expected to have a significant impact on many demographic trends, and in particular on migration and urbanization dynamics. Such an impact could be direct (e.g. migration due to rising sea levels or extreme weather conditions) or mediated by the consequences of climate change on the availability of food, water and land. Other environmental features, such as air pollution, also interact in complex ways with demographic developments, being affected by the huge increase in
urban population foreseen in the developing world and registering a significant impact on living conditions in these areas.

- **Health** - The interactions between severe epidemics and pandemics on the one side, and demography on the other are as relevant as they are multi-faceted, and difficult, if not impossible, to predict. Epidemics affect deaths and mortality, but also births and fertility. From a policy perspective, integrated approaches that strengthen global health governance are needed to prevent and limit the disruptive effects on demography associated with the outbreak of epidemics. Similarly, measures to spread access to health services can affect the composition of the population, primarily in terms of age structure, decreasing child and maternal mortality and guaranteeing prevention and treatment of diseases later in life.

- **Technology** - Technology does play direct and indirect roles in shaping demographic dynamics. Indirectly, technology improves life conditions in developing countries, affecting well-being, and in turn life expectancy and other major demographic trends, such as fertility. Technology also has an impact on education, thus affecting health and reproductive dynamics. It can increase the sustainability of agriculture, affecting food and water availability over the long run. Finally, it creates new incentives for the location of economic activities, which affects migration patterns, and provides new tools for controlling migration fluxes.

- **Politics** - Politics and demographics interact in different ways. On the one hand, many demographic trends have fundamental political consequences: while a large population is usually considered a crucial asset in terms of potential military power, ageing could significantly affect this potential; conversely, youth bulges could contribute to explaining cases of political instability, particularly when combined with other demographic phenomena such as urbanization dynamics or immigrations flows. Increasing education levels, combined with high youth unemployment and non-responsive regimes, can create further tensions. On the other hand, political events such as domestic conflicts or major wars have profound demographic consequences in terms of mortality, fertility patterns and forced migration. Furthermore, political choices and actions at different levels, and by various actors, have the potential to alter demographic projections.

**RegIoNal Scenarios as of 2035**

The main demographic trends, and their interaction with other relevant dimensions, have been analyzed for five specific regions in order to define two polarized scenarios for each region. According to the experts who participated in the consequent workshops, regional trends might produce the following by 2035:

- **Asia-Pacific** countries will experience considerable levels of both demographic and economic growth, leading to huge rates of urbanization across the region. In this context,
environmental sustainability and competition over drinkable water could be the main drivers of change for APAC countries, especially if nationalistic ideologies take root in the region. Additionally, the creation of a “new Silk Road” connecting China and Europe, could be an important development over the next two decades, and lead to a change in China’s foreign policy stance (from non-interference to intervention).

If APAC countries (China and India in particular) could successfully reform their political systems, manage their economic development and increase their level of institutionalization, the region could become the core of the world economy. In this case, a “great strategic bargain” between the United States and China will be necessary, meaning that Washington and Beijing will need to agree on the principles and the rules on which they can establish mutual trust, settle their economic and military disputes and regulate their interactions.

On the contrary, if nationalist ideologies spread throughout the region, competition over resources and environmental issues will represent the most pressing, non-traditional or comprehensive challenges for APAC. This also means that APAC countries may be involved in several territorial and maritime disputes. In this case, nuclear proliferation may be another relevant security threat for the region.

- The **European Union** architecture is likely to change, ranging from an enlarged EU of 35/40 members to a reduced EU of few states. In either case, EU will have to cope with ageing and migration, two phenomena that, in case of future economic recessions, may undermine social cohesion. European economic performance, which is related to its ability to absorb future migrants and attract human capital, will also affect EU technological edge and its ability to keep up the pace of emerging countries like China. In turn, Europe’s role in technology could reduce its energy dependence from Russia.

A stronger, enlarged and economically stable Europe could face possible challenges, such as coordination problems over policy implementation, more multicultural society, territorial and military threats at its borders and tensions with non-Western countries over liberal norms and values. Additional challenges may also come from the internalization of new members’ unresolved disputes, the effect of a navigable Arctic and from controversial aspects of the Transatlantic Partnership (TTIP).

On the contrary, a more fragmented and economically unstable Europe would be characterized by both internal and external challenges: internally, the EU will have to cope with possible border changes, social inequalities arising from poor economic performances and the emergence of radical anti-immigration parties; externally, a more marginalized Europe will probably become less significant as an international force, as all relevant actors would refrain from building relations with a non-reliable actor. In this case, TTIP failure could also undermine transatlantic relations.

- **Russia and Post-Soviet** states will face several problems related to population composition
and distribution, in a framework of overall demographic decline. The evolution of Russia’s political system (either in the form of a power transition or continuity) will be a major driver of change. Also a higher or lower dependence on hydrocarbons may affect Russia’s future, and this in turn will affect regional economies and state capacity. Besides the availability of natural resources, Russian attitudes toward the world and its relationships with neighboring countries will also be influenced by immaterial factors related to Russian history and identity. Finally, an expected increase in temperatures could affect regional agricultural output, as well as have an impact on the Arctic region.

If liberalism spreads throughout the region, normalization of relations between Russia and the West could probably follow. In this case, China’s rise could push Russia to form a strategic partnership with NATO. Climate change may affect the region as a whole, benefiting some regions (such as Siberia) and hurting others (in terms of food security and destructive natural disasters).

If Russia’s current regime remains in power, its meddling in Central Asian and non-NATO Eastern European countries will be more likely. This will probably produce confrontations with NATO. Furthermore, the continuation of repressive central authority is likely to instigate insurgency and terrorism in the North Caucasus, and Russian intervention in the South Caucasus. In case of continuity in Russian nationalistic policies across the region, climate change and water security issues (though still relevant), may not be priority challenges.

- The MENA region will experience significant demographic pressures (such as an increased old-dependency ratio), coming from a past and apparently ongoing youth bulge. An increasing population will also bear significantly over already-scarce food and water resources, especially if MENA countries are unable to manage environmental issues. MENA’s role as a major energy provider is expected to remain unchallenged, but domestic consumption, and rising breakeven prices could decrease its export capacity and, therefore, the level of state revenues. Relevant drivers of change are expected to be the (increased or decreased) level of state capacity and the (good or bad) relationships between radical and secular groups.

If MENA can diversify its economic structure, that is decreasing its dependence from hydrocarbons, countries in the region could face the problem of protecting critical infrastructure and managing the effects of climate change (water issues, food production and desertification). A stronger MENA will be better integrated in the World Economy, leading to an increased level of state capacity. However, some threats could emerge from proliferation of unconventional weapons and the spread of terrorist groups.

On the contrary, a weaker and economically unstable MENA will probably face a broader set of challenges. High rates of unemployment could prompt radicalization, social unrest and low-intensity civil conflicts; in turn, this could produce huge outflows of migrants and refugees. Also in this case, the threat of proliferation of unconventional weapons programs and transnational conflicts could worsen the relations among regional powers, increasing
sectarian infighting between radical Islamic groups and disrupting energy supplies.

- In **Sub-Saharan Africa**, projected huge demographic growth might represent either an opportunity or a threat for the continent. Rapid urbanization will create competition over existing resources (leading to rising levels of inequalities), increase the risk of political violence and reduce the ability to contain the spread of diseases. In addition, large movements of "economic" and "climate" migrants are likely to flow across SSA countries and towards other regions. Technological developments may positively affect access to knowledge in the region, although they are not sufficient to achieve economic and social development. In addition regional organizations could play a major role in SSA development, if they can reach the level of coordination and commitment necessary to be truly effective.

If the majority of African states are able to improve their governance, their economic conditions, and their human capital, challenges for SSA will be moderate but still substantial. At the domestic level, social conflict and popular uprising may arise as a consequence of urbanization, increasing demands for jobs and lack of political accountability. At the regional level, stronger military powers (such as Nigeria, Ethiopia, Rwanda and South Africa) may be tempted to project force in their own region.

If weak government and poor governance persists in the region, SSA countries will face more severe problems such as the threat of radical movements, transnational crime (due to their inability in border control), and recurrent international and domestic warfare. In turn, conflicts, poverty and political exclusion, besides the effects of climate change, could lead to massive migrations both out of Africa and within Africa.

**Implications for NATO**

The analysis of the security challenges emerging from each regional scenario and by demographic trends at large showed the following:

- **Asia-Pacific** will be increasingly relevant for NATO. The relevance of the current and projected shifts of demographic and economic weight towards the region is in fact heightened by the United States rebalancing strategy towards the Pacific, which gives developments in this area a direct impact on the Alliance. Urbanization is likely to put Asian social and political systems under stress, particularly in cases of high rates of unemployment and poor living standards, as these issues often pave the way to social uprisings. In order to defuse domestic political turmoil, Asian political leaders may then resort to nationalism and to aggressive/imperialist ideologies. Under these circumstances, and especially in case of a US involvement in Asian disputes, NATO could become a
stakeholder by virtue of its Art. 5. However, Asian countries are generally opposed to the idea of a NATO presence in their surroundings. For this reason, without appropriate diplomatic efforts, a potential American-led NATO intervention might only add fuel to Asian nationalist fire, thus escalating the crisis. Furthermore, as the global center of gravity continues its eastward shift and the United States “rebalances,” NATO will face a trade-off between continued effectiveness and relevance at the global level on one side, and deeper commitment from its European members on the other. The search for a deeper cooperation between NATO and the European Union, albeit politically very sensitive, could then be for the Alliance an indirect implication of developments occurring in the Asia-Pacific.

- **Europe** is the region where the majority of NATO member states are located, and where the Alliance is headquartered. It is thus more likely that by 2035 the role and the nature of the Alliance would be challenged to a greater extent than has been the case in past decades. If Europe were to become a much more powerful actor in the international arena through an increase in its population and a buoyant economic recovery, NATO would probably have to accommodate and adapt to major European activism both on defence issues and on interventions abroad. On this latter account, a more multicultural society in Europe may have an impact on the direction of external engagement. In the case of a “shrinking” Europe, triggered by the mounting needs of an ageing population and the effects of multiple centrifugal forces in place, NATO would be challenged by the diminished faculty of its European member states to provide the necessary resources to the organization. And yet, although the maintenance of adequate defence and deterrence capabilities will be a significant internal challenge, in such a situation NATO would probably remain the only institution with the capacity to take care of traditional and new security needs.

- As for **Russia and Post-Soviet States**, the analysis had to take into account the degradation of NATO-Russia relations over the 2014 crisis in Ukraine. Assuming that there is a genuine will to restore relations, one way to rebuild trust would be to resume cooperation in a number of well-defined areas that already have a record of success, such as arms control, counter-terrorism, Afghanistan, and the Arctic. Specific demographic phenomena taking place in this region need to be attentively monitored. China's growing demographic and economic pressure in the Russian Far East and in Central Asia might translate into an escalation of tensions. In this light, NATO and its members may play a crucial role as third-party actors, either as facilitators or as mediators. The presence of significant Russian minorities in NATO and non-NATO members in Eastern Europe is another point in case. In addition to engaging in confidence- and security-building measures toward Russia, political and economic steps that address these ethnic groups’ grievances can reduce the Russian government’s ability to manipulate them. This strategy would require NATO to increase its cooperation with the EU, whose vast array of integration policies and civilian capabilities could be particularly appropriate to deal with these non-traditional threats.

- As far as the **Middle East and North Africa (MENA)** is concerned, the peculiarity of the area requires NATO to further develop a deeper understanding of the regional dynamics in order to achieve an adequate and comprehensive approach. Military might – while necessary – has in fact proven insufficient by itself in tackling the challenges arising from
the region. At the same time, upcoming “more immaterial” challenges require a balanced set of instruments, ranging from the training of local military forces to institution building, to cyber capabilities. Massive outflows of refugees may still be possible, not least because of the possible effects of climate change that could worsen the regional endowment of water and food resources. Ultimately, NATO should be ready to mitigate the impact that huge outflows may have both in the region and towards other geographical contexts, with Europe at the forefront of this effort with diplomatic and relief measures. The MENA region will still be characterised by a population highly fragmented in “religious” terms with possible radicalisation tendencies – especially in case of poor economic performances, enticing unemployment and social unrest. NATO may be a part of a broader effort to contain the negative impact of these phenomena, potentially through both its set of partnerships established in the region, and its unique military record.

• The challenges emerging from Sub-Saharan Africa are mostly political and socio-economic in nature. Indeed, demographic phenomena such as youth bulges, rapid urbanization and mass migrations here seem to have the highest likelihood to manifest. However, actors other than NATO seem to be better equipped and placed to respond. The Alliance thus needs to carefully craft its strategy for the region, in order to prevent unnecessary securitization of issues that are not military in nature. In this regard, Sub-Saharan Africa will provide opportunities to test NATO’s willingness and capacity to cooperate and coordinate with other international organizations for a wider spectrum of tasks: both in crisis management – particularly in scenarios associated with urban riots or mass migrations – and prevention. In other areas such as piracy, cyber-security and terrorism, NATO could certainly bring its specific expertise as an added value for stronger regional partnerships.

**Final Remarks**

• Demographic trends are neutral phenomena: whether they become security challenges largely depends on the broader socio-political context in which they take place, as well as their interaction with economic, environmental, energy, health and technological trends.

• Having said that, our analysis highlighted that youth bulges, rapid urbanization and migration have the highest potential to turn into security issues, especially in Sub-Saharan Africa and South Asia. In addition, specific unbalances in population distribution and ethnic distribution may lead to conflict within and between states, particularly in Russia and the Post-Soviet States region.

• The preservation of NATO’s deterrence capabilities is a recurring implication coming out of different regional scenarios. At the same time, an equally strong recommendation is for NATO to develop capabilities to intervene in a number of non-traditional security contexts associated with the aforementioned demographic phenomena: from conducting contingency planning after natural disasters, to coordinating relief strategies in the Arctic
to providing assistance in managing urban riots or mass migrations.

• NATO can best perform these new tasks by coordinating with other international organizations. Organizations that have different, non-military capabilities can help NATO to develop comprehensive responses to complex emergencies. In particular, NATO’s cooperation with the European Union may be productive given the overlaps in their membership and geographical mandate. Furthermore, it would be in the interest of NATO to strengthen regional partnerships around the world as they provide unique regional knowledge and opportunities to build trust in the regional contexts.

• The continued relevance of NATO out to 2035 cannot be taken for granted. The strength – and to a certain extent the very survival – of NATO will depend on its capacity to adapt its mission, structures and strategy to the ever-evolving security context described in PREDICT, in which non-traditional security challenges will be increasingly relevant.
**Introduction**

**Why and How Demographic Scenarios?**

The global population is already considered today to be over the sustainability level. According to several estimates, by the mid-1980s, human activity on the planet had already reached the maximum limit, and since then it has steadily grown. The rise in global population, forecasted to increase to 8.7 billion in 2035 (1.6 billion people more than in 2013) is regarded as a threat for a variety of reasons including potential environmental impact, as well as social, political and economic consequences. Malthusian echoes are audible behind some forecasts and scenarios on global demographic trends, depicting the global order jeopardized by this new and unprecedented demographic bomb.

Reality, however, is much more complex – and probably less gloomy than this. Population growth varies considerably from region to region: in the next 20 years more than 40 countries will experience an overall decline in population, many will just sustain their demographic levels, while most population growth will occur in less developed areas. Moreover, global population increases are by no means fixed or certain as much depends on fertility trends that are highly sensitive to women’s education patterns, health provisions, technological developments, resource availability, economic trends and social policies. In all these respects it is possible to depict alternative scenarios and certainly to identify a highly variegated globe by 2035. In terms of economic growth, several factors – such as dependency on resources, the impact of climate change, access to technological innovation, the ability to cope with severe health emergencies and multiple cultural backgrounds – lead to believe that the world will be a highly diversified place.

Furthermore, specific demographic dimensions (e.g. population composition, migration, urbanization, life expectancy and mortality) are expected to vary in different parts of the world and to interact in a peculiar way with those socio-economic-political trends that are specific to a particular region. In the end, social and political tensions might emerge for completely different reasons in different parts of the world, as they will be characterized by particular combinations of demographic, economic, political and social characteristics.

For this reason, the only plausible way to study future demographic challenges is to explore
the complexity of possible demographic developments globally and in different regions, evaluating their interaction with the specificity of the region in other respects (social, political, economic). This is precisely the aim of PREDICT (Projections and Relevant Effects of Demographic Implications, Changes, and Trends), the research project led by the University of Bologna and sponsored by NATO Headquarters, Supreme Allied Transformation Command, that has seen the participation of the Bruno Kessler Foundation (Italy) the University of Warwick (United Kingdom), Sabanci University (Turkey), and Johns Hopkins University - SAIS (United States/Italy).

The first purpose of the project was to identify demographic trends in their interaction with other trends both globally and at the regional level. In addition, the project aimed at developing scenarios of specific regions out to 2035, to evaluate the security implications associated with these scenarios and the challenges that they represent for security in general and for NATO in particular. The mere analysis of single trends is in fact of limited use for the evaluation of long-term developments, because several alternative trends are plausible in the long run. PREDICT has thus sought to: (i) identify possible demographic trends (ii) explore their interrelation with developments in the economy, health, technology, energy, environment and politics domains (iii) develop regional scenarios that could emerge in 2035, and finally (iv) assess the security implications of these scenarios and the challenges to NATO.

**PREDICT: RESEARCH AIMS AND MILESTONES**

The first task of PREDICT was to identify possible methods of forecasting and foresight. Since the goal of foresight is not to provide an exact projection or prediction of the future, but rather to assess the implications of multiple possible futures, a well-defined methodology was of paramount importance. The First Interim Report thus provided a thorough description of forecasting methods that allowed the research team to take objectives as inputs and use them to map possible futures in a directly relevant context.

The second step of the project was to reconstruct a detailed overview of key demographic trends out to 2035 – a task fulfilled by the Second Interim Report. The objective of the report was to identify dimensions that best account for changes in demography, the projections built upon them and the degree of consensus existing around expectations for the future. The main dimensions investigated were population growth, fertility, population composition, life expectancy and mortality, urbanization and international migration. The report not only included relevant data on the selected dimension, but it also attempted a first identification of possible relationships between demographic trends and other variables in the economy, energy, environment, technology, health and political domains.

As demographic changes do not occur in a vacuum, but instead are often affected by changes in other dimensions, the Third Interim Report was developed with a twofold aim. On the one hand, it presented the main trends in economics, energy, environment, health, technology, and politics (projected to 2035), providing specific reference to regions and countries. On the
other hand, the report elaborated on how variables in other domains (and their likely trends) may affect demographic dimensions (and their trends) over the next two decades. According to the report, linear directions of change are difficult to identify, as patterns differ across dimensions as well as among different areas.

Building on the findings of the second and third Interim reports a Scenario Building Exercise, focused on the interaction of these trends in specific world regions, was held at the University of Warwick in June 2014. The technique used led the participants to identify two extreme scenarios per region taking into consideration not only demographic trends, but also possible developments in other areas. In parallel, in order to avoid the problems of working in isolation from other communities whose contribution might instead be beneficial to the project, and to reach out and engage a wider audience, a tailored PREDICT Questionnaire was submitted to around 200 experts. The questionnaire proved to be an important tool that allowed us to examine expert beliefs about some of the most important future trends and their potential interactions.

Finally, the evaluation of the security implications connected to each scenario and the assessment of the challenges that these implications represent for NATO was undertaken in another interactive workshop held at the Bruno Kessler Foundation in Trento in November 2014.

**The Final Report**

The present report is a summa of the entire research project although more space is devoted to the final part of the project (the scenarios and their security implications) given that a full analysis of demographic trends and their interaction with other trends was provided in the Interim Reports.

The rest of this report is organized as follows: First, it summarizes how the project has been articulated, what its main outputs have been and the sources used. Then, in Chapter 1, it provides a concise overview of the main demographic trends forecasted at the global level out to 2035, highlighting both common patterns and the different impact of these trends in relation to specific contexts as well as areas of disagreement concerning specific assumptions and projections. Chapter 2 briefly recalls the main trends projected for 2035 in economics, energy, the environment, health, technology, and politics at the global level, to then focus on how these trends may affect demography over the next two decades. Chapter 3 provides a summary of the work conducted within regional working groups. For each of the selected regions – Europe, Russia and Post-Soviet States, Asia-Pacific, Middle East and North Africa and Sub-Saharan Africa – an analysis was undertaken of the main trends affecting the region, of critical issues identified during the workshops, of the scenarios that emerged and their implications for NATO. Finally, the conclusions summarize the overall implications for NATO as a security actor in 2035.
Chapter I

Global Demographic Trends

This chapter provides an overview of demographic trends up to 2035, focusing attention particularly on population growth, fertility, population composition, life expectancy and mortality, urbanization and international migration.¹ The data provided are mainly derived from the United Nations World Population Prospect 2012 Revision, the widest dataset on the topic. However, although demographic projections are fairly reliable in the long run and minor changes in demographic estimates do not jeopardize overall expectations on trends, the last sections of this chapter provides an overview of alternative projections by other sources and studies.

Assumptions

This overview is based on a number of assumptions:

When not stated, the data provided are mainly derived from the United Nations World Population Prospect 2012 Revision; hence, the main assumptions behind these data are kept.²

Following a widely shared belief among demographers and experts on the study of population estimates and projections, this report considers fertility, mortality and international migration as the main determinants of population change.

Other dimensions matter in accounting for demographic change. Age, ethnic and religious composition are relevant to see how the structure of the population of countries and regions will change over the coming years and which implications can be derived. Urbanization is a

¹ A comprehensive analysis of these demographic trends has been provided in PREDICT’s Interim Report Two – “Demographic Trends.”

² Assumptions are on fertility, mortality and international migrations. General assumption on fertility is convergence towards low fertility. As for mortality, general convergence towards increasing life expectancy is expected for most countries. Under the normal migration assumption, the future path of international migration is set on the basis of past international migration estimates and consideration of the policy stance of each country with regard to future international migration flows. Projected levels of net migration are generally kept constant over the next decades. For more on the assumptions taken see the Interim Report Two, ‘Annex’.
further dimension of transformation in population that entails several positive and negative consequences. The choice of these dimensions has also been driven by the potential relationship that they have with trends in the energy, environmental, technological, economic, health and political sectors.

**POPULATION - GLOBAL AND REGIONAL TRENDS**

**Population Growth**

World population will increase to 8.7 billion in 2035 (9 in 2040, 9.6 in 2050). That is, the world is expected to be inhabited by 1.6 (then 1.9 and 2.5 for 2040 and 2050 respectively) billion people more than in 2013 (7.1) (medium variant projection). This increase will be mostly concentrated in already populous countries.

Population growth rate is projected to slow from 1.2% per year in 2005-2010 to 0.66% in 2035-2040 and to 0.51% per year in 2045-2050 and to further decline later on. Diminished fertility in the developing world is behind this trend. And yet, decline in fertility has not occurred and is still not occurring simultaneously in all countries so that differences in rates keep persisting among them.

![Fig. 1 – World population, 1990-2035 (in billions)](source: WPP 2012 (medium fertility assumption))
The geography of population growth

Most of the increase in population will occur in the less developed world that would reach 7.4 billion in 2035 from 5.9 billion in 2013, with an average annual rate of change at 0.77% in 2035-2040. Within the developing world, the least developed countries are expected to grow “dramatically”, almost doubling in 2050 the 2013 level while passing from 898 million to 1.2 billion in 2030 and 1.5 in 2040. And yet, the actual rate of increase per year (2.3%) is expected to slow down in the next decades to 1.77% in 2035-2040.

Overall, in 2035 85.2% of the world population is expected to live in the less developed world. Among regions, Asia will see its population grow until 2050, after which a decline would occur; on the contrary, the population of Africa will increase more in the second half of the century (1.8 compared to 1.3 billion).

Who grows?

India’s population is likely to surpass China’s by 2028: at that time the two countries will account together for 35% of the world’s population. By 2035, Bangladesh, Ethiopia, the Democratic Republic of Congo, the United Republic of Tanzania, currently among the least developed countries, will be among the twenty most populous countries in the world.
Population in the developed regions will remain relatively stable. With a fertility rate estimated at 1.66 children per woman in 2005-2010 and an increase of net immigration (2.4 million persons annually from 2013 to 2050 from the developing world) the population of the developed world is expected to pass from 1.25 billion in 2013 to ca. 1.3 billion in 2030, with no further changes expected in 2040 and 2050. Overall, independently of the level of development, the countries and areas hosting vast population (such as India, Indonesia, Pakistan, the Philippines and the US) and showing high fertility rates (mainly Africa) will record the highest increase in population between 2013 and 2050. Thus, differently from China, - but also from other major powers like Russia or Germany - the US will still see a positive average annual rate of population change by 2050.

<table>
<thead>
<tr>
<th>Russia’s demographic decline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia’s demographic decline is not new, nor unique. What is new and unique is the scope and the effects of such population crisis, a previously unprecedented phenomenon for an urbanized, literate society not at war. The combination of high mortality, low fertility, and fast ageing indeed threatens Russia’s economic development, its social stability and potentially its security. Declining health care conditions, bad habits (smoking, diets, and alcohol abuse), poor education and family formation trends (Russia has 56 divorces every 100 marriages) lie behind these trends.</td>
</tr>
<tr>
<td>Over the last few years, Moscow has introduced programs aimed at reversing Russia’s downward demographic spiral, trying to increase births and drive death rates down. However, given recent trends and their cascade effect, Russia’s demographic decline is likely to continue in the foreseeable future, with grave implications for its international stance (Eberstadt 2011b).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Population decline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries such as Belarus, Bulgaria, Croatia, Cuba, Georgia, Latvia, Lithuania, Republic of Moldova, Romania and the Russian Federation (see below), Serbia and Ukraine will see their population decline by more than 15% by 2050 while 43 countries or areas will experience an overall decrease in population by 2050. Indeed, the decline in population will have evident repercussions on the welfare and economic systems of these countries.</td>
</tr>
</tbody>
</table>
Fig. 3 – Population of NATO and other regional groupings / countries, 1990-2035 (in millions)

Source: Authors’ calculations based on WPP 2012 (medium fertility assumption)

Fig. 4 – Total fertility trajectories, 1950-2035 (in births per woman)

Source: WPP 2012 (medium fertility assumption)
Fertility

At the global level, total fertilityii is projected to decrease to 2.30 children per woman in 2035-2040 from 2.53 children per woman (medium variant) and further decrease later on. The projected trends also show a certain convergence between the more and less developed world, although fertility rates in the latter will always be higher than that of the former. Still, projections over the fertility rate distribution are widely differentiated in diverse geographical contexts.

• The fertility rate will decline in the less developed regions from 2.69 children per woman in 2005-2010 to 2.36 in 2035-2040.iii Fertility levels in Africa would be on average more than one child higher than that of Asia or Latin America, a difference that is likely to persist in all fertility variants.iii

Below replacement fertility: Where?

In the more developed regions total fertility is already below replacement level. In particular, historically, Austria, Germany, Hungary, Italy, Japan, Malta, Poland, Portugal, Romania, Slovakia and Ukraine had a fertility rate at below 1.4 children per woman while Bosnia and Herzegovina, Macao, Hong Kong, Singapore and the Republic of Korea experienced in 2005-2010 a rate at below 1.3. In the developed world, though, fertility will increase from 1.68 children per woman in 2010-2015 to 1.84 in 2035-2040.

• The least developed countries would experience even sharper declines in fertility rates from 4.53 children per woman (2005-2010) to 3.13 children in 2035-2040. If fertility remains constant as in the 2005-2010 period the less developed population would rise to 7.4 billion by 2030 and 8.5 billion by 2040 (instead of 7.1 and 7.7 billion projected under the medium variant assumption).

• Overall, fertility decline will take place independently from ethnic and religious differences, and 139 countries are expected to have below-replacement fertility in 2045-2050.

Where will high fertility persist?

The fertility rate of 12 least developed countries (Afghanistan, Angola, Burkina Faso, Burundi, Chad, the Democratic Republic of Congo, Mali, Niger, Nigeria, Somalia, East Timor, Uganda) was at 6 or more children per woman in 2005-2010; although expected to decline after 2010, average fertility is still projected to be at just below 3.5 children per woman by 2045-2050. Several of these countries are characterized by high diffusion of HIV, political instability, and civil wars which all together limit the provision of basic services for the population.
Fig. 5 – Total Fertility Rate in 2035-2040

Source: Authors’ calculations based on WPP 2012 (medium fertility assumption)
COMPOSITION OF POPULATION: AGE, ETHNICITY AND RELIGION

Age
The decline of the young population
The assumption of fertility decline made by the UN inevitably impacts on ageing dynamics. Most of the population increase is expected to occur in the developing world, with peaks in the 15-59 and the 60 or over categories, while the category of children under the age of 15 is not expected to enlarge in the developing world by 2030 and 2040. In the developed regions:

- The number of children under the age of 15 is expected to change very little (from 206 in 2013 to 208 million in 2030 and 205 million in 2040).
- The “young person” category (aged 15-24) is expected to decrease by 12 million people by 2035 (from 160 to 148 million) and further decrease later on.

Fertility and youth
Notwithstanding a downward trend, countries that still show high fertility rates will exhibit a comparatively younger population by 2035. Countries with highest percentage of young persons will mostly include sub-Saharan African countries such as Uganda, Nigeria, Tanzania, and Democratic Republic of Congo. Out of Africa, East Timor, Afghanistan, Guatemala and Iraq will have relatively larger share of young population (more than 18 per cent of the total).

Working-age population
In the next decades most countries will experience the most significant change in the proportion of working age population, which will be decreasing at different rates both in the developed and developing world.

In developed countries, 2013 registered the peak of population in their main working ages (25-59). Afterwards, working-age population is expected to decline from 606 million to 557 million by 2035 (from 49% of the population in 2013 to 43% in 2035) and further decrease later on. Working-age population proportion in the less developed regions would shift from 44% in 2013 to 45% in 2035, while the same proportion in the least developed countries would increase to 40% in 2035 from 34% in 2013.

An ageing population?
People aged 60 or more are expected to constitute 30% of the developed regions population by 2035 (22% now). In the developing regions, the proportion of older people will increase to 16% (9% in 2013). Population aged 60 or more is the fastest growing globally. By 2050, this
category would be increased by 45% at a pace of 1% annually, passing from 287 million in 2013 to 417 million in 2050. After this period the growth speed would slow down to a great extent.

- In the less developed regions although the ageing phenomenon is less advanced, the pace of increase of the population aged 60 or more is now the fastest ever at 3.7% annually, while it would slow down slightly to 2.9% annually after 2015 and up to 2050.
- Globally, the 60 or more age category could reach 1.5 billion people by 2035, up from 765 million in 2013.
- Ageing happens when the proportion of older people in the population increases while that of young people diminishes. This proportion is captured by the median age of the population. At the global level the median age is expected to increase to 33.2 by 2030 from 29 in 2013. The median age in Europe, which is currently the “oldest” region (a median age of 41 in 2013), is projected to increase further, reaching a median age of 45 by 2030. 20 out of 24 countries expected to have a median age of below 25 by 2050 pertain to the least developed category. Niger, Mali, Zambia and Somalia are expected to host the youngest population in the world.

Tab. 1 – Percentage distribution by age group of the world population and of major development groups, 2010, 2035 (medium variant; in % of total population)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-14</td>
<td>15-24</td>
<td>25-59</td>
</tr>
<tr>
<td>World</td>
<td>27</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>More Developed Regions</td>
<td>16</td>
<td>13</td>
<td>49</td>
</tr>
<tr>
<td>Less Developed Regions</td>
<td>29</td>
<td>19</td>
<td>44</td>
</tr>
<tr>
<td>Least Developed Countries</td>
<td>41</td>
<td>20</td>
<td>34</td>
</tr>
<tr>
<td>Other Less Developed Countries</td>
<td>27</td>
<td>19</td>
<td>45</td>
</tr>
</tbody>
</table>

Source: WPP 2012 Revision, Excel tables, “Age composition – Population by Broad Age Group – Both Sexes”
• In the future ageing will particularly concern the less developed regions. Overall, median age for the least developed countries is below 20 in 2013 and it is expected to increase to 23 by 2030. The global dependency ratio – i.e. the ratio of dependent population under 15 and over 65 to the working age population 15-64 – will pass from 52 in 2010 to 54 in 2030 and 56 in 2040; in 2030 the dependency ratio of the developed regions would be at 63 compared to 52 and 66 of the less developed regions and the least developed countries, respectively.

The politics of demography: China’s one-child policy

China’s one-child policy is perhaps the best-known example of the determination of many states to alter the demographic trends of their population.

The one-child policy was introduced in China in 1980, and reflected the Communist Party's fear of a “Malthusian trap” (if left free to choose the people would multiply beyond the country’s ability to feed itself). Many demographers, including Chinese experts, retain this fear was unfounded as the birthrate would have declined anyway, due to economic development, increases in literacy and the urbanization rate.

Whatever the real impact of this policy, today China faces the opposite problem: with a fertility rate of 1.5-1.7 children per woman (below the replacement rate), and rising life expectancy, the ratio of taxpayers to pensioners is expected to drop from almost 5:1 to just over 2:1 by 2030. The Communist Party's recent decision to relax the one-child policy – allowing couples where one parent is an only child (as opposed to both) to have a second child – represents an important change, but its effects are doubtful. Recent surveys confirm that rapidly rising costs of living and education, particularly in major cities, already represent strong disincentives to have more than one child anyway.

Politics and demography: a glimpse at Philippines and Japan

In 2012, a law was passed in the Philippines on birth control provisions such as the free distribution of contraceptives to the poorest families and the promotion of sex education courses at school. While Catholics (almost 80%) of the population have largely opposed this measure the Supreme Court has recently rejected the accusation of unconstitutionality. Even though the Philippines exhibit one of the highest rates of population growth, it has high levels of death at birth and has seen HIV and other sexual transmitted diseases increase in the last few years. On the contrary, to face what is by now considered to be a “demographic crisis”, the government of Japan is considering revising its “closure” policy towards the outer world, evaluating the hypothesis to open its frontiers to at least 200, 000 immigrants per year. This policy, together with one promoting higher fertility (at least up to 2.07) would allow keeping the population over 100, 000 inhabitants. The economic and social implications of such a move would not be marginal.
ETHNIC COMPOSITION

General trends
The ethnic composition of the world population is projected to further diversify in the upcoming decades. Migration and increasing inter-racial marriages contribute to increasing inter-ethnic mobility, i.e. the change of ethnic identification over time. It should also be considered that the measurement of ethnicity has recently changed in some data collection, including or excluding specific categories.
In making projections on ethnic composition, assumptions on levels of fertility and migration are crucial. In general, the fertility rate of foreign-origin population has tended to converge to the national average of industrialized countries, yet the process is not complete. However, fertility differences are likely to persist if immigrant groups fail to achieve socio-economic equality, or if they maintain a strong attachment to elements of foreign religion or culture that reinforce their separation from the hosting countries. Indeed, their minority status makes some immigrant groups resistant to change per se.

The United States: rising diversity
The United States will substantially increase its racial diversity. According to the US Census Bureau, in 2004 Central America and South East Asia were the leading regions for legal immigrants, and they are projected to increase their weight by 2050. In the same timeframe the Asian population will double its presence, moving from 4 to 8% of the total US population. The Hispanic population will double as well, from 12 to 24% of the total. People of African-American roots will rise from 13 to 15%, while the White population will decline from 81 to 72%. As a consequence, the elderly population will increase its diversity, and minorities will more than double their presence (from 20 to 42%) in the total US population by 2050.
The trends of change in the composition of the US population will also be reflected in the variety of languages other than English spoken at home, which has grown continuously in the last decades. Between 1980 and 2007, the number of self-identified speakers of Spanish increased by 210.8%, those speaking Chinese grew by 290.7%, those speaking Vietnamese by 510.9% and those speaking Korean by 299%. Factors that influence this growth include employment opportunities, family nets as well as community connections, and if the area acts as a gateway point of entry to the US. Illegal immigration also contributes to increases in racial and ethnic diversity. The 2009 economic crisis is the main factor that has ignited a downward trend for unauthorized immigration, which is projected to last at least for a decade.

Western Europe: A changing society
In the case of Western Europe, it is expected that by 2040 the future total population of foreign origin will grow to a much higher level than today. Foreign-origin populations are projected to comprise between 15 and 32% of the total population in most Western European countries by 2050. The proportion of foreign population is expected to show a constant rate of increase, with the proportion of Western population diminishing over time, mostly due
to the higher rates of immigration and the higher fertility of immigrants. According to these trends, Sweden and the Netherlands are projected to have the majority of the population of foreign-origin by the end of the century, although fertility differentials are projected to diminish their relevance at the end of the period. Other countries, such as Austria, will arrive at a substantial parity between foreign-origin and native population.

**Religious composition**

**Christianity and Buddhism growing**

Most foresight analyses suggest that Christianity was and remains the single largest major world religion, representing slightly over 30% of the world’s population. This proportion has remained fairly stable since 1945. Islam has increased to become the second-largest religion in the world after Christianity, accounting for roughly 22% of the world’s population by 2010. Since the late 1960s, the number of independent states with a majority Muslim population has not changed significantly. However, the proportion of Muslims in existing states has been on the rise.

The proportion of Buddhists in the world population has also increased over time, going from 4% of the world’s population in 1950 to 7% in 2010. Other major world religions have captured an increasingly smaller percentage of the world population. The most relevant decline took place in the share of Jews, which has shrunk by 60%, from 0.5% of the world’s population in 1950 to 0.2% by 2010.

**The expanding Muslim working age population**

The Islamic population tends to be young, as it displays high fertility rates. For this reason, the share of the Islamic working-age population is increasing globally. In 2010, it was 24.4%, by 2030 it should rise to 28.2%, peaking in 2050 at 30.7%.

Overall, the Muslim population is expected to increase by around 35% by 2035, from 1.6 billion in 2010 to 2.2 billion. This growth rate will be almost double that of the non-Muslim population, with an average annual growth of 1.5%, compared to 0.7% for the non-Islamic population. Should the current trends continue, the share of population that declares itself Islamic will make up 26.4% of the 8.3 billion people projected for 2030. However, the growth rate of the Muslim population is expected to slow down during the subsequent two decades, whilst maintaining the absolute fastest rate of growth.

According to these trends, by 2030 there will be 79 countries hosting at least one million Muslim inhabitants, while today only 72 countries reach this number. Most of the Islamic population will continue living in the Asia-Pacific region (60%), followed by the Middle East and North Africa (20%). In 2030, Pakistan will have surpassed Indonesia as the state with the largest Muslim community. The share of Sub-Sahara African Muslims is expected to steadily increase.
In the United States, for example, Muslim inhabitants will double, arriving at a total of 6.2 million by 2030 (1.7% of the total US population), mostly due to immigration and high fertility rates. Although various European countries will host higher percentages of Muslims, by 2030 the US will have a higher absolute number of Islamic people than all European countries, except for France and Russia.

In the whole of Europe, the percentage of Muslims is expected to rise from 6 to 8% in the period between 2010 and 2030, thus growing by nearly one third. The most significant increases will take place in the Western and Northern parts of Europe. For example, the United Kingdom will have 8.2% of a Muslim population by the end of the period, up from the current 4.6%. In Austria, Muslim inhabitants will move from 4.6 to 9.3%, in Belgium they will increase from 6 to 10.2%, while in France they will pass from 7.5 to 10.3%.

Four major reasons account for this growth: Higher fertility rates; a large share of Muslims in the prime reproductive years (15-29); improved health and economic conditions, which have substantially reduced mortality rates; and, consequently, the fast growth of life expectancy.

This said, the global growth rate of the Muslim population is expected to slow down in the next decades, dropping to 1.7% from 2010 to 2020, and to 1.4% from 2020 to 2030. While they remain higher than those of other religious groups, Muslim fertility rates are dropping, as people are increasingly urbanized and more women access secondary education. Changes in fertility rates are likely to lead to a considerable shift in the age structure of the Muslim population, leading to the end of the Muslim “youth bulge” which took place in the early 2000s.\textsuperscript{vi}

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**Women, education and population growth**

Several studies have shown that women empowered through literacy and numeracy are in a better position to improve their own health and that of their children and other family members. In particular, recent analyses confirmed women’s level of education as the most important determinant of child mortality, even more than wealth: estimates show that each additional year of schooling is associated with a 5 to 7% reduction in child death.

In addition, more educated women typically want fewer children, find better access to contraception, and eventually show a lower fertility rate, irrespective of their ethnic or religious belonging. Populations with higher proportions of better-educated women have lower overall birth rates. Given that this factor by far outweighs the higher child survival rates, it will lead to a reduction in the population growth rates. For this reason, universal secondary female education—in addition to its many other positive implications—has been suggested as an effective way to lower the world’s population growth (W. Lutz, S. WK 2011).
LIFE EXPECTANCY

At the global level, life expectancy at birth is expected to reach 74.5 years in 2035-2040 from 69 years in 2013.

- The developed world will see life expectancy increase to 81.5 years in 2035-2040 from 77 years in 2013.
- 73 years is the life expectancy projected for the less developed world in 2035-2040 from 67 years in 2013, while the least developed world would reach 68.1 years in 2035-2040 from the current 58 years. Yet, relative to the developing world and especially least developed countries, this trend would only materialize if the speed of HIV and other disease diffusion were lowered.

Tab. 2 – Life expectancy at birth for the world and major development groups, 2005-2010 and 2035-2040 (years)

<table>
<thead>
<tr>
<th>Life expectancy</th>
<th>2005-2010</th>
<th>2035-2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>68.7</td>
<td>74.4</td>
</tr>
<tr>
<td>More Developed Regions</td>
<td>76.9</td>
<td>81.5</td>
</tr>
<tr>
<td>Less Developed Regions</td>
<td>67</td>
<td>73.1</td>
</tr>
<tr>
<td>Least Developed Countries</td>
<td>58.4</td>
<td>68.1</td>
</tr>
<tr>
<td>Other Less Developed Countries</td>
<td>68.8</td>
<td>74.5</td>
</tr>
</tbody>
</table>

Source: WPP 2012 Revision, Excel Tables, “Summary Indices – Life Expectancy at Birth – Both Sexes”

MORTALITY

- While all world regions have experienced a fast decrease in mortality rates, Europe has seen a slowdown determined in particular by negative figures in the Russian Federation and Ukraine.
- Africa has the lowest life expectancy due to health conditions, political instability and diffuse conflicts.
- Overall, females are expected to have a higher life expectancy across all regions and levels of development. While the gap in life expectancy is expected to narrow in the more developed world, it is expected to expand in the less developed world.
• Under-five mortality, at 59 deaths per 1000 births in 2005-2010 is expected to continue declining to 32 deaths in 2035-2040. Here again, the expectation of under-five mortality decline (especially in Africa) is linked to the assumption of diminished HIV impact and diffusion.

**URBANIZATION**

Globally, more than half of the world population lives in urban areas although not all of the world regions have reached this threshold; thus, if by 2020 half of the population in Asia live in urban areas, Africa will reach that same level only by 2035 (45% and 40% respectively of urban population in 2011). The increase in population that will be experienced up to 2035, and beyond, will be mostly absorbed by urban spaces. Approximately 6.3 billion people are projected to live in urban areas by 2050 (67% of the global population).

**WHERE WILL PEOPLE GO?**

In 2035, Asia will be home to most of the urban population of the world, followed by Africa (57% and 21%).

Moreover, still more people will move from rural to urban areas. The rural population is expected to start declining soon: after a steady increase in the developing world and in Africa (higher than 1.3% growth annually with the exception of Nigeria and Egypt) in particular, around 2020-2030 the rural population in this area will start decline and by 2050 some 0.3 billion people will leave rural areas.

Fig. 6– Distribution of world urban population by major areas, 1950 / 2035

Source: Authors’ calculations based on WPP 2012 and World Urbanization Prospects 2012
While the rate of urbanization will increase at high speed in Africa (0.96) and Asia (0.74) in 2030-2050, the percentage of their urban population will remain still below that of developed countries or of Latin America and the Caribbean.

**The Pace of Urbanization**

In more developed regions, urbanization will move from 78% to 86% (from 2011 to 2050) while in less developed regions, urbanization will move from 47% to 64% in the same time-span (UN 2012).

The growth rate of the world urban population is decreasing if compared to previous years: in fact, while the urban population grew at an average rate of 2.6% per year between 1950 and 2011, the rate is expected to slow to an average of 1.7% per year until 2030. Thus, the pace of urbanization would be slower than in the past.

**Large Cities and Megacities**

Over half of the population is and will continue to be situated in small urban centres (less than half a million inhabitants. Future urbanization will increasingly occur in large cities (1 million or more inhabitants) with “megacities” observing the largest percentage increase. Megacities are in Asia (13), Latin America (4), Africa (2), Europe (2) and North America (2).

Tokyo is likely to remain the most populous city, although its average annual rate of change would be significantly lower than that of other megacities. The table below shows that megacities increasing the most between 2011 and 2025 are mostly located in Eastern and Southern Asia and essentially follow fertility rates, while the rates of change in Europe and Latin America are slowing down, with Lagos (Nigeria) experiencing the fastest growth.

**Urbanization: Geographical Distribution**

As for countries, the increase in world population would be particularly relevant in China and India (together 37% of the increase of the urban population between 2011-2030).

- Nine more countries will contribute 26% of the urban increase by that date: Nigeria and the Democratic Republic of Congo in Africa, Bangladesh, Indonesia, Pakistan and the Philippines in Asia, Brazil and Mexico in Latin America and the United States of America.

- Between 2030 and 2050 India and Nigeria will contribute the most (with respectively 270 and 12 million urban population) to further urbanization (a total of 1.3 billion increase) and will account for 31% of urban growth in that period. Although having the largest urban population by 2050, China would only contribute with 44 million to the increase of urban population between 2030 and 2050.

- Between 2011 and 2030 two countries will see a decrease of their urban population: Ukraine and Bulgaria. Between 2030 and 2050 other countries will add to the two, among which worth noticing are Japan (with a reduction of 10 million), the Russian Federation (2.4 million), the Republic of Korea (1.7 million), and Ukraine, which will experience a further loss (1.3 million).
Fig. 7: World Urbanization by country, 2035

Source: Authors' calculations based on World Urbanization Prospects 2012
Tab. 3 – Average annual rate of increase 2011-2025

<table>
<thead>
<tr>
<th>Megacity</th>
<th>Region</th>
<th>Average annual rate of change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagos, Nigeria</td>
<td>(Western) Africa</td>
<td>3.71</td>
</tr>
<tr>
<td>Dhaka, Bangladesh</td>
<td>(Southern) Asia</td>
<td>2.84</td>
</tr>
<tr>
<td>Shenzhen, China</td>
<td>(Eastern) Asia</td>
<td>2.71</td>
</tr>
<tr>
<td>Karachi, Pakistan</td>
<td>(Southern) Asia</td>
<td>2.68</td>
</tr>
<tr>
<td>Delhi, India</td>
<td>(Southern) Asia</td>
<td>2.67</td>
</tr>
<tr>
<td>Beijing, China</td>
<td>(Eastern) Asia</td>
<td>2.66</td>
</tr>
<tr>
<td>Guangzhou, China</td>
<td>(Eastern Asia)</td>
<td>2.54</td>
</tr>
<tr>
<td>Shanghai, China</td>
<td>(Eastern) Asia</td>
<td>2.43</td>
</tr>
<tr>
<td>Manila, Philippines</td>
<td>(South-Eastern) Asia</td>
<td>2.26</td>
</tr>
<tr>
<td>Bombay, India</td>
<td>(Southern) Asia</td>
<td>2.12</td>
</tr>
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<td>Istanbul, Turkey</td>
<td>(Western) Asia</td>
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<td>(Northern) Africa</td>
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<td>Los Angeles, USA</td>
<td>(Northern) America</td>
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<td>São Paulo, Brazil</td>
<td>(South) America</td>
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<td>New York, USA</td>
<td>(Northern America)</td>
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<td>Buenos Aires, Argentina</td>
<td>(South) America</td>
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</tr>
<tr>
<td>Paris, France</td>
<td>(Western) Europe</td>
<td>0.97</td>
</tr>
<tr>
<td>Rio de Janeiro, Brazil</td>
<td>(South) America</td>
<td>0.93</td>
</tr>
<tr>
<td>Moscow, Russian Federation</td>
<td>(Eastern) Europe</td>
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<tr>
<td>Osaka-Kobe, Japan</td>
<td>(Eastern) Asia</td>
<td>0.33</td>
</tr>
<tr>
<td>Tokyo</td>
<td>(Eastern) Asia</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Source: data retrieved from UN 2012, own adaptation
**Urbanization: Geographical Distribution**

As for countries, the increase in world population would be particularly relevant in China and India (together 37% of the increase of the urban population between 2011-2030).

Nine more countries will contribute 26% of the urban increase by that date: Nigeria and the Democratic Republic of Congo in Africa, Bangladesh, Indonesia, Pakistan and the Philippines in Asia, Brazil and Mexico in Latin America and the United States of America.

Between 2030 and 2050 India and Nigeria will contribute the most (with respectively 270 and 12 million urban population) to further urbanization (a total of 1.3 billion increase) and will account for 31% of urban growth in that period. Although having the largest urban population by 2050, China would only contribute with 44 million to the increase of urban population between 2030 and 2050.

Between 2011 and 2030 two countries will see a decrease of their urban population: Ukraine and Bulgaria. Between 2030 and 2050 other countries will add to the two, among which worth noticing are Japan (with a reduction of 10 million), the Russian Federation (2.4 million), the Republic of Korea (1.7 million), and Ukraine, which will experience a further loss (1.3 million).

<table>
<thead>
<tr>
<th>Cities at risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>The urbanization report delivered by the UN in 2012 combined urbanization figures with the risks of “natural hazard” (such as with flooding, droughts, cyclones) ran by the cities, reporting on potential risks that specific areas may undergo (although data is based on the period 1980-2000). As the UN report makes clear, Tokyo, Delhi, Mexico City, New York and Shanghai, the five most populated cities in 2011 are all located in areas highly exposed at least to a major natural hazard. Only ten major urban cities (with 750,000 inhabitants or more in 2011) are located in areas exposed to three or more natural risks, while many cities find themselves in areas potentially exposed to one or more natural disasters. Asia is particularly at risk of natural disasters.</td>
</tr>
</tbody>
</table>

**International Migration**

**International Migrants by Region**

Europe and Asia together host 2/3 of all migrants, with Northern America, Africa, Latin America and the Caribbean and Oceania following.

- Between 1990 and 2013 North America has experienced the greatest increase in international migrants, followed by Europe and Asia.
- On the contrary, from 2000 it has been Asia that has registered the highest increase in migrants, followed by Europe and Northern America. The latter has seen a decline in the number of international migrants added each year from 2010 on.
With exception made for Latin America and the Caribbean, it is observed that international migration remains in the same region.

### Sending countries

**Opportunities**

If properly managed and paralleled by structural economic policies, remittances are likely to affect the economy of sending countries (as shown in the World Bank Migration and Remittances Factbook) through a better access to education and the health system and through the transfer of know-how. Ultimately, this may well diminish the cause of migration.

**Risks**

“Brain drain” of skilled emigration and a general reduction of the young population, which are normally the most eager to migrate. Of particular relevance is the significant emigration of Doctors and health personnel from small developing countries such as Angola, Haiti, Liberia, Mozambique, Republic of Tanzania and Sierra Leone registered in the last few years, which has affected the provision of advanced health services.

### Receiving countries

**Opportunities**

Reducing the shortage in the labour market due especially to ageing dynamics and to the decline of the overall population.

**Risks**

Potential social tensions related to welfare dynamics, cultural cleavages and integration struggles. Of particular significance is the interplay between migration dynamics and urbanization development.

### Paths of migration

During 1990-2013, the relative “importance” of main migration corridors has changed. While 1990-2000 was “dominated” by the LAC-Northern American corridor, 2000-2013 has mainly registered the prominence of the Asia-Asia corridor, although at a slower pace in 2010-2013. Remarkably, during 2010-2013 the Africa-Africa corridor has outpaced the LAC-Northern American one as the third main corridor.

Worth noticing is the increasing relevance of the India-United Arab Emirates, Bangladesh-Saudi Arabia and Bangladesh-United Arab Emirates corridors, that is, of flows departing from Southern Asian countries and reaching oil-producing countries in Western Asia. Of importance is also the corridor Iraq-Syrian Arab Republic, which calls attention to the incidence of refugees on migration figures, a point we will return to later in the Report.
Migration not only affects population growth but also population composition and structure. Thus, fundamental is to consider how migration would impact age composition and the likely consequences in terms of economic and social support needs. As seen above, this element is captured by the dependency ratio: a measure of how many people each potential worker needs to support - the higher the ratio the more the people.

According to the medium variant scenario, the dependency ratio is projected to increase in the developed world in the next decades from 48 in 2010 to 72 in 2050. Assuming no migration the rate is projected to increase to 76 by 2050, with Northern America, Oceania and Europe being more affected. While Africa and Asia would not be affected by zero migration, Latin America and the Caribbean will see a decline of the dependency ratio in the case of a zero-migration assumption compared to the medium variant.

Projections

Net migration from developing to developed countries will average 2.2 million persons annually from 2011 to 2050, after which, a declining trend is expected. The net number of international migrants towards the developed world by 2050 will be 87 million.\textsuperscript{vii}

A positive net migration in developed regions will prevent and overall population decrease in the region: in fact, the overall 63 million increase in population between 2010 and 2050 is largely to be attributed to an international migration of some 96 million persons (faced with a death rate surpassing that of births by 33 million people).

<table>
<thead>
<tr>
<th>Major net receivers of international migrants (annual averages) 2010-2050:</th>
<th>Number of migrants (annually)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States of America</td>
<td>1.000.000</td>
</tr>
<tr>
<td>Canada</td>
<td>205.000</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>172.500</td>
</tr>
<tr>
<td>Australia</td>
<td>150.000</td>
</tr>
<tr>
<td>Italy</td>
<td>131.250</td>
</tr>
<tr>
<td>The Russian Federation</td>
<td>127.500</td>
</tr>
<tr>
<td>France</td>
<td>106.250</td>
</tr>
<tr>
<td>Spain</td>
<td>102.500</td>
</tr>
</tbody>
</table>

Source: WPP 2012 Revision.
THE DECLINE OF MIGRATION?

After a huge rate of net migration towards the developed world from 2000-2010, with a peak of 3.46 million migrants annually, the level of net migration towards the developed world is expected to decrease at 2.3 million annually in 2030-2040. Asia will cover more than half the net emigration from the less developed regions towards the developed world.

Tab. 5– Countries with most emigrants

<table>
<thead>
<tr>
<th>Major countries of net emigration (annual averages) 2010-2050:</th>
<th>Number of migrants (annually)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>-331.000</td>
</tr>
<tr>
<td>China</td>
<td>-300.000</td>
</tr>
<tr>
<td>India</td>
<td>-284.000</td>
</tr>
<tr>
<td>Mexico</td>
<td>-210.000</td>
</tr>
<tr>
<td>Pakistan</td>
<td>-170.000</td>
</tr>
<tr>
<td>Indonesia</td>
<td>-140.000</td>
</tr>
<tr>
<td>The Philippines</td>
<td>-92.500</td>
</tr>
</tbody>
</table>

Source: WPP 2012 Revision.

The US as the “promised land?”

Net migration towards the United States is projected to remain constant at 1.2 million annually between 2040 and 2050.

REFUGEES

The relevance of international migration and its likely projection should not overlook the importance of refugees – that is, of “forced movements.” Ultimately, even though restrained in scope, internal forced migration may well be a further reason for turbulence in already unstable regional contexts.

Indeed, refugees and internally displaced persons are difficult to be projected but a tentative investigation might be proposed: first it would be useful to consider the regions or area highly characterised by higher political instability where conflicts or tensions are more likely to come about. Second, it could be advisable to look at those contexts where the risk of natural disasters is higher given that the latter are a leading motivation behind people movements.
Notwithstanding the overall consensus around UN’s data, partially different trends are provided by those datasets that undertake different measurement systems, by those studies specifically focusing on certain regional contexts or by those works contesting the same assumptions upon which UNPD data rest.

For example, as far as population is concerned, The World Bank (WB) and the United States Census Bureau (USCB) see Southern Asia hosting 51-65 million people more than UNPD projections in twenty years’ time. Similarly, WB/USCB expect the African continent to host between 103 and 71 million fewer inhabitants than UNPD estimates, and for the Eastern Asia region WB/USCB projections are 86-75 million inhabitants lower than UNPD.

This downward trend has pushed some commentators to calm down recent alarmism towards a population bomb: commenting on the latest UN 2012 data, demographer Massimo Livi Bacci emphasizes that the so-called “demographic bomb” did not eventually explode; while population growth is a phenomenon destined to remain in the foreseeable future and with relative pressures on resources, the growth rate will be slower than in the past (Livi Bacci and De Santis 2013). According to Nicholas Eberstadt of the American Enterprise Institute, if the 20th century was characterized by “health explosion”, the 21st century would be the one of “fertility implosion”, (Eberstadt 2011), a decline that would occur irrespective of economic and social conditions experienced by each country. Sub-replacement fertility would also characterize parts of North Africa and the Middle East and far to Asia.

As for fertility, according to Bloom et al. (2013), lower fertility levels would not only decrease the level of projected population for the future, but would also change age distribution, increasing the share of working-age population in the medium term. This would have a positive impact on economic potentialities, as happened in the past in other regional contexts (i.e. East Asia for example). The European Demographic Data Sheet proposed by Populationeurope utilizes measures that take into account changes in the age at which women give birth given that birth postponements, a widely spread and long-time phenomenon in Europe, depress the number of births in a given period.

Although ageing is a phenomenon largely impacting Europe it is not at the same stage in every country. According to Eurostat Population Projections 2010, ageing would shift eastward in the next decades. A different reading as been provided by a consortium of three research Centers, the Wittgenstein Centre, the Vienna Institute of Demography and the International Institute for Applied System Analysis has re-measured ageing in Europe contesting the use of the conventional old-age dependency ratio (OADR number of people aged 65 or more/ number of people aged 20 to 64) (Populationeurope 2013). The main argument is that a less healthy population aged 65 or over in the past had a different social and economic behavior of people aged 65 or more today, which are expect to live longer. The proposal is to complement traditional indicators of population ageing with measures that take into account the changing life expectancy. Thus, considering European countries, ageing changes a lot if the two measures are used: given that life expectancy is lower in
Eastern Europe (Croatia, Serbia, Bulgaria, Romania, Ukraine, Belarus) the population of these countries will be much older in 2040 than that of Germany and Finland and Western Europe in general. Along the same line, the demographer Wolfgang Lutz points out that the productivity of some individuals is much higher than that of other individuals essentially because of education attainment (Lutz 2014): from this perspective, ageing may well be seen as an asset rather than a burden. Hence, suggests Lutz, population ageing is not irrelevant, but should be looked at jointly with other variables, such as education attainment. Education is also believed to improve the accuracy of population projections given that this variable highly impacts fertility (number of children and age of reproduction), mortality (better access to health) and migration (more educated are more likely to move and to do that permanently).

Mortality too seems to be particularly contested a trend: Populationeurope makes projections on mortality in Europe that partially differ from those of the UN (Populationeurope 2013). In fact, for low-mortality countries it is expected that life expectancy at birth is 90 years by 2050, exceeding the UN projections by about five years. The measures used take into account the fact that given that the young cohort are healthier than their older peers, when they age the mortality rate may be lower than that of the currently old cohort.

Despite persistent rural disadvantages, a report by UNDESA (2013) suggests that improvements in education, health and nutrition during the last decade have often been achieved faster in rural rather than in urban areas of developing countries. Although there is an urban health advantage, health disparities are larger in urban than in rural areas and the burden of disease borne by the urban poor is similar to that experienced by rural populations. Further studies on urbanization allows depicting a more variegated and refined picture of the possible implications of the phenomenon: A recent publication by the OECD-UNDESA (2013) highlights how one in every nine persons born in Africa with a tertiary diploma lived in the OECD in 2010/11. Corresponding figures for Latin America and the Caribbean and Asia are one in 13 and one in 30, respectively. The risk of “brain drain” is more acute in countries with small populations and island states, but lower in populous non-OECD countries. The report notes that the proportion of highly educated immigrants in OECD countries is rising sharply. Over the past ten years, the emigration of the highly-skilled has increased in some countries, whilst decreasing in others. While the absolute number of tertiary educated emigrants in OECD countries has increased for all countries of origin, in some cases the highly educated population in the country of origin rose faster than the number of the highly educated emigrants. This was the case for many countries in the Middle East and North Africa (MENA), which invested heavily in tertiary education in the past decade. The increase in the number of graduates in populous countries, such as China, India or Indonesia, more than compensated for the increase in the outflow of highly educated migrants.

Notwithstanding its unpredictability migration offers important fields of research: Skeldon Ronald, in a 2013 UNPD publication, emphasizes that migration is a complex phenomenon that cannot be reduced just to unidirectional flows. In particular, he highlights that future migration is likely to be very different from what it is today, as destinations in some parts of the developed world may not retain their attractiveness for migrants in the face of competing opportunities elsewhere. According to the author, among other factors influencing future migration trends will be return migration. The international migrations to Australia, Europe and Northern America from the developing world were relatively recent, dating from changes
to immigration laws in the 1960s. As pensions will last longer in lower cost economies, a return migration of these migrants might be expected. Also, researchers at the Wittgenstein Centre for Demography and Global Human Capital, Vienna Institute of Demography/Austrian Academy of Sciences examine an alternative measure of migration projection with respect to the one employed by the UN and essentially using net migration. The bi-regional projection model they adopt produces some notable differences in the future levels of migration and resulting population in comparison to the net assumptions used by the United Nations because of two factors. The model projects an increase in the number of emigrants from continents with young populations such as Africa. Conversely, the projection model used by the United Nations assumes, in most countries, a constant net level in future projections despite expected changing age structures and population size. In Europe, North America and Oceania the bi-regional model projects a rise in net migration. The high levels of immigration from the rest of the world lead to a continuation of population growth. Under the United Nations net migration assumption, the future populations are expected to either fall (Europe) or slow in their increase (North America and Oceania). The impact of migration on the projected populations is largest in continents where fertility and mortality rates are at already stable low levels.

As seen, while given, demographic trends may be open to different interpretations, or, may produce different effects in different contexts. This is so especially because they cannot be separated from the environment in which they produce and from trends in other dimensions both influencing and influenced by them. To the investigation of this latter consideration is devoted the second original chapter of this work.
Chapter II

Trends in other Dimensions and their interaction with Demographic Trends

As clearly emerged from Chapter 1, demographic change does not occur in a vacuum, but instead it is often affected by changes in other domains. Thus, the aim of this chapter is twofold. On the one hand, it seeks to recall the main trends in economics, energy, the environment, health, technology, and politics, projected for 2035, extensively analyzed in the Interim Report Three. On the other hand, it provides hints on how variables in other domains (and their likely trends) may affect demographic dimensions (and their trends) over the next two decades.

Assumptions

As in every long-term investigation, this work adopts a series of assumptions. In this case, they are drown from the UN. Yet it recognizes that alternative patterns, possible deviations from expected trends, may emerge and may possibly be determined by the failure of some hypotheses, unexpected developments in the domains considered, or the combined effect of the demographic and other variables in specific regions of the world. Particularly in this latter case, the role of political action can sometimes be fundamental in anticipating or partly deviating trends. Indeed, political action would exert a different impact according to the issue under investigation and the modalities of intervention. Thus, for example, actions decided and implemented today may have either an evident effect by the time-span considered here, 2035 (e.g., some policies related to the movements of person), or a more pronounced effect in the second part of the century or even later (e.g., environmental policies). In most cases, governments have been proactively engaged in anticipating or deviating trends, though effectiveness or mitigation of bleak scenarios depends again on the nature of the issue at hand, on implementation capabilities, and on the level of development.
ECONOMY

The future global economy will be particularly influenced by developments in education, technological progress, and labor force participation. Notwithstanding the complexity associated with long-term predictions in the economic domain, the research identified some major trends concerning growth, trade and wealth distribution. Over the next three decades, developing nations will become much stronger economically, wealthier, and more central to the global economy, although with different regional and national prospects. Regional trade partnerships will grow, and there will be a shift from Europe, the United States, and Japan, and toward China and India as emerging trade nodes. Global flows and stocks of capital will also increasingly shift toward the developing world, accelerating the displacement of the global distribution of wealth. However, wealth in both developing and developed nations will continue to be concentrated in the hands of a small percentage of the population, and poverty will continue to be a significant, though less dramatic, phenomenon, particularly in Sub-Saharan Africa.

ECONOMY AND DEMOGRAPHY

Demographic factors matter for economic growth just as much as, and sometimes even more than, the factors commonly stressed in the growth literature, such as technological change, innovation, and political/institutional explanations. Specifically, many economic processes over the coming decades might be closely correlated with the demographic structure of countries, and hence can be captured by detailed forecasts of the age structure.

POPULATION COMPOSITION, FERTILITY AND LIFE EXPECTANCY

Two decades from now, the world will experience a profound transformation, as rapid growth in emerging economies leaves a reduced part of the G20 population under the poverty line. Absolute poverty will continue to be a significant, but less dramatic, phenomenon in Africa, while the global rate of poverty is expected to drop to 14 percent by 2025, from 19 percent in 2012 (Ravallion 2012).

Poverty is highly dependent both on population and economic growth rates. Although a larger population has a positive impact on aggregate economic growth, it also has the side effect of slowing per capita growth, obviously a downside for developing economies. Moreover, larger cohorts of people increase the costs of education and the cost of arable land. On the contrary, when the population increases at a slower pace, the aforementioned resources become available at higher per capita levels. This can positively influence the demographic dividend. Thus, the dimension of population will continue to influence poverty rates substantially (Hughes et al. 2008).

Demographic changes are forecasted to have a particularly salient implication for the labor force. While the labor force will continue to grow at the global level, important asymmetries in labor force growth between regions and countries will develop because of demographic trends. Projections indicate that by 2020 the majority of the world’s labor force will reside
in Asia, followed by Africa (ILO 2013). China’s workforce will stop growing by 2025, while India’s will continue to grow slowly through 2035. In 2035, the two workforces will both settle at 700 million economically active individuals (ILO 2013). Among developing countries, the workforce will grow quickly also in most African countries, particularly in Eastern Africa.

Over the same timeframe, projections suggest that the United States’ labor force will be fairly dynamic, with a 34 percent increase between 2008 and 2035. Nonetheless in 2035 the US labor force will reach 200 million individuals, 3.5 times smaller than either China or India in that period (Johansson et al. 2012). Conversely, in Europe there will be a marked slowdown in labor force growth because of the substantial diminution of the labor force in Eastern Europe, most notably in the Russian Federation. Also Japan will experience a similar decrease in labor forces.

Ageing is another demographic dimension with deep economic consequences. The old age dependency ratio, which compares the number of people aged 65 years and over with those aged between 15 and 64, is likely to become a concern for developing countries in the long run, as it is for developed countries today. Population projections forecast that in future decades, Asia and Eastern and Southern Europe will double their old age dependency ratios, while China’s will quadruple (ILO 2013, Johansson et al. 2012). This effect follows directly from the falling fertility rates in these countries (Johansson et al. 2013).

At an advanced stage of demographic transition, the consequences of trends in economic dependency ratio on public finance (especially for transfers and services for elderly people) are likely to influence the overall economy (ILO 2013). A shrinking labor force means that countries will have to rely more on productivity growth than on new entrants into the labor market, even if the number of new entrants can be increased by promoting higher labor force participation for specific population groups (e.g., women, people with disabilities) and by managing migration flows. The economic impact of an aging population will also influence the long-term
projections of public spending on education, healthcare, and pensions. If governments in rapidly aging societies cannot afford the additional cost of increased healthcare and pensions, poverty and inequality are expected to worsen substantially (OECD 2012).

**Urbanization**

Economists in recent years have noted almost universally that the urban world is shifting. Today, 600 urban centers generate about 60% of global GDP (Dobbs, et al., 2011). These 600 cities will continue to account for the same share of global GDP in 2025. However, over the next 15 years the center of gravity of the urban world will move South and, even more decisively, East. This change will result in very different membership for this group of cities. As such, these urban areas will continue to be economic giants for the foreseeable future, and many nations throughout the world are looking for ways to seize certain growth opportunities and help companies and policymakers manage the increasing complexity of larger cities more effectively and beneficially in the future. Companies today tend to look for cities that will generate the most GDP growth throughout the world, so as to grow wealth from the ground-up in these areas.

The economic role of large cities varies widely among regions, as do their future growth patterns. In Asia, the continuous growth of its megacities and the emergence of new ones fuels China’s rapid growth, while the urbanization of India is still in its early stages. In Latin America, the number of large cities is diminishing in favor of middle-sized conglomerates. The urban markets of emerging economies vary widely around the world.

The demand for infrastructure to support urban growth is very high, as most of these areas have yet to be built in developing economies, despite their rapid economic growth. Urban infrastructure needs to be added for national projects with significant cross-border impacts such as airports, seaports, and roads to borders.

The challenge posed by increasing urbanization concerns the limits to resource availability and the sustainable use of ecosystem services. Economic growth is already using 50% more than the annual productivity and assimilating capacity of the planet’s ecosystems. Thus, the growth of cities has severe implications for the consumption of ecosystem services, causing water security, food security and energy security issues for the population.

**International Migration**

Research has shown that international migration is an ever-growing phenomenon that has important development implications for both sending and receiving countries. For a sending country, migration and the resulting remittances lead to increased incomes. In turn, this is likely to have a positive effect on poverty reduction, improved health conditions and educational outcomes. Overall, remittances are considered as positively correlated with higher birth rates, improved schooling outcomes, and greater economic development. However, migration might come at substantial social costs to the migrants and their families, and it entails the loss of human resources for countries of origin cause corresponding fiscal and political disruptions by their relative departures.
Migration has both positive and potentially negative implications also for receiving countries. In various receiving countries, for instance, most immigrants pay taxes and have therefore the right to draw on at least some public services, changing the net tax burden on native residents. International migration also has the potential for facilitating the transfer of skills and contributing to cultural enrichment. However, high migration may also give rise to political, economic or social tensions in countries of destination. Integration challenges mainly concern job competition between migrant and native workers, fiscal costs associated with provision of social services to the migrants, and balancing of the overall economic landscape (Ratha, Mohapatra and Scheja, 2011). Only when they become citizens do immigrants generally obtain the right to vote, which can alter domestic politics and the ways in which policymakers shape the respective economic policies of their constituencies.

ENERGY

Energy and economic trends are profoundly interrelated with each other. Global energy use and production patterns are, however, influenced by many other factors, such as demographic change, technological efficiency, political stability, and the evolution of social habits. The interactions among these dimensions allow the identification of various trends at the global level concerning global energy demand, the sources of energy consumption, and the expected “energy mix” in 2035.

In the next 20 years global energy demand will increase by more than 40%, although over this period of time the annual rate of growth is expected to slow down. As emerging countries continue to grow, both economically and demographically, non-OECD regions will acquire ever more relevance in global and regional energy markets as well. Different regions, and countries within regions, will see their levels of energy security affected in starkly different ways. Although Western Europe’s energy demand will likely remain flat in the next 20 years, the region will become increasingly dependent on imported oil and gas; Eastern and Southern Asia (China and India in primis) will follow suit. By contrast, thanks to the extraction of shale gas and tight oil, North American countries (and the US in particular) are likely to return to levels of energy security not seen since the 1950s. When it comes to energy sources experts tend to foresee a future characterized by national competition, or by regional cooperation at best. As far as the future energy mix is concerned, oil will likely remain the most-relied-upon energy source, but both coal and natural gas are expected to catch up fast.

ENERGY AND DEMOGRAPHY

Energy and demography are highly interrelated. An extensive literature exists on the influence of demographic factors over patterns of energy consumption. However, much rarer are studies analyzing potential effects of energy trends over the various dimensions of demography. In the following section, wherever possible we will try to account for both literatures.
Together with the level of economic development and economic growth prospects, expected total population size has historically been one of the main determinants of energy demand. Additionally, due to the recent rapid economic growth in many emerging economies, which is expected to continue, per capita energy consumption across different regions of the world has tended to converge more quickly than ever before, with advanced economies gradually decreasing total consumption, while emerging economies rise in both relative and absolute relevance. Energy consumption in emerging economies is generally expected to increase faster than demographic growth, so that in many of these countries per capita energy consumption will tend to increase. This clearly poses a problem: since emerging countries also present higher average fertility levels than advanced countries, increases in per capita energy consumption will interact with total population growth, and risk having a multiplicative effect over total energy use with significant pressures on total energy supply (BP 2014).

From a demographic point of view, energy demand is driven not only by total population size, but also by other variables, such as household size and structure, and by the age composition of the population. Studies suggest that household size has a significant effect on energy consumption, as larger families can benefit from economies of scale compared to smaller ones (Lenzen et al. 2006).

![Fig. 8– Global energy consumption (in Mtoe)](source: BP (2014).)
Urbanization is a major demographic driver of energy demand. The amounts and types of energy used by rural and urban households differ significantly, and are expected to continue to do so over the next 20 years (Pachauri 2012). For example, as previously anticipated, since urban households tend to be smaller than rural households increasing urbanization might mean fewer economies of scale, and therefore higher energy usage.

Urban populations also have, on average, better access to energy infrastructures than rural populations, so that urbanization also has a direct effect over total energy use. However, and counter to these expectations, it is worth noting that 15% of the world’s urban population still lacks access to electricity (in Sub-Saharan Africa the situation is even worse, with only 46% of the urban population having access to electricity). The concern is that continuing urbanization might be accompanied by growing numbers of urban poor without access to modern energy sources, and a deterioration in the quality and reliability of energy services available to them; on the other hand, this deterioration might assuage fears of energy demand spikes in the medium term. Therefore, a latent conflict seems to be simmering here, between improving power access to most of the world’s population, and the stability of global energy markets.

Returning to the effects of urbanization on energy use, other experts tend to take a more nuanced view: studies find that, on average, increased urbanization does not seem to have significant effects in either reducing or increasing energy intensity (i.e., the amount of energy needed to produce a unit of GDP), so that these effects might be more muted than feared in the long run (Sadorsky 2013).

Migration

Within the literature, there is no theoretical mechanism that directly links energy to migration flows. However, a clear trend has emerged linking Gulf energy exporters, mainly Arab countries, to high immigration flows, especially from South Asia.

For example, whereas Qatar hosted just 0.2 million people in the 1980s, today it is home to about 2 million people. The biggest population surge Qatar experienced occurred in the span of just 5 years, between 2004 and 2009, although its population has continued to grow since. The economic growth due, in this case, to surging natural gas exports resulted in a huge inflow of migrants which was not associated with an extension of civil and political rights, as the latter remained limited to Qatari citizens, who currently constitute around 15% of the population.

Something similar occurred in the United Arab Emirates and Bahrain: in the UAE, immigrants make up more than 90% of the total population. In Saudi Arabia, a considerably larger country of 27 million people, expatriates still make up around 33% of the total, or 9 million people.
Climate change is one of the main trends that will mark the environmental dimension in the coming decades. By 2035, we expect that some consequences of climate change, such as an increase in extreme weather events or sea level rise, will directly affect human activities and security in some regions. Others aspects of climate change, like increased temperatures and variations in precipitation, will also show a significant, indirect effect on many global goods, including basic needs, such as food and water. Overall, the most affected areas will include Sub-Saharan Africa, South-East Asia and South Asia. Another major environmental trend, distinct from climate change, is the intensification of pollution, specifically air pollution, in major cities.

Environmental factors have always played a key role in human development, enabling or constraining human societies' potential in terms of growth, wealth, health, and power.

Climate-change-related effects will not spread evenly across the globe, and their impact will also depend to a large extent on differences in exposure (the physical presence of people and livelihoods in places that could be adversely affected) and vulnerability (the predisposition to be adversely affected). Adaptation strategies at the national, local, and individual levels can reduce vulnerability, but they depend on policy choices and available resources, and are thus closely intertwined with trends in the economy, health, and technology.

Overall, climate change and climate-related hazards have the effect of exacerbating other stressors, often with negative outcomes for livelihoods, especially for people living in poverty (IPCC 2014). Adverse impacts of climate change are thus predicted to be concentrated in poorer populations at low latitudes, where the most important climate-sensitive health outcomes (malnutrition, diarrhea and malaria, see the section on Health Trends) are already common, and where vulnerability to climate effects is greatest.

Over the next 20 years, projected climate change will impact population composition, particularly in terms of age and life expectancy, mainly by exacerbating health problems that already exist. Only in the longer run (end of the century), is climate change expected to lead to an increase in ill health in many regions, especially developing countries with low income. The main drivers of this impact are the greater likelihood of injury, disease (such as malaria and diarrhea), and death due to more intense heat waves and fire, and inland and coastal flooding; the increased likelihood of under-nutrition due to diminished food production, and worsening access to food; and increased risks from food, water, and vector-borne diseases.

Within countries, the impact of climate change will not be felt equally, and projections of future population composition represent essential information for estimating the actual exposure of each country to climate change. In fact, young children and elderly people are in general at
increased risk of climate-related injury or illness. Children, in particular, are the most exposed to the risk of food insecurity, and are thought to be more vulnerable to heat-related illness. Older people face higher risk from storms, floods, and heat-waves: in part because they are less mobile than younger adults, and in part because they show health conditions that limit their ability to respond to increased heat or air pollution (for example, during the extreme heat wave in France in 2003 80% of those who died were above 75 years).

Climate change will also affect population dynamics indirectly, through its effects on food production, food security more generally, and consequentially on mortality rates. Sub-Saharan Africa, where undernourishment currently affects 24.8% of the population, represents the most critical area for the coming future. Given that the food production system of the region is highly dependent on rain-fed agriculture, food security of sub-Saharan populations – specifically in the Sahel region – will be severely affected by projected reduction in mean precipitations by 2035 (World Bank, 2013).

Another relevant indirect effect of climate change on demographic dynamics concerns its supposed effect on conflicts. According to the latest IPCC report (WGI), climate change can indeed indirectly increase the risk of civil wars and intergroup violence “by amplifying well-documented drivers of these conflicts such as poverty and economic shocks” (IPCC 2014: 20); in addition, some transnational impacts of climate change, such as changes in sea ice, shared water resources, and fish stocks, are estimated to “have the potential to increase rivalry among states.” On the other hand, special issue of the Journal of Peace Research (2012) dedicated to climate change and conflict concludes that “there is not yet much evidence for climate change as an important drive of conflicts.” However, the same review reminds us that framing climate change as a security issue may well influence the perceptions of the actors in local and regional conflicts, leading to militarized responses and thus perhaps contributing to a self-fulfilling prophecy (p. 7).
Urbanization

The spatial distribution of projected demographic trends is of the utmost importance for understanding the impact of climate change, since many global-scale risks will be concentrated in urban areas. Environmental and urbanization trends seem to interact through at least three different mechanisms related to specific cities’ locations (such as the exposure to extreme weather events), or to urbanization in general (such as pollution and the heat island effect). The specific ways in which urbanization takes place (urban population composition and distribution) will also be relevant since climate-change-related risks are amplified for those who live either in informal settlements and in hazardous areas and lack essential infrastructure and services or where there is inadequate provision for adaptation.

Among the extreme weather events associated with climate change in the coming decades, flooding appears one of the most pressing risks, given the increasing concentration of urban populations in coastal locations and within low-elevation zones. The “top-20” cities identified for both population and asset exposure to coastal flooding for next future are mainly concentrated in Asian deltaic cities, but also spread across low, middle, and high-income nations. They include: Mumbai, Guangzhou, Shanghai, Miami, Ho Chi Minh City, Kolkata, New York, Osaka-Kobe, Alexandria, Tokyo, Tianjin, Bangkok, Dhaka, and Hai Phong. Settlements located in river flood plains also are prone to flooding during extreme or persistent precipitation/severe storm conditions and thus the map of urban exposure to extreme weather events could be much more complex to draw.

The urban “heat island effect” is another environmental effect that has been already well described in relation to Asia’s mega-cities and that could significantly worsen the effect of global warming and heat waves. Due to the massive concentration of infrastructure that causes thermal storage, urban temperatures may sometimes climb to more than 10°C above those of the surrounding rural areas. Seoul, with a quarter of South Korea’s total population, has registered an astonishing 1.58°C temperature increase in just three decades, two and a half times greater than the temperature increase of the surrounding rural and littoral areas. Research on the increase in daily mortality rates for Seoul as a result of increased heat shows ranges from 2.7 per cent to 16.3 per cent (Munslow, B. and O’Dempsey, T. 2010: 1342).

Finally, air pollution is another environmental dimension that is intrinsically linked to urbanization dynamics. According to OECD estimates (2012), by 2050 air pollution is set to become the world’s top environmental cause of premature mortality, with effects specifically concentrated in cities, especially in Asia. Today, only 2% of the global urban population is living with acceptable PM10 concentrations, while approximately 70% of the urban population in the developing world is exposed to concentrations above the highest WHO standard of 70 µg/m³. Notwithstanding some recent improvements, the number of premature deaths from exposure to particulate matter is expected to more than double worldwide, from 1 million today to nearly 3.6 million per year in 2050. Most of these deaths will occur in China and India, due both to the sheer size of the urban population and current levels of air pollution in these countries.
**Migration**

Among the potential impacts of the environmental trends on demographic dynamics, climate change forced migration or internal displacement is probably the most debated. In the early years of climate change, research widely cited estimates suggested that climate change would result in hundreds of millions of climate refugees migrating out of the global South, a narrative that has obviously received much attention in the North. However, according to the latest review conducted by the IPCC (2014), the high estimates of international climate migrants have been largely dismissed as unfounded by migration researchers. Nonetheless, climate change is indeed expected to have an impact on migration according to two distinct mechanisms and time perspectives.

The most direct link is relative to extreme weather events, which produce displacement of population in the short term due to loss of residence or economic disruption. However, the evidence suggest that in these cases most displaced population attempt to return to their original location, so that this kind of migration is rarely permanent and often short-distance. Furthermore, the direct causal link between extreme weather events and migration is complicated by the fact that the latter demands resources not at the disposal of the most vulnerable groups, thus limiting their capacity to use migration as an effective adaptation strategy; in addition, various studies highlight how members of a population display differentiated migration outcomes on the basis of ethnicity or gender (IPCC 2014).

Additionally, long-term climate change effects – global warming, sea-level rise, coastal erosion, changing patterns of precipitation – are expected to have significant impacts on migration flows and permanent displacement, in particular amplifying existing trends and flows (Black, R., et al., 2008). In the timeframe considered in this analysis (2014-2035), climate-change-induced variations in agricultural productivity, and worsening of food security conditions more generally, appear as the most relevant factors in terms of migration outcomes. From this viewpoint, projected negative effects on crop production in many low latitude countries (especially in Sub-Saharan Africa and South Asia) could produce significant population movements, but mainly at the local and regional level, since economic losses associated with climate change may prevent vulnerable people investing in overseas migration.

**Health**

Health represents a global issue, both because of the risks of contagion that disregards national borders, and because its impact strongly affects every society. Communicable diseases such as HIV/AIDS have received much attention in past years, through both education and therapy, but the outlook is still critical and very dependent on the policies enacted to tackle their spread. At the same time, the toll exacted by non-communicable diseases (NCD) has been increasing in recent years and is likely to do the same in the future, creating new challenges for national health systems.
HEALTH AND DEMOGRAPHY

Health and demography are very strictly intertwined, and in recent years there has been increasing attention paid to the interactions between the two, as tackling complex policy problems often requires an integrated approach, such as dealing with child mortality or providing access to basic services in urban settings. More broadly, comprehensive approaches to development have increasingly placed high importance on health has a precondition for sustained economic growth and well-being.

Generally speaking, the health-system of a country is an indicator of a state and of its citizens well-being. Thus, besides those mentioned here, health has also indirect effects on demography by affecting economic dynamics. Every balanced assessment should recognize how actions undertaken by Governments as well as other Organizations in this peculiar domain may largely affect health conditions and thus related demographic projections for the future.

In 2011, non-communicable diseases and HIV/AIDS were identified by governments as the second major concerns among population issues considered by the UN (UN 2013). In particular, fitness and obesity and NCD were ranked as top concerns for developed countries, while less-developed countries, and especially the least-developed, attached a greater concern to HIV/AIDS.

The interactions between severe epidemics and pandemics, which cannot be foreseen ex ante, are as relevant as they are multi-faceted. Epidemics affect deaths and mortality, but also births and fertility – with conceptions decreasing as mortality increases and then rebounding about two years later – and population mobility and migrations (Livi Bacci 2000). Recent cases of epidemics, from SARS to Ebola to H1N1, which caused great panics and a relevant number of deaths, did not have the same impact. Similar phenomena, especially if not tackled in time, can have consequences as well, especially in terms of population displacements or, in more extreme cases, changes in the structure of the population.

POPULATION COMPOSITION, FERTILITY AND LIFE EXPECTANCY

As far as mortality is concerned, a major reduction of child mortality has been associated in the past with improved access to basic healthcare services, which is likely to increase in the coming decades as well. ARTs and Malaria immunization are also important drivers in reduction of mortality among children and young people. ‘Clean water’ programs, vaccination campaigns or programs such as those adopted in Mexico and Brazil, envisaging financial incentives conditional on regular attendance at health clinics that supply essential health and nutrition services may be important drivers for the decline of under-five mortality. Undernourished children have less resistance to infectious diseases and are more likely to die from illness related to childhood (UN 2013). Thus, supporting nutrition plans has a direct impact on health conditions.

Also, and relatedly, a reduction in child mortality is at the root of the changing distribution of deaths by age, further affecting the composition of the population especially in less-developed countries where this phenomenon has not yet fully unfolded. In the next decades,
deaths will be relatively more frequent at older ages, driving up the average age of the population and increasing the number of elder people.

This reduction can lead in the short and medium term to the emergence of youth bulges in some developing countries, where the decrease of child mortality is associated with persistently high fertility of mothers. Bulges happen before new equilibria are reached, in which fertility will decline as well, reducing thus the relative number of people aged 15-24 (generally considered young adults). Governments can exploit the relative increase of working age population (the so-called demographic dividend) by improving expenses in child and maternal health but also by improving health related infrastructure and education programs.

Maternal deaths also have generally declined in recent years, though the phenomenon still persists in large pockets of the world, especially in Asia and Africa (with India and Nigeria figuring prominently). Access to and provision of fundamental services related to education programs and basic health assistance would sharply reduce the number of maternal deaths. Access to reproductive health services and safe and effective contraception may lower fertility. Seemingly, the provision and availability of hospitals, clinics, health posts, and health centers is the key to family planning programs (UN 2013).

Healthcare improvements associated with major communicable diseases can similarly have deep consequences for age structure. In particular, ARTs will not only reduce child mortality but will also prolong the lives of people with HIV/AIDS. The family structure of the population might also change as well: HIV/AIDS, for instance, contributed to the creation of so-called parentless families, leading to often insurmountable challenges for orphans in several countries in sub-Saharan Africa, beginning with South Africa. Increased access to effective medicines should alleviate the societal costs of high numbers of orphans. Additionally, better care should help in addressing the gender gap in HIV/AIDS that is emerging in Africa, where women are relatively more at risk of contracting this type of diseases than elsewhere in the world.

It has been widely noticed that ageing presents notable challenges for several states (both developed and developing countries) in terms of health care financial sustainability, and will require thorough fiscal and regulatory changes. Still, advancements in fields such as preventive medicine, due, for instance, to a greater ability for early diagnosis and treatment of diseases, or in robotics, associated with improved mobility, have the potential to improve the well-being of the elderly significantly, allowing them to increase their social involvement and postpone the costs that are currently necessary to cover different types of elder care.

Access to healthcare may thus become ever more important in the future, as, especially but not exclusively, in the case of communicable diseases, successful access to therapy plays a large role in explaining differences among different scenarios. Such access, even within developed countries, has been not generalized to the whole population but is quite often associated with some ethnic or religious groups and specific minorities having preferential access (AHRQ 2013).
Urbanization, one of the major demographic shifts that will occur in the next decades, also creates specific challenges. Providing basic health (especially clean water and sanitation) is a relevant problem given the growth in urban population, especially in developing countries. These problems will be heightened in urban areas that are particularly exposed to the risk of natural or man-made disasters.

Health in new urban areas is at risk, especially as large inflows of migrants might lead to the creation or further development of slums. These parts of cities present peculiar challenges, as they have been traditionally associated with deteriorated health conditions and services. Although there is a possibility that the generally improving outlook for child and maternal mortality (highly correlated with the absence of basic hygiene and services) might affect these areas too, there is an increasing need to focus on the diverse effects that urbanization might have in developing countries.

International migration

The relationship between health and migration has been subject to increasing scrutiny in recent decades, both because health might lead to migrations and because of the consequences that migration can have on the receiving and sending countries’ health. As migration is determined by push and pull factors, bad or deteriorating health condition in an area or a country (for instance as a follow-up to natural disasters or conflicts) might create migration flows toward areas that are untouched by the problem.

By the same logic, changing access to healthcare can directly affect migration as well. Improved health conditions, which can be related to technologies that allow telemedicine,
can diminish pressures from migrations due to health crises and more broadly to limited access to basic health services. Of course, improved governance of the health sector, in particular with reference to the early management of health crises plays a role comparable to that of technology in diminishing the incentives to migrate for health-related reasons.

Advancing technology may also decrease the negative impacts of the migration of highly-skilled workers in the health sector. In fact, the migration of doctors and of specialized personnel in the health sector is a key problem in developing countries. Of particular relevance is the significant emigration of doctors and health personnel from small, developing countries such as Angola, Haiti, Liberia, Mozambique, the Republic of Tanzania and Sierra Leone in recent years, which affects the provision of sanitary services, the innovation and adoption of new technologies, and the training of new health personnel. The problem is complicated even further by the fact that doctors and healthcare personnel that remain prefer to work in private hospitals and generally in urban centers, so that rural areas are even more disadvantaged. Ultimately, this has led towards the drafting in 2010 of the WHO Global Code of Practice as a sort of ‘ethic’ guide for countries that want to recruit health personnel.

Migration has also an impact on receiving countries: on the one hand, there is an expansion of the health system (not implemented by all countries, with a notable exception being China) and related economic burden, and on the other, the possible diffusion of new or previously eradicated diseases. From this point of view, providing health care to all categories of migrants (even irregular) remains a fundamental challenge.

**TECHNOLOGY**

Technology is a key driver of societal transformations, economic innovation, and change in the political and military-related fields in the last decades. Key Enabling Technologies (KETs) such as nanotechnology, micro- and nanoelectronics, photonics, advanced materials, and biotechnology are deemed to have a fundamental impact in bringing about “product, goods and services”, and are likely to have relevant impacts in the next two decades. Technological convergence and increased access to technologies also constitute important, and potentially disruptive, factors of change.

**TECHNOLOGY AND DEMOGRAPHY**

Technology does play both direct and indirect roles in shaping demographic dynamics. A major argument is that technology manages to improve life conditions in developing countries, thus affecting well-being, and in turn (indirectly) life expectancy and other major demographic trends, such as fertility. This impact is factored into most economic projections, and the focus here is on other, more direct, consequences of technological change.
**Population Composition, Fertility, and Life Expectancy**

Access to knowledge that can be linked to technological developments, with special reference to advanced access to information and knowledge at all levels of education has a deep impact on demography. The link between education and demography has been the subject of several studies, and recent research has shown that the relation can be interpreted as a causal one where mother’s education level is a key determinant of child’s mortality, apart from affecting several other dimensions, such as health, working conditions, lifestyle, and preferences over the number of children.

Other types of indirect effects include effects of technology on food and water availability. Mechanization and automation of agriculture can have direct benefits in the short run in providing nutrition to growing population. More complex are the implications of biotechnological innovations. The debate on the topic is very hot and far from conclusive. Supporters of the application of biotechnology to agriculture and food processing will lead to a new “green revolution” that will allow countries to overcome problems related to nutrition and its health consequences for growing shares of the world population. A concurrent “blue revolution”, related to the advancements in aquaculture and fish farming might as well address nutritional deficiencies in parts of the world where fish have been largely absent. Partially related are improvements in clean water availability due to the diffusion of sanitation technologies such as biotechnologies (e.g., those related to purification) and hydraulic engineering (such as pumps or water conservation instruments) (Cranfield University et al. 2011).

This is especially true for areas such as India – where a “first” revolution occurred in recent decades, with the introduction of modern agricultural techniques – and sub-Saharan Africa (Hunt and Lipton 2011). In the most extreme case, genetically modified crops (GM) could contribute decisively to end food scarcity and provide dietary regimes that are tailored to the needs (and tastes) of specific population groups.

More conservative views don’t always underestimate the impact of technologies in increasing yield, but often point out the complex governance (and, sometimes, political and ethical) challenges associated with high-yield and (to a greater extent) GM crops. The major problems are related to more technical issues linked to sustainability (for instance, soil protection) and to the allocation of resources if cultivation becomes more profitable (for instance, the phenomenon of land grabbing).

**Urbanization**

With urbanization advancing quickly, new challenges and opportunities emerge. Technological change leading to the development of so-called smart cities (with reference to key network infrastructures) could reach beyond developed urban areas and create more integrated cities. Urbanization is also extracting increasing resources from the countryside, to nourish increasing numbers of people. New technologies related, for instance, to vertical farming might also contribute to making urbanization more sustainable.
Migration

Evolution in technology affects both “push” and “pull” factors in international migrations. The increasing connectedness allowed by physical and virtual networks, and thus the possibility to see what happens beyond traditionally closed borders (be they the borders of a village or a country), might lead to increasing numbers of people trying to escape from poverty and/or conflict in search of what they perceive to be far better living and working conditions.

Fig. 11 – Internet Users by Region, 2000-2013

Source: International Communication Union Data.

Other transformations would have a negative impact on the push to move. On the one hand, innovations in production/manufacturing, due to the advent of technologies such as 3D printing, would change the landscape of industrial geography, possibly leading to further diffusion of areas of production towards less developed countries, thus diminishing incentives for migration. Further development in ICTs and in ICT-related contents (such as the growing online education market) also make possible to acquire knowledge and skills, as well as to sell some specific products and services, without physical movement.

On the other hand, evolution in robotics and sensors might change the tools for controlling migratory fluxes, as it is already happening on some key borders. The combined use of drones and satellites might have the effect of reducing the costs of patrolling vast areas both on land and sea, thus potentially decreasing the chances of illegal migrants crossing previously accessible borders. Seemingly, systems facilitating information sharing would entice coordinated efforts for the tracking of illegal immigration, asylum abusers and “overstayers.”
Three potential sets of trends will mark politics in the coming decades, although all are associated with a high degree of uncertainty. The first considers the nature of actors in international politics, focusing on the changing role of states, the empowerment of non-state actors, and the rising relevance of megacities. The second major trend concerns the power shift that is taking place at the international level, with the emergence of Asia as the new epicenter of economic growth and demographic weight. How rapidly these assets will translate in political and military power, and how peaceful this power transition will be, are the main questions surrounding this process. A third major trend is found in the decreasing level of homogeneity in the international system. Due to the multiplicity of actors involved, the difficulties in the spreading of democratic regimes, and a resurgence of nationalism and religion in the political arena, we expect a more diverse ideological landscape, in which existing norms could be increasingly questioned at both the international and domestic levels.

**Politics and demography**

States and other political actors have always played a role in demographic dynamics, and changes in states’ policies appear as one of the main uncertainties in the assessment of future demographic trends. The control of migration flows is just the most immediate example. But states can also exert an influence on demographic patterns through policy incentives or restrictions aimed at influencing reproductive behavior, and thus the fertility rate of their population. On the other hand, States have been responsible for the overall quality of their healthcare systems, thus affecting reproductive health, life expectancy, and the age structure of societies. Similarly, the way in which political actors promote and interpret different values and norms will have a crucial influence on policy decisions concerning, for example, life-preserving, cloning, and bio- and nano-technologies, which will also affect demographic dynamics, through their effects on medical applications. Beside states policies, other structural variables, such as the level of political instability in a given country or region, and the onset or conclusion of major conflicts, have direct and relevant demographic impacts.

Conversely, it is also evident that demographic trends have fundamental political consequences. Historically, a large population has always been considered to be a crucial asset in terms of potential military power, notwithstanding the increasing role of technology in warfare. Population composition affects not only the availability of manpower or the composition of the labor force but, according to the so called “youth bulge theory”, could also help to explain cases of political instability, such as the Intifada or the Arab Springs. Urbanization is another demographic phenomenon that has profound political consequences, since governments are considered particularly sensitive to the demands of their urban populations, while cities are becoming ever more the centers of economic growth, innovation, wealth, and power.
POPULATION COMPOSITION: MORTALITY, FERTILITY AND LIFE EXPECTANCY

One demographic aspect that has attracted much attention from political analysts in recent years is the relationship between age structure and political violence underpinning the so-called “youth bulge theory”. Indeed there is now a substantial literature showing that youth bulges – a peak in the proportion of youth (15-24), relative to the total population - are positively related to domestic instability, particularly in the form of low-intensity unrest, protest, and rioting (Goldstone et al, 2012). Yet, youth bulges may also increase the risk of more organized forms of violence, such as internal conflicts, which in turn could have a cascade effect outside the country of origin.

However, recent studies caution against overstating the problem with youth bulges, finding that the likelihood of youth-driven conflict can be tempered by the existence of democracy and a good education system (Urdal, 2012). Conversely, particularly because large numbers of young people can drive instability, governments facing a youth bulge are more likely to engage in repressive behavior than other states (Norda, Daveport, 2014).

Overall, the demographic evidence of slowing population growth implies that, in the future, the impact of youth bulges in specific regions, such as Latin America or North Africa, will be lower, contributing to domestic political stability. And yet, all of Sub-Saharan Africa will be characterized by huge youth bulges. Globally, all else equal, there should be fewer civil wars and protests caused by demographic imbalances.

Research on conflict has mainly focused on understanding the initiation, duration, and severity of wars. However, a rapid look at total numbers of deaths and percentages of the total population lost for the countries involved in the most severe conflicts are good reminders of the demographic impacts of conflicts. World War II, the most catastrophic global conflict so far, produced over 50 million losses among combatants and non-combatants, corresponding to an average of 3% of the population for the belligerent countries, and peaks of almost 20% (for Russia). Other recent domestic conflicts, including Rwanda, Angola, Liberia are good examples as well.

Furthermore, the demographic effects of war are not limited to direct battle casualties, and do not stop with the end of the conflict. In effect, several studies show that battle deaths could constitute just a small percentage of the fatalities from war. Data suggest that protracted conflicts in poor countries claim the vast majority of their victims off the battlefield, and are especially dramatic in cases where conflict causes famine, as has occurred in Ethiopia and the Sudan (Gleditsch, N. P., Lacina, B. 2005). More generally, analysts emphasize how the human costs of war also include death due to a surge in one-sided violence, increases in criminal violence, increases in non-organized violence (such as food riots), and increases in nonviolent causes of mortality, such as disease and starvation.

URBANIZATION

Urbanization is another factor related to political instability that has attracted considerable interest within the literature. In a seminal study, Robert Bates (1981) argued that in developing countries, the government is very sensitive to the demands of the urban population, especially those living in the capital, because these people can more easily overcome the
problems of collective action, attack their government, and topple it. Jeremy Wallace (2013) makes a similar argument and shows that authoritarian regimes are less stable where urban populations are larger. Due to the general trend of rapid urbanization in the developing world, and especially in Africa and Asia, we could expect an increase in the capacity of these population to make their voices heard, thus increasing the prospect for further diffusion of democratic regimes.

Other strands of research in this area have emphasized the interaction between urbanization and the age composition of the population. Historically, the coincidence of youth bulges with rapid urbanization, especially in the context of unemployment and poverty, has been an important contributor to political violence (Goldstone, 2002). Youth often constitute a disproportionately large part of rural-to-urban migrants; hence, in the face of large youth cohorts, strong urbanization may be expected to lead to an extraordinary crowding of youth in urban centers, potentially increasing the risk of political violence (Urdal, 2011). In the long run, however, indications seem to be that as urbanization becomes pronounced, urban reproduction rates decline (regardless of ethnicity), thus contributing to a rebalancing of the population.

The lesson one can draw from this research is that increased urbanization in the future portends more near-term political instability, especially in less democratic and poorer societies. Recent empirical studies, however, find that urban disorder is primarily associated with a lack of consistent political institutions, economic shocks, and ongoing civil conflict, more than urbanization per se (Buhaug, H. and Urdal, H. 2013).

**Migration**

The relationship between migration and political instability or conflict has been increasingly addressed considering the impact of the former on the latter. On the one hand, this is in line with a longstanding body of research that suggests that the security externalities of migration movements can indeed impact the course of domestic security (Teitelbaum 1984). On the other hand, however, this approach seems to be inspired by the perception, shared in many wealthy countries, that immigration, in particular of low-skilled and culturally distinct people from poorer countries, constitutes “a problem in need of control”. In this view, immigration undergoes a process of “securitization” and is considered as a real and growing threat to national identity, traditional values, and nation-state strength. Much of this literature however explores the security implications of migration, focusing more broadly on “security”, without fleshing out the conditions that might lead to political instability or “violent conflict”.

Conversely, even if there is still little understanding of the mechanisms at play at the individual level – why, when, and who is likely to migrate during conflicts – evidence consistently shows that conflicts and political instability do indeed affect migration on an aggregate level (Williams, M. and Pradhan, M., 2009). Government terror, dissident violence, civil wars, and international wars within a territory all increase the probability of migration movements. Moore and Shellman (2006), however, suggest that it is government-sponsored violence that has the greatest impact on forced migration. Additionally, the characteristics of surrounding states have an impact on the probability of refugee flight: states that are surrounded by
authoritarian regimes are less likely to produce forced migrants because there is little hope of receiving better treatment there than from the home country.

The relationship between violence and migration appears rather complex, and the causal mechanisms involved are often multifaceted. Bohra-Mishra and Douglas (2011), for example, find that violence has a nonlinear effect on migration, such that low-to-moderate levels of violence reduce the odds of movement, but when violence reaches high levels, the odds of movement increase. On the other hand, some studies demonstrate that refugee flight can cause disputes between states to prevent future refugee flight or to pursue rebels across territorial boundaries (Salehyan 2008).
Chapter III
From Trends to Scenario: Regional Dynamics

The complex international environment in which we live and the uncertainty linked to its development are the primary factors that motivate attempts at forecasting, imagining and even anticipating the future. The more the projection is far into the future, the less the sole analysis of trends is sufficient. The non linear development of certain trends, their interaction with trends in other areas and the possible arise unexpected sudden events, make it impossible to forecast the long-term future with the analysis of trends. For this reason it is important to combine the analysis of trends, with an effort of imagination and speculate on the possible alternative futures that might arise. The most accredited method to do this type of foresight is Scenario-building. A scenario is a narrative description of potential futures focusing attention on the relationship between events and decision points. It does not involve the prediction of ‘the most likely future,’ but the development of a range of strategies that may be useful in a variety of different circumstances. It should be plausible and consistent, challenging for the organization that has commissioned it, and be useful for decision-making (must stand up to critical examination). It poses attention to driving forces and confrontation among possible evolution paths. It is usually the case that more extremes scenarios are selected so to speculate on what would the world look like in extreme circumstances. This allows practitioners to discuss and analyse the implications of these extreme futures, and to evaluate how to get ready to otherwise-unthinkable future environments.

For NATO, foresight seems especially useful now, as the Alliance is rethinking its role in the world, its missions and its possible actions. Indeed, previous Allied Command Transformation (ACT) foresight exercises have demonstrated the usefulness of the method. It is primarily because the future is so difficult to predict that we can hope to affect it today by understanding its possible evolution.

The building of scenarios for the PREDICT project has proceeded along standard phases, adapted to the specificities of this project. Thus, a first phase has seen the provision of relevant trends in demographics and other dimensions as emerged from the desk research undertaken by the University of Bologna team.
Following this, participants at the first workshop – held in Warwick in June 2014 – were divided into regional groups according to their geographical and disciplinary expertise so that each group had at least one demographer, and a balanced composition among other fields. Groups were assigned tasks in sequence according to which they were required to identify focal issue; to provide a list of key factors in local environment and driving factors in the macro-environment; to classify key forces and drivers; to select scenario logics; to construct scenarios, to write and read a story about them. For each geographical area of interest – Middle East and North Africa (MENA), Sub-Saharan Africa, Asia, Europe, Russia & Post-Soviet States – two more extreme scenarios were presented, one on the positive (where possible) and one on the negative, taking particularly into account the role of demographic variables as well as the consequences of the scenarios on demographic trends.

Finally, the evaluation of the security implications connected to each scenario and the assessment of the challenges that these implications represent for NATO was undertaken in another interactive workshop held at the Bruno Kessler Foundation in Trento in November 2014.

What follows summarizes the results of the entire exercise.
Main Demographic Trend: Urbanization

In the 25 years between 2010 and 2035, the level of urbanization in Asia will increase from the current 44% to more than 58%. Although still trailing behind the MENA region, such a steady increase in urbanization means that, by 2035, over 850 million more people in Asia will live in cities rather than rural environments.

Within Asia, the largest increases in relative terms are expected in Laos and in China; in the latter, the urban population will grow from 56% in 2013 to 73% in 2035. India’s urban population is also expected to increase, from today’s 33% to an expected 46%. In these two countries alone, the urban population is estimated to grow by around 290 million; taken together, India and China will account for 67% of the total increase in urban population in Asia between 2010 and 2035.
OTHER DEMOGRAPHIC TRENDS

- Total population in the region is expected to increase by 16% over the next two decades, with the biggest increase by far being recorded by India (+273 million inhabitants), and China, Pakistan and Indonesia (each increasing by more than 50 million people) trailing far behind. Thus, over the next two decades, India is expected to overtake China as the most populous country in the world.

- In relative terms, the biggest increases are expected in Afghanistan (+55%), the Philippines, and Laos (+38%), while Thailand is expected to register zero growth in the next 20 years.

- Fertility rates diverge widely in the region, with some countries still estimated at five or more children-per-woman in 2010 (Timor-Leste), while others lie significantly below replacement levels (Singapore and South Korea are estimated at 1.3 children-per-woman, Thailand at 1.4, and China is below 1.7). During the next two decades, differences are expected to narrow, and 18 out of 23 countries will experience below-replacement fertility rates.

- Life expectancy is foreseen to increase from 71 to 75 years in twenty years. Interestingly, differences between China and India will continue to narrow. In 1990, life expectancy in China was 70 years, while in India, it was 59 years. By 2035, life expectancy in the two countries will be 79 and 71 years, respectively.

- Asian countries will consistently experience net emigration. Emigration will mostly affect Bangladesh, Sri Lanka, Nepal, and Laos. On the opposite end, some advanced or resource-rich countries (South Korea, Singapore, Malaysia, and Thailand) will continue to experience net inflows of migrants.

DRIVERS OF CHANGE

Demographic changes will not happen in a vacuum, but rather will affect – and in turn be affected by–trends in other dimensions. In this regard, by 2035, several dynamics are expected to affect the region in a significant manner.

- Water supply: Resources, and primarily drinkable water can become scarce and contested. Water scarcity is already affecting vast parts of India and China, who have per capita consumptions of clean water inferior to much less developed states in Sub-Saharan Africa. In China, five provinces – including Shanghai, Beijing and Tianjin – already suffer from absolute water scarcity (less than 500 m³ per year). In India, 22 out of 32 major cities have to deal with daily shortages, with a gap between demand and supply that can reach 70%. The crisis is acute in Kanpur, Asansol, Dhanbad, Meerut, Faridabad, Visakhapatnam, Madurai and Hyderabad — where supply fails to meet almost 30% of the demand. Demographic growth is likely to worsen this dynamic, turning it into a severe political, social and economic problem.

- Environmental sustainability: Demographic growth will have major consequences on the environment. China, India and the other newly industrialized countries in the region are contributing to an increasingly large proportion of carbon dioxide emissions and to other
forms of environmental pollution. Two different dynamics are likely to make this problem more severe in the next two decades: total population growth and the expansion of the middle class. Economic development in the region is making basic consumer goods, such as cars and household appliances, available for a larger percentage of the population. This will worsen the impact on the environment. The rise of the middle class in Asia is also likely to have negative environmental impact as it reinforces another fundamental trend in the region, the process of urbanization. Climate change can also present a severe security challenge because, among other consequences, it is responsible for the rise of sea and rivers water levels. In this regard, the issue appears to be particularly challenging in South and South East Asia, where great part of the population lives either near the sea or a river, and projections of sea-level rise are generally 10-15% higher than the global mean.

- Urbanization challenges: Aside from the environmental impact, urbanization stemming from economic development and demographic growth might generate another relevant problem: newly urbanized citizens can experience unemployment, social and economic exclusion, and low living standards. In particular, those who do not have adequate education levels could in fact find it difficult to find access to a stable job within an economic system that is increasingly turning from a labor-intensive to capital-intensive form of production. A similar problem already affects China and India. In China, local authorities have tried to prevent this issue by preserving the hokou (the household registration system) but they face increasing pressure to lift it.

- Gender imbalance: Although no consensus exists in the scientific community about the full extent of its consequences, gender imbalance could become another relevant demographic issue in the region. This issue appears particularly pressing in China, where the “One Child Policy” led families, especially in the countryside, to practice selective abortions.

- Nationalism: The political landscape of the region is likely to be marked by various forms of nationalism. Many governments are likely to use nationalism as a political tool aimed at reinforcing their legitimacy, particularly in the case of slow economic growth. The government in China---as well as those in Vietnam and India---might increasingly resort to nationalistic and occasionally xenophobic discourses to preserve its legitimacy, especially among those who suffer from unemployment, inequality and environmental degradation. Nationalism, however, is not only related to the uneven and turbulent growth that newly-developed countries have been experiencing in recent years. Developed countries, such as South Korea and Japan are also becoming more nationalistic, appearing far from achieving a shared vision of their memories and their past. This trend is likely to have a negative effect on the existing conflicts, given competing security and economic interests.

- The creation of a new Silk Road: The creation of a “new Silk Road” connecting China and Europe, going through Central Asia, is likely to be an important development for the next two decades. This would increase Central Asia’s strategic relevance. Moreover, this would increase the interconnectedness of Europe and the Asia-Pacific Region. As a consequence, China is likely to change its approach to foreign policy, currently based on the principle of non-interference. This change is likely to be driven by demographic concerns, among other factors. Chinese nationals are increasingly present in neighboring countries, such as
Russia, Mongolia and Central Asian States. Moreover, economic exchanges and trade - as well as the opportunity to mitigate potential gender imbalances at home - will lead more Chinese nationals to settle in Africa and the Middle East. As a result, China might steer away from its current strategy, developing a more interventionist foreign policy.

**Regional Scenarios**

The analysis of the interplay between demographic trends and the aforementioned key drivers of change enabled the development of two distinct scenarios for the future economic and political development of the Asia Pacific region. The first scenario, labelled “Asia governing its future,” describes a region that not only succeeded in adapting its development models to a more sustainable pattern, but also witnessed the creation of dispute-settlement mechanisms. The second scenario, labelled “A (not) so stable trajectory,” imagines a region that has been largely incapable of addressing current challenges, and that finds itself divided and tested by economic difficulties.

### Scenario 1: Asia Governing Its Future

<table>
<thead>
<tr>
<th>Reform in China and India (economic, political, demographic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>More sustainable development (less inequality, reduced environmental impact)</td>
</tr>
<tr>
<td>Mechanism to solve differences. Functional and institutionalized governance and dispute-settlement mechanism</td>
</tr>
<tr>
<td>ASEAN solid, coherent and engaging others</td>
</tr>
</tbody>
</table>

The first scenario for 2035 is based on three main preconditions: successful political reform in China and India; the spread of more sustainable paths to development; and increasing levels of institutionalization in the field of governance and conflict resolution.

Political, social and economic reform, particularly in China and India are the keys to a more stable Asia-Pacific region in the next two decades. Both countries are affected, in different ways, by problems related to uneven growth, rising inequality, environmental degradation, and severe shortage of resources such as clean water. Moreover, both countries are developing their middle classes, which are likely to grow increasingly economically and politically demanding. As a consequence, the Indian and Chinese governments will need to face increasing pressure for reforms aimed at increasing inclusion, participation, accountability and sustainability. Additionally, China could suffer severe setbacks if the legitimacy of the government, largely determined by
economic growth, decreases. Consequently, the Chinese government will likely be compelled to increase transparency, inclusion and accountability.

In this scenario, all of the main actors of the region are able to develop a more sustainable model of development. For the region, this means the ability to face the issues of inequality, access to education, access to resources and environmental degradation.

The enhancement of the current level of institutionalization is another relevant improvement for the stability of the region. The main actors in the region are able to create an inclusive mechanism of conflict resolution, capable of addressing the most pressing security issues (such as maritime and territorial disputes). Moreover, they are able to achieve increasingly sophisticated forms of regional governance in the political, financial and commercial realms. These new institutionalized mechanisms would be based on the centrality of ASEAN, which would constitute the core of new, institutionalized schemes based on the “ASEAN+n” formula.

### Scenario 2: A (not so) Stable Trajectory

| Economic and demographic malaise in China |
| India expanding in an uneven fashion |
| Entire region affected by possible slowdown of economic engines of the region, mainly China |
| ASEAN politically divided, giving China significant leverage |

### A (not so) Stable Trajectory

This scenario is marked by a failure to address existing economic, political and social challenges. The trigger for the development of a scenario of this kind might be economic malaise in China. Such an occurrence could be brought about by a physiological slowdown in the current levels of economic growth and by the persistence, or the worsening, of current problems (such as pollution, social inequality and contested access to resources).

This might lead the Chinese government to become even more nationalistic. The PCC, in order to maintain its grip on power may try to channel popular resentment towards external “enemies,” such as the United States or Japan.

Another possible consequence of an economic slowdown, or even an economic slump, might be domestic turmoil and political instability within China. The potential spill-overs of this instability could affect the entire region and have negative economic consequences on a global scale.
South East Asia would be particularly affected since the economic growth of ASEAN states remains largely dependent on their integration with China.

In South Asia, India will continue to grow in an uneven fashion, creating several challenges. Vertically, the Indian society would become increasingly unequal, in terms of access to resources and education. Horizontally, different regions could reach very different levels of development. This would have negative political and social spillovers not just for the Indian government but for the entire region. Demographic pressure in India and the rest of South Asia is likely to worsen this problem considerably.

In this scenario, ASEAN cannot act as a hub for a process of institutionalization involving governance and dispute resolution. On the contrary, with its members facing economic malaise, ASEAN would become increasingly weak and divided. This would have considerable political and strategic consequences. China could approach single states bilaterally to preserve political leverage and exploit its major relative power.

Security Challenges

Each scenario brings with it different security challenges. In the optimistic scenario, experts foresee just one major challenge, which will likely determine future power relationships between China and the US. In the pessimistic scenario, there is a broader range of both traditional and non-traditional challenges to security. It is worth noting that this last scenario assumes that Asian major powers will also have to face environmental issues, which they are able to manage, through sustainable development, in the more positive scenario.

### Scenario 1: Asia Governing Its Future

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Nature</th>
<th>Actors involved</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A new type of great power relations</td>
<td>Comprehensive</td>
<td>US, China</td>
<td>A strategic bargain</td>
</tr>
</tbody>
</table>

One of the main preconditions for the realization of the first scenario is the achievement of a “great strategic bargain” between the United States and China. This bargain, defined a “new type of great power relations”, will limit and regulate the areas of competition between Washington and Beijing. The two would be able to agree on the principles and the rules on which they can establish mutual trust, settle their disputes and regulate their interactions. The main issues involved might include an agreement on principles and rules governing territorial disputes, the use of force, and interventions in other states’ sovereignty, and rules of economic integrations.

It must be emphasized that while this might entail a noticeable progress for the region, it would not be necessarily in the best interests of NATO and the West more in general. This agreement would recognize a new Chinese centrality, and a decline of the Western (American and European) power to settle the agenda and impose its priorities.
** Scenario 2: A (not so) stable trajectory **

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Nature</th>
<th>Actors involved</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition for resources</td>
<td>Non traditional</td>
<td>China, Japan, Korea, Australia, Russia, India</td>
<td>Assured access to SLOCs Conflict resolution mechanisms</td>
</tr>
<tr>
<td>Environmental</td>
<td>Comprehensive, non-traditional</td>
<td>Everyone, especially India, China and other big polluters</td>
<td>Institutionalized forum for cooperation</td>
</tr>
<tr>
<td>North Korea</td>
<td>Traditional</td>
<td>US, Japan, China, Russia, South Korea</td>
<td>Deterrence Diplomatic engagement</td>
</tr>
<tr>
<td>Territorial disputes</td>
<td>Traditional</td>
<td>China, India, Japan, ASEAN</td>
<td>Consultation Diplomatic engagement Dispute-settlement mechanisms</td>
</tr>
</tbody>
</table>

The second scenario would present a different and wider set of security challenges, ranging from traditional to non-traditional to comprehensive issues. Competition for resources and environmental degradation represent the most pressing, non-traditional or comprehensive challenges. They affect all major actors in the region, especially those having a significant environmental impact due to their demographic weight, such as India and China. Both challenges could be faced by putting into place forms of institutionalized cooperation to enhance policy coordination and develop trust among most relevant actors. The problem of access to resources can be dealt with by promoting a conflict resolution mechanism and improving security of sea lines of communication.

Territorial and maritime disputes and proliferation of nuclear weapons are likely to be the most relevant traditional security challenges. The first primarily involves the relationship between China and its neighbors (India, Vietnam, Philippines, Malaya and Japan), but it also concerns Japan, who has disputes with China, South Korea, and Russia. These disputes should be addressed with a mix of military deterrence and diplomacy. Nuclear proliferation appears to be another relevant security threat. North Korea and Pakistan appear to be the most problematic cases for different reasons. Pakistan might suffer from a decline in control over what happens within its territory; the North Korean regime, although subject to rational incentives, has demonstrated itself inclined to threaten its neighbors even with its WMDs. These problems should be dealt with through diplomatic and military means. Although they must be considered urgent causes for concern, neither territorial disputes nor the North Korea threat are likely to lead to a major role for the Alliance.

It must be noted that the disruption of the rule of law in the region could represent the starting point for a process of degradation affecting the respect accorded to sovereignty and the rule of law on a global scale. This would represent significant damage to the current rule-based global order.
**SCENARIO 1: ASIA GOVERNING ITS FUTURE**

<table>
<thead>
<tr>
<th>Challenge</th>
<th>NATO Role</th>
<th>Needed Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>A new type of great power relations</td>
<td>Not direct (burden-sharing); increased in other regions</td>
<td>More effective burden sharing mechanisms within NATO</td>
</tr>
</tbody>
</table>

The possible development of a new set of great power relations between China and the United States, or short of this agreement, a progressive shift of the American priorities toward the Asia-Pacific region would have relevant, albeit indirect consequences for NATO. The European members of the alliance would need to compensate the fact that Washington would move resources away from the European theater. This can be done in either of two ways. The first option would involve increasing national military budgets. This appears unlikely in the current and near-future political climates, and given the foreseen effect of demographic trends. A second viable alternative is achieving more integration in terms of defense at the EU level. As a consequence, NATO should put into place procedures to cooperate more efficiently with the EU, aimed at reaching a more balanced burden sharing and increasing interoperability and integration.

**SCENARIO 2: A (NOT SO) STABLE TRAJECTORY**

<table>
<thead>
<tr>
<th>Challenge</th>
<th>NATO Role</th>
<th>Needed Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition for resources</td>
<td>Possible presence in Central Asia and neighboring regions</td>
<td>Political and military will to project influence</td>
</tr>
<tr>
<td>Environmental</td>
<td>Disaster relief</td>
<td>Maintain and strengthen disaster relief capabilities</td>
</tr>
<tr>
<td>North Korea</td>
<td>Stabilization in case of meltdown</td>
<td>Contingency plans to cope with a possible melt down</td>
</tr>
<tr>
<td>Territorial disputes</td>
<td>Burden sharing in Europe and neighborhood</td>
<td>More European or EU capabilities</td>
</tr>
</tbody>
</table>

Competition over resources could lead to a possible NATO role under two main circumstances. First, NATO could be asked to patrol and secure sea lines of communication (SLOCs), and prevent their disruption. Alternatively, NATO could be tasked to intervene in Central Asia with the aim of securing access to resources and protecting communications along the new Silk Road. In order to do so, NATO will need to overcome possible political opposition in the aftermath of the intervention and its decade-long presence in Afghanistan. Moreover, NATO should enhance its capabilities and procedure to do so.

In case of large scale disruptions of rule of law and sovereignty due to territorial and maritime disputes, the United States would probably increasingly focus its attention on the region. As a consequence, NATO should deal with the necessity for the European flank of the
alliance to be more autonomous. This is likely to lead the EU to achieve increasing levels of integration in the realm of security and defense. NATO would need to improve present levels of cooperation with the EU and develop procedures to do so.

Still, NATO might be forced to become involved in the region if WMD-armed states face a major decline in the capacity to control over their territory and turn into failed states. NATO could be asked to cope with a possible meltdown. As a consequence, it is recommendable to prepare contingency planning aimed at fulfilling this task. In order to be prepared for this possibility, NATO should make its presence acceptable to countries that tend to refuse its presence in their territory and the surrounding areas.

Another main recommendation for NATO is to develop the capacities and procedures aimed at disaster relief operations. As Operation Tomodachi demonstrated, joint disaster relief operations, combined with humanitarian efforts can require major political efforts.

Finally, it is recommended that NATO enhance its knowledge and research capacity with respect to the region. At the moment, NATO does not have an autonomous body of experts able to provide in-depth knowledge and analysis of the political, economic, and social dynamics affecting the region. Acquiring this research and analytical capacity would greatly enhance NATO’s effectiveness in the region. This would be especially beneficial to small members of the alliance who cannot afford to do so independently.

**Recommendations For NATO**

In order to face future challenges, NATO should:

Share the burden in case of military intervention. Asian countries tend to refuse NATO presence in their territories and, in order to be accepted as a relevant actor, European NATO members should achieve a higher level of integration in the realm of security and defense. NATO itself would need to improve current levels of cooperation with the EU. This applies to both scenarios.

Develop political will to intervene in case of disruption of SLOCs (New Silk Road in particular). Indeed, as a result of competition over resources, SLOCs may be disrupted by both state and non-state actors. In this case, NATO could be asked to secure the access to resources and protect communications along the new Silk Road, and should develop procedures to do so.

Increase its level of knowledge and research capacity on the region. Acquiring this research and analytical capacity would greatly enhance not only NATO’s effectiveness in military operations, but also its level of acceptance in the Asia Pacific Region.
Main demographic trend: Ageing

Europe’s population is already the oldest in the world, and is expected to remain so for at least the next twenty years, as life expectancy at birth will shift from 74 years in the early 1990s to more than 83 years in 2035. By that time, the world’s overall average life expectancy will still be less than 72 years: a significant improvement over the 60 years in 1990, but still far from European averages. The pace at which Europeans’ life expectancy is estimated to increase, however, will be somewhat less astounding than the recent past, as citizens born in European countries have witnessed their life expectancy increase by 3 months per year in the last two decades, and this speed should decrease to 1.9 months per year in the next two decades.

Because of this expected increase in life expectancy, however, problems will ensue. First of all, by 2035 the old-age dependency ratio will boom to 43.5, by far the highest in the world, and will almost double that of the second-‘oldest’ region (Post-Soviet States, with a level of 24.1). This means that 30% of Europe’s population is expected to be at least 65 years old by then, putting even further strain on European countries’ welfare states (both in terms of healthcare and pension systems). Within Europe, the biggest differences in life expectancy in 1990 could be observed between the Western bloc and countries belonging to the Warsaw pact and Yugoslavia. As most of these countries have made major strides toward catching up,
up with the rest of the continent in the last two decades, variance in life expectancy among European countries has constantly diminished during this period. However, in the next decades some countries are not expected to keep pace with the rest: by 2035, for example, citizens in Bulgaria, Romania, Latvia and Lithuania are all expected to have a life expectancy of 77 years or less (i.e., 7 years less than the European average).

**Other demographic trends**

- In terms of total population numbers, by 2035, the largest gains will accrue to Turkey (+15 million), the United Kingdom (+6.7), and France (+6.2). On the other hand, Germany will lose almost 5 million inhabitants, while Romania and Poland will lose 2 and 1.5 million respectively. In relative terms (excluding countries with fewer than 1 million inhabitants), Switzerland’s population is expected to grow by 22%, while countries expected to grow around 19-20% include Iceland, Ireland, Norway, and Turkey. The biggest losers in terms of share of inhabitants are expected to be Bulgaria (-18%), Serbia (-13%), and Latvia (-12%).

- Fertility in European countries is expected to recover slightly from the global low of 1.66 children per woman, estimated in 2010, but will only increase to 1.8 children per woman by 2035 (i.e., below the natural replacement level of 2.1 children per woman). Countries currently exhibiting very low fertility rates, such as Bosnia, Portugal, Malta, Serbia and Slovakia (all below 1.4 children per woman) are expected to recover more rapidly than countries already at ‘higher’ levels. An important exception is Turkey, which in 1990, was a very fast-growing nation (fertility levels were estimated at 2.9 children per woman). Turkey’s fertility rate declined rapidly to 2.05 by 2010, and is now expected to continue to drop below replacement levels, reaching 1.77 children per woman by 2035. However, because of ‘population inertia,’ Turkey’s total population is still expected to increase from 75 million in 2013 to just below 90 million by 2035.

- Europe is a net receiver of migrants, and it is expected to remain so in the decades to come. In 2013, Europe’s population increased by 1.1 million because of this surplus in immigrants compared to emigrants. This trend is expected to reduce only slightly in the next 20 years: by 2035, it is expected that Europe’s population will be increasing by 800,000 people per year due to net migration. This means that immigrants are expected to contribute 75% of the 24.2 million more people that Europe will host between 2013 and 2035. Without immigration, Europe’s population would increase by just 1% by the end of 2035 – and, excluding Turkey, Europe’s population would actually shrink by 8 million people, a 1.5% decline.
• Reordering of the EU/Europe. Changes in the EU architecture are considered likely and their impact significant; options range from an enlarged EU of 35/40 Members States including the European peripheries (CEEC; Balkans, Turkey), to a 2/3 EU limited to funding and “core” members (“Brexit plus”) and variable groupings. Were the EU to divide, its population would significantly shrink, with implications for overall competitiveness and economic sustainability. The direction that Turkey goes is unpredictable but very relevant for the destiny of Europe: due to its relatively higher fertility and expected increase in population, the country would exert significant influence on the future shape of Europe. According to the EU’s architecture, demographic trends in Europe will largely vary across states: Western states will be those ageing the most, and fertility trends will follow a nearly identical pattern to the current one.

• Ageing population and socio-economic development. Europe’s capacity to return to high employment levels and to maintain/strengthen social security nets is considered essential to ensuring strong social cohesion and overcoming tensions linked to growing inequalities, extreme job competition, cultural diversity and factionalism. Hence, it is fundamental to see how ageing will be addressed by political actors, so that it does not overburden states’ welfare systems and prevent economic growth in the future. It is also important to see how Europe is able to absorb and integrate future migration, taking into account the fact that, due to demographic decline in the East, it will probably be mainly an immigration from the South. For this reason, the youth bulge in Sub-Saharan Africa and its possible development (the possibility of absorption by local markets, political instability, and wars) is particularly relevant.

• Technological edge. Europe’s role in technology and innovation is critical for its economic development. However, the increase in European spending on R&D, the development of a European digital market and the strengthening of EU cyber security all require a significant increase of intra-European scientific and technological cooperation and the pooling of public and private resources. For this to occur, it is necessary that states recover from the doldrums of the economic recession, strike a balance between welfare and technology needs and attract human capital to speed up technological innovation.

• Europe’s energy dependence is considered a major weakness, affecting both its security and political autonomy. Technological advancements, the diffusion of renewable resources and improved energy efficiency are all considered promising developments to reduce European energy insecurity, albeit to a limited degree. Largely connected with EU energy dependence, developments with regard to the Russian leadership and its political system, as well as its relationship with the EU/western Europe, is a fundamental element for the future of the region. In this view a declining and weakening Russia (in demographic and economic terms) can be considered as dangerous as a strong and assertive one.

• Economic opportunities, relations with emerging economies and migration. While in the middle of an economic recession that would last for some time, it is fundamental to see how economic relations will develop both with China and the US. Seemingly, the possible opening of the Arctic routes would deeply impact economic developments in a positive way. Ultimately this would depend on the ability of Europe to re-propose an image of itself as a promising and competitive market, able to keep up the pace with emerging
and ‘young economies.’ This, in turn would imply reshaping its own working market, and attracting not only skilled migrants, but also those migrants needed for basic jobs. Accordingly, policies to improve the movement of people will also be fundamental.

- Transatlantic partnership: Western relative decline? The transatlantic partnership is crucial for both regions but, notwithstanding initiatives such as the Transatlantic trade and investment partnership (TTIP), the prevalent perception is one of weakening ties. Specific worries concern the sustainability of the western economic model, the level of popular support for NATO, and the level of political investment by the leadership both in the US and in Europe. Additionally, demographic trends in the United States are expected to diverge significantly from those of Europe, with fertility and migration in the latter continuing to be strong in the future. Hence, the US population will be younger than that of Europe. In this scenario, the international liberal order will be under fire, both because of internal (demographic decline in Europe, loss of competiveness, rise of right-wing parties due to increasing immigration flows) and external dynamics (rise of or connectedness with emerging or reinvigorated actors not abiding by the Western ‘standards’ and challenging Western norms).

**REGIONAL SCENARIOS**

The analysis of the interplay between demographic trends and the aforementioned key drivers of change enabled the development of two distinct scenarios for the future economic and political development of Europe. The first scenario, labelled “Unity in diversity” describes a region that not only succeeded in overcoming the economic crisis, but one with strengthened and enlarged institutions, good relations with its neighbors and a rising population. The second scenario, called “Fragmented Europe,” is much more gloomy and depicts a decadent Europe, internally fragmented, with tense relations with its neighbors and a dramatic problem of declining population.

### SCENARIO 1: UNITY IN DIVERSITY

| Reformed EU at 35 actors (Balkans plus Turkey). |
| EU becomes a more powerful and active global actor, engaging positively with its neighbors and having common policies to deal with challenges |
| Rising population with differences among countries. Decreasing social inequality, rising inclusion. Ability to maintain a liberal and free internet |
| Energy : more efficiency, diversification |
| Constructive economic relation with China, competitive and advanced economy and agreement on TTIP |
| Opening of Artic routes. Tension with other parts of the world→ implications on multilateralism |
**UNITY IN DIVERSITY**

In 2035, the EU has managed to enlarge to 35 members, encompassing the Balkans and Turkey, making it a much more heavily-populated collective actor. It has enlarged its working market possibility and it engages positively with its neighbors, especially Russia, with whom energy relations are more balanced. Furthermore, the EU has succeeded in diversifying its energy providers and to manage its energy resources much more efficiently. Reinvigorated by an increased population (although differently distributed among states) and by important restructuring of its institutions and working market, the EU has become more competitive, thanks in part to its capacity to attract skilled migrants. It has also been able to build constructive relations with China and it has successfully signed the TTIP agreement with the United States. The opening of the Arctic routes has further contributed to its economic recovery and has increased tourism opportunities. The EU has deepened its integration as Member States have grown confident of a rosy future. For this reason, it has been able to forge a common position to face common challenges. The EU has struggled and been able to increase social inclusion, mitigating the growing inequalities brought about by a more multicultural population. At the same time, it has succeeded in maintaining a free internet, as one of the fundamental tenets of the liberal model. Indeed, its buoyant economy and its increased population have set the conditions for a more ‘interventionist’ role and more active attitude in global affairs. While this has been welcome by a relevant group of actors, wary of US dominance, it has also multiplied clashes with actors opposed to the ‘liberal’ model and proposing their own recipe for order and prosperity.

In this scenario, ageing is still an issue but has been partly mitigated by the increase in population, especially from Turkey. The outstanding economic performance has had multiple effects on migration flows: it has increased flows within Europe and also between the enlarged EU and the US; it has attracted highly skilled migrants and those people escaping poor economic conditions in their countries of residence. In this scenario, Europe is more multicultural. As social inclusion improves, thanks to better economic conditions and the emphasis on the ‘EU welfare system,’ life expectancy increases and mortality decreases. Fertility does not change to a great extent. Hence, thanks to robust migration, the inclusion of other states and the decline in mortality, the population of Europe increases more than envisaged by official projections. A renewed and vibrant economy is behind these trends, propped up by the TTIP and the opening of the Arctic routes.
SCENARIO 2: FRAGMENTED EUROPE

Elements of disintegration of Europe, Euro stress, core/periphery divide. Possible border changes and fragmentation of some states. Relative population decline and/or in human capital

Increase in organized crime and corruption. Tensions with the neighbors, particularly over energy with Russia and over illegal migration with Mena. Failure of TTIP

Poor economic performance and less innovation

Increasing intra-state social cleavages

Fortress Europe mindset

Increasing energy dependence from unreliable countries

FRAGMENTED EUROPE

In 2035, the EU finds itself in dire straits. Several divisive elements have popped up, undermining the role of the EU as a single actor in the international landscape. Accordingly, the EU has split between a core (the EURO zone) and a periphery, increasingly characterized by centrifugal forces. Never-resolved issues, especially of an ethnic nature, have increased in relevance and create challenges to the shapes of states’ borders. As a result of the shrinking population and an economy that has not been able to recover in the face of newly-emerging actors, the EU has lost most of its attractiveness both in the external world and among its Member States and citizens. The Member States have grown increasingly wary of further integration, and the lack of coordination has contributed to - and possibly even favors - the spillover of organized crime and corruption. A weakened EU has worse relations with its neighbors: as Member States fail to agree on common policies, the Union remains the hostage of an increasingly revisionist Russia. Poor economic performance has doomed the TTIP agreement to failure, further watering down the possibility of economic recovery. China has lost interest in the EU, directing its FDIs to other regions of the globe. Social inequalities - deepened by the core/periphery divide and by the poor economic performance - have increased and further undermined the union, while the welfare system is significantly strained. With a shrinking and ever-ageing population, not compensated by ‘new energies’ because of the loss of attractiveness, and largely-reduced economic power, the EU is neither willing nor able to take an active role in global affairs, and budgets for defense have diminished. Instead, a ‘fortress mindset’ has developed, favoring restrictive migration policies toward a MENA region that has remained fairly troubled.

Given multiple elements of disintegration, borders may well be questioned and even changed, raising cultural and ethnic issues, possibly erupting in displacements. In this case, the poor economic performance plays a highly disruptive role: it leads to less highly-skilled migration and internal mobility, lower life expectancy and an increase in mortality. Given that fertility is not expected to change, the overall population decreases and ageing has a deep impact on the welfare systems and on the propensity
to assume a more ‘interventionist’ role in global affairs. Europe develops a Fortress mentality with an impact on migration policies that turn more restrictive; and yet, the instability of the MENA region keeps the flows of illegal migrants constant and even increasing, posing further problems to European social and integrative capabilities.

**SECURITY CHALLENGES**

Although the ‘rosy’ scenario looks to be the best of possible worlds, a more careful look reveals a series of major security implications for Europe. Overall, both scenarios entail a challenge to the international liberal order as we know it. In the first case, the challenge would be represented by a regained hegemony over the West, which creates tensions with an ever-more-marginalized rest of the world; in the second case, the challenge would be directly to the permanence of an international liberal order that has always been promoted and supported not only by the US but by a strong transatlantic partnership.

Each scenario was considered in detail as for the nature of the challenge posed, the actors involved and the required response. We consider each of them in turn:

<table>
<thead>
<tr>
<th><strong>SCENARIO 1: UNITY IN DIVERSITY</strong></th>
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<tbody>
<tr>
<td><strong>Challenge</strong></td>
</tr>
<tr>
<td>Enlarged and deepened EU</td>
</tr>
<tr>
<td>Success of the TTIP</td>
</tr>
<tr>
<td>Opening of the Arctic</td>
</tr>
<tr>
<td>Free internet</td>
</tr>
<tr>
<td>Social inclusion</td>
</tr>
<tr>
<td>EU becomes an active international actor</td>
</tr>
</tbody>
</table>
As evidenced, an enlarged EU of 35 states, which absorbs both Turkey and the Balkans, would not be immune to potential security challenges. Few of the possible threats would be conventional (regarding territorial issues or being of a military nature), while most would regard the EU’s capability to act and implement decisions in an enlarged format, as well as the capability to maintain its own normative standards and its ‘way of life’ (hence, they will have a cognitive nature). These challenges would be of an economic/budgetary and political nature. As the EU enlarges, challenges of coordination among the Member States and policy implementation arise. The more it enlarges, the more likely it is to be a proactive actor in an international landscape characterized by rampant and young states not eager to accept the liberal multilateral norms and standards. This might have a positive effect on transatlantic relations and NATO cohesion, but could also have a disruptive effect with centripetal tendencies toward the re-launch of a European defense that is independent from the US and NATO. Even in the case of a more cohesive Transatlantic alliance, tensions with the non-Western world would rise. The latter would oppose the liberal norms and values proposed by the newly hegemonic West, working for the affirmation of a world order alternative to the liberal one. A free internet may be the first victim of this contestation. Moreover, the costs of a more active role for Europe would add to those of a welfare system that aims to be as inclusive as possible (and thus, also costly).

Finally, the more it enlarges and expands its activities, the more the EU is likely to internalize security issues and unresolved disputes from the new Member States. New challenges might appear, such as the effect of a navigable Arctic (highly plausibly by 2035) and the need to cope with the rights and interests of the indigenous populations that may see their normal life deeply disrupted. The TTIP might be more controversial than expected: an improved economic scenario would encounter opposition from other actors (the excluded ones), while the EU would undermine some of its ‘core’ values related to food quality etc. which could generate internal social and political tension. Moreover, with the rising immigration, Europe is also going to face a more multicultural society, which might imply a redefinition of the internal political debate and Europe’s main interests in foreign policy. Finally, the inevitable aging of Europe’s population will only be partially compensated by a demographic rise, however different in different parts of Europe.

### Scenario 2: Fragmented Europe

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Nature</th>
<th>Actors involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elements of disintegration; porous borders/borders changes</td>
<td>Military; Societal</td>
<td>EU; Member States; Neighbors; non-state actors</td>
</tr>
<tr>
<td>Tensions with Neighbors</td>
<td>Military; Cultural; Operational</td>
<td>EU; Member states; other actors; citizens</td>
</tr>
<tr>
<td>TTIP failure</td>
<td>Cognitive; Economic</td>
<td>EU; US</td>
</tr>
<tr>
<td>Irrelevance of Europe on the world stage</td>
<td>Cognitive; Political; Military; Economic</td>
<td>Europe; Citizens; US; Periphery</td>
</tr>
</tbody>
</table>
In the gloomy scenario, security challenges are much more self-evident. Again, their nature would be economic, political, cognitive, and only partially conventional. A fragmented Europe would be characterized by both internal and external challenges. Internally, the EU would have to cope with possible border changes, rising tensions among the core and a periphery and with a diminished capability to coordinate policies to face common challenges. Common institutions would weaken, and an EU at two speeds would mean that social inequalities would increase and tensions possibly amplify. The loss of its economic might would leave the EU marginalized in the economic landscape, as all relevant actors would refrain from building relations with the EU, which would be seen as less and less reliable. In particular, the failure of the TTIP would undermine transatlantic relations. The EU’s role in the international landscape would diminish as well, possibly undermining the idea of multilateralism as we know it and the liberal order. The worsened scenario would favor the rise of right wings parties, radicalism and xenophobia with further implications for the tenure and the image of Europe.

**Implications For NATO**

In both scenarios’ NATO’s role is challenged, although in different ways.
A more populous EU would probably gain a stronger voice within the alliance. And yet, with a strengthened EU as we have in the first scenario, the possibility to re-launch an independent European defense rise, suggesting new forms of coordination with NATO. A second challenge would be represented by the changed composition of population in Europe and the likely definition of ever more multicultural military personnel and possible redefinition of the foreign policy aims of the Member States, responding to the interests and pressures of a partially changed citizenship. The might create challenges for NATO’s cohesion and direction and would call for additional dialogue and coordination. For example, interventions abroad would be more frequently questioned.

NATO would still be useful for managing a number of more or less traditional challenges: facing border challenges; enticing cooperation between the transatlantic partners when disagreement arise; facing increasingly relevant cyber threats both from states and other actors; promoting a series of other partnerships with actors in the international scenario; and, possibly, helping regional accommodation in the case of cooperation failure in the Arctic.

In this scenario, given the reduced threats coming from Europe’s neighborhood, NATO and the West in general could possibly focus more on global challenges that will come to be considered real security threats, such as the impact of climate change. In this context NATO’s focus would move sharply away from Article 5 of the Washington Treaty. In this case, Articles 2 and 4 would, however, provide the necessary legal framework for the Alliance to develop and share expertise on the possible hard security implications of global warming and to advocate a serious collective response to environmental challenges.

The permanence of old and new tasks for NATO would imply the adoption of a wide range of capabilities that would need to range from interoperability to best practice dissemination, from cyber capabilities to deterrence. In all events, this scenario would require an even stronger dialogue and cooperation with other international organizations whose functions would come to overlap with those of NATO. In the end, however, if there is ground for a residual role for NATO, even an important one (e.g., in cyber security or environmental security), it is still to be seen whether Member States will still see the alliance as a fundamental key or whether NATO will persist according to the inertia that characterizes institutional frameworks.
**Scenario 2: Fragmented Europe**

<table>
<thead>
<tr>
<th>Challenge</th>
<th>NATO Role</th>
<th>Needed Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal security threats</td>
<td>Internal security provider</td>
<td>Policy and intelligence capabilities; fight against organized crime and terrorism</td>
</tr>
<tr>
<td>Border challenges</td>
<td>Political dialogue</td>
<td>Deterrence capabilities; Policy and intelligence capabilities; enhanced cooperation</td>
</tr>
<tr>
<td></td>
<td>Border control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deterrence</td>
<td></td>
</tr>
<tr>
<td>Less defence resources</td>
<td>Reduced out-of-area missions</td>
<td>Risk assessment capacity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Internal mediation</td>
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<td></td>
<td></td>
<td>Coordination with other international organizations</td>
</tr>
</tbody>
</table>

In the second scenario of a more fragmented Europe NATO will be more relevant than in the first to fulfill a series of tasks that not only Member States but also Europe as a whole would no longer be able to achieve. For example, NATO may be increasingly relevant for facing ‘internal security threats’ with which Europe, due to its reduced capabilities and weakened internal cohesion, would not be able to deal. In particular, NATO would be especially relevant to protect critical infrastructures and face cyber threats. This may entail a reduced capacity for conventional and ‘out of area tasks’: hence, a balance should be found between new and traditional tasks.

Indeed, in a context of a weak and introverted Europe, NATO would be still very relevant for facing traditional security challenges at the European periphery: border control, deterrence and political dialogue will still be necessary instruments to guarantee a minimum level of regional security.

Finally, NATO may still be relevant in building up partnership for non-NATO EU members that would prefer not to see themselves marginalized in this fragmented scenario. Accordingly, NATO should strengthen old commitments and engage in new ones, from deterrence and interoperability capabilities to internal security issues capabilities in a series of domains, such as border control, advancement of police and intelligence cooperation, and the fight against organized crime and terrorism. This wide range of tasks would have severe implications in terms of the ability to perform external duties if internal coherence is challenged. It will also require significant burden-sharing and coordination with other international organizations and difficult internal diplomatic work. Indeed, with respect to this latter point, in this scenario, internal disagreements and lack of support for defense expenditures might create internal problems for the alliance. The possibility also arises that, given the inability to face aging properly, the propensity of a fragmented Europe to engage more actively in NATO’s task would diminish.
RECOMMENDATIONS FOR NATO

In order to face future challenges in Europe, regardless of the scenario, NATO should:

Develop a broad range of capabilities, from deterrence to cyber and interoperability capabilities, from border control to intelligence, from police activities to the fight against organized crime and terrorism, to hybrid warfare. In particular, non-conventional threats demand an improved cooperation with police and intelligence capacities of the Member States.

Improve dialogue and cooperation with other international organizations whose functions overlap or are complementary to those of NATO. In particular, NATO should team with the EU in order to build a comprehensive approach to security to face both traditional and non-traditional challenges in the wider European region.

Increase the level of burden-sharing and coordination both within the Alliance and with other international organizations. Both tasks would require more intense and effective diplomatic work, in order to reach a shared consensus on common goals and specific contributions. In particular, NATO should be prepared to cope with a reduction of military contribution from European members, without risking a loss of internal cohesion.

Finally, NATO should improve its risk assessment capacity, specifically in relation to non-military challenges in areas such as climate change, energy security, environmental degradation and migration.
RUSSIA AND POST-SOVIET STATES

Main demographic trend: total population decline and shifting ethnic composition

After growing more slowly than any other region in the world for two decades, the population of the Post-Soviet states is actually expected to shrink by almost 0.1% a year for the next 25 years. This record negative growth will be worse than Europe's, partly due to the fact that net migration in the Post-Soviet states as a whole is expected to be slightly negative (meaning net emigration is expected).

Within the Post-Soviet states, much of the population decrease is expected to happen in Russia, whose population is estimated to decline from 143 million in 2013 to 130 million in 2035. Also declining: the populations of Ukraine (from 45 to 38 million inhabitants), Belarus, Moldova and Georgia. In contrast, the population of every Central Asian state (including the most populous, Uzbekistan and Kazakhstan) is expected to increase. In all these cases, such increases will be highly significant relative to each country's total population, ranging from a 50% expected increase in Tajikistan to a 16% increase in Kazakhstan.

Other demographic trends

- Fertility in the Post-Soviet countries is expected to remain below replacement rates, though recovering slightly from the negative record of 1.78 children per woman estimated in 2010. Fertility should increase to 1.86 children per woman by 2035.

- Fertility rates vary widely today, with 7 out of 12 countries estimated to be below or significantly below replacement rate (the worst being Moldova, Ukraine, and Russia, all below 1.53 children per woman), and Central Asian countries substantially exceeding 2.1 children per woman (with a record 3.85 children per woman in Tajikistan). By 2035, fertility rates are expected to converge and become more homogeneous, with 9 countries out
of 12 being below replacement rate. However, fertility rates in 3 Central Asian states (Kazakhstan, Tajikistan and Kyrgyzstan) are expected to remain above the replacement threshold.

**Drivers Of Change**

Starting from the analysis of demographic trends and their interaction with trends in other dimensions, a number of factors were identified as key drivers of change for the future of the region:

- **Demographic imbalances:** Within the Post-Soviet states, Russia, Ukraine, Belarus, Moldova and Georgia are expected to experience a substantial decline in total population. Population decline (mostly driven by low fertility and higher mortality, compared to other advanced economies) has serious consequences for economic growth, fiscal sustainability, welfare and ultimately, military might. Although population policies are rarely very effective in changing long-term trends, governments in the region have a number of instruments to limit their impact. However, beyond the general depopulation trend that affects Russia (as well as other eastern countries in the region) – and that differentiates them sharply from the Central Asian Countries – the most pressing aspects seem to be those related to population composition and distribution. Three issues are particularly relevant: i) population scarcity in the Russian Far East; ii) growing Islamic minorities, specifically in the Caucasus; iii) the role of Russian-native minorities in other countries within and outside the region.

- **Leadership:** in Russia’s political system, leadership is of paramount importance, and power transition is a critical and decisive process for the future of the country and the region as a whole. Given Russia’s massive territory, indefensible borders, potentially hostile neighboring powers and diverse population, many observers fear that without a heavy-handed leader, the country will struggle to maintain stability. Others, however, consider more positively the opportunity for progressive democratization of the political system, because such development could reduce cronyism and the influence of clans and power circles on the country’s governance. Demographic trends that characterize the region might have an impact on the development of political systems in different ways: on the one hand, Central Asian countries characterized by high fertility will pass through youth bulges that might have relevant consequences in terms of increased political pressure on the leaders; on the other hand, the countries that experience a depopulation trend are more likely to enter into economic stagnation – due to the reduction of domestic demand, the loss of young human capital, etc. – that might well create discontent toward the incumbent regime.

- **Hydrocarbons management:** Since his rise to power, Russian President Vladimir Putin has considered oil and particularly natural gas as fundamental elements for Russia’s emergence as a global power. This continues to be true. However, long-term prospects for Russian gas exports will be affected by several global pricing trends. Surges in liquefied natural gas capacity, the increasingly competitive nature of Central Asian gas supplies, advances in US/EU shale gas technology, as well as the implementation of greenhouse gas policies...
may all reduce Russia’s future hydrocarbon revenues. Given Russia’s decline in working age population, and its scarce investments in human capital, economic growth in the country risks becoming increasingly dependent on hydrocarbons.

- Business condition & investment climate: Due to their dependence on the export of hydrocarbons, many economies in the region appear to be scarcely differentiated and inherently fragile. Reducing corruption, separating business from politics, establishing/reinforcing the independence of the judiciary, and strengthening the rule of law are all necessary measures to be pursued in order to attract foreign investments. Russian technological delay, infrastructural weaknesses and its limited innovation capacity demand huge investments. Central Asian countries that are experiencing population growth might use FDIs to differentiate their economies, invest in human capital and fully exploit their “demographic dividend”.

- Russia’s status seeking policies: Russia’s continuing status as a major military power and its efforts toward gaining even greater status regionally and globally will affect the development of the whole region. Presumably, these aspects will not be altered by demographic trends alone. Although Russia might encounter growing difficulties in terms of recruitment of young, valuable military personnel, its armed forces are already transforming into a more technologically-oriented army. On the other hand, Russia’s status-seeking policies are certainly related to the availability of resources – and thus to trends in “material” domains such as demographics, energy and economy – but seem also to depend on “intangible” aspects related to Russian history: its “ego” and its identity as a regional and global power are expected to stay for some time.

- Relationship with neighboring countries: the post-Soviet region is characterized by a number of frozen/protracted conflicts (Abkhazia, South Ossetia, Nagorno-Karabakh, Transnistria, Ukraine) and by serious tensions between Russia and neighboring states/regions (including the EU and China). With the Western countries, tensions are due mainly to EU/NATO eastern expansion and ideological contrast on democracy, human rights issues, and economic regulations. With China, a cooperative posture and goodwill declarations are offset by mutual suspicions, concerns regarding the Chinese presence in the Russian Far East and competition for influence in Eurasia. In both cases, the evolution of existing institutional frameworks such as the Eurasian Union and the Shanghai Cooperation Organization might be instrumental in moving toward a more stable and cooperative relationship. On the other hand, demographic issues - Russian minorities in the “Near Abroad”, growth of Muslim communities in the Caucasus, or Chinese demographic pressure – might well be transformed to give rise to serious escalation.

- Climate change: Climate change effects will be diverse across the region, as the temperature increase is expected to be greater at higher northern latitudes. Temperature increases may affect agricultural and forestry management – such as earlier spring planting of crops, alterations in disturbance of forests due to pests – but also increased health risks due to heat-waves, changes in infectious diseases and allergic pollen, and higher frequency of wildfires. Permafrost warming is considered a specific cause for concern. The thawing of permafrost soils (mainly located in Siberia and the Russian Far East) will release methane, which has 25 times the warming potential of carbon dioxide. Climate
change impacts on the Arctic region will be particularly relevant due to reduction in the thickness and the extent of glaciers and ice sheets. Negative impacts could include damage to infrastructure and changes to winter activities such as ice fishing and ice road transportation. Positive impacts could include the exploitation of gas and oil resources and of more navigable northern sea routes that, however, could also raise tensions in relation to competing claims.

**REGIONAL SCENARIOS**

The analysis of the aforementioned *key drivers of change* lead to the elaboration of two polarized scenarios for the political and economic development of region. The first scenario, named “Moscow's Revival” imagines a positive development for each of the dimensions examined as well as for their interaction, leading to an extremely rosy – but still plausible – picture. The second scenario, labelled “Russia tightens its grip” takes the opposite direction, envisaging a vicious circle of negative outcomes in various dimensions affecting each other and leading to a regional outlook that is pessimistic, but, according to many experts, more likely than the first.

<table>
<thead>
<tr>
<th>Scenario 1: Moscow’s Revival</th>
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<tbody>
<tr>
<td>Slower depopulation, shifts in ethnic composition managed well</td>
</tr>
<tr>
<td>Political liberalization</td>
</tr>
<tr>
<td>High energy revenues invested in building physical and human capital</td>
</tr>
<tr>
<td>Improved business climate</td>
</tr>
<tr>
<td>A benign hegemon in a stable area, closer cooperation with the EU</td>
</tr>
<tr>
<td>Mix of economic cooperation &amp; competition with China in Central Asia and Russia’s Far East</td>
</tr>
<tr>
<td>Coordinated regional effort to mitigate the effects of climate change</td>
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</tbody>
</table>

**Moscow’s Revival**

In 2035, Russia is a well-functioning state that has taken significant steps toward a liberal political system, a diversified economy and contributes to international peace by ensuring regional stability. Behind Russia’s revival lies a combination of a change in leadership, a favorable international environment, and policies that effectively deal with economic and demographic pressures on the Russian polity.

Domestically, a slow process of political liberalization has led to a peculiar system, a “Russian style” democracy, which appears to be quite efficient in economic terms. The 2018 presidential elections saw the victory of the reformist front that reverses the direction chosen by President Putin during his decades in power. Specifically, civil and political rights are slowly extended, leading to a somewhat democratic system,
characterized by a relatively independent media and a visible opposition, and lively civil society networks begin to consolidate.

A favorable international context in which Russia’s oil revenues remain high is a necessary factor in this scenario. Despite a global effort to reduce dependence on fossil fuels, the demand for Russian oil and gas and the prices for these commodities remain high. Government policies toward improving Russia’s human capital (i.e., health and education) and physical capital (i.e., technology and infrastructure) begin to bear fruit. The gains translate into further popular support among the lower classes and prevent a regression to authoritarianism. Russia’s improved human capital stock, coupled with a stronger respect for the rule of law, produce a business climate that attracts domestic and foreign capital and raises employment.

Several factors combine to slow down (but not completely turn around) Russia’s population decline. The improved economic outlook and demographic policies initiated under Putin (e.g., generous government subsidies and family tax breaks) slowly succeed in raising the birth rate. Moreover, improved healthcare and education have a positive impact on life expectancy. Nonetheless, Russia’s population continues to decrease, albeit at a reduced rate. To further combat this trend, immigration from central Asian republic and from China is actively encouraged through specific bilateral arrangements.

In the international arena, with few minor exceptions, Russia’s relationships with neighboring countries are peaceful; in particular, territorial conflicts as in Crimea are not on the horizon. The Eurasian Union has expanded to include central Asian republics, and takes the form of a continental free trade area. Within the Union, Russia dominates both politically and economically and adds to the region’s stability. Russia-EU relations are characterized by a constructive pragmatism: common interests dominate and value-based contrasts are less and less common. The EU supports Russia’s political and economic modernization efforts, while Russia allows the Eurasian Union’s western countries (Belarus, Ukraine and Moldova, but also South Caucasus) to entertain closer economic cooperation with the EU. Russia’s relations with China are tenser due to China’s growing influence in Central Asia and Russia’s Far East. Although Russia benefits in absolute terms from this relationship, its growing dependence on China is a concern that not only shapes Russia’s relations with China, but also feeds the rapprochement between Russia and the West.

Finally, under the leadership of Russia, the post-Soviet states are able to act in concert and mitigate some of the harmful consequences of climate change.
**Scenario 2: Russia Tightens Its Grip**

| Power concentration at the Kremlin continues |
| Population decline. Faster growing minorities inspire xenophobia, separatism |
| Low oil revenues, or high revenues wasted on corruption & populism |
| Increasing pressure on Caucasus, territorial conflicts with neighbors |
| Russia confrontational towards the West and suspicious toward FDI |
| Military and economic competition with China in Central Asia and Far East |
| Struggle against climate change eclipsed by military issues |

It is 2035 and an increasingly nationalist and authoritarian government is sitting at the Kremlin. In 2018, Putin won the presidential elections and proceeded to select a trusted successor. Declining population and the rising share of ethnic minorities in Russia inspire xenophobia among ethnic Russians and the nationalistic government at the Kremlin chooses to capitalize on rather than confront it. As tensions mount, Chechen separatism reignites and other Northern Caucasus provinces (such as Dagestan) risk following suit. Islamist terrorist attacks in the region and in major cities increase, further fuelling anti-Muslim sentiments in the population and provoking harsh anti-terrorism measures from the government.

The Russian economy experiences a long period of limited (or zero) growth, with negative spillovers for the whole region. For a while, high energy prices bring the Russian economy short-term booms, but these revenues are wasted by an administration keeping elites rich and the lower classes subdued. As a result, resources are wasted on corruption and populist policies that do not raise Russia’s competitiveness or diversify its economy in the long-term. Eventually, advances in shale gas technology and the emergence of the US as a major energy exporter lead to a reduction in Russia’s hydrocarbon revenues. At the same time, demographic decline is joined by declines in workforce availability, total output and fiscal sustainability. Domestically, economic woes for the Russian economy frequently force the moderate fringes of the government to succumb to hawkish tactics in order to preserve power and consolidate authoritarianism.

Moscow’s insistence on the narrative of a ‘common enemy’ and efforts to establish its supremacy over the Russian-speaking and Russian-influenced “near abroad” creates an increasingly tense international environment in which Russia and its neighbors frequently clash. The Ukrainian conflict has effectively become a new ‘frozen conflict’. Facing Russia’s continuous interference in home affairs, the Baltic countries feel more and more threatened, and search for continuous reassurance from NATO allies. Although with reduced leverage, Russia continues to use gas flows toward Europe to divide European NATO allies and their opposition against its actions. Russia’s confrontation with the West extends to the economic arena as well. Suspicious of autonomous
power centers, the government restricts and controls incoming investment, which is another factor preventing a more diversified Russian economy.

Meanwhile, in the Caucasus, regional tensions occasionally flare up, generating considerable turmoil. Russia is increasingly concerned with the rising power to its east: China. China’s economic power allows a faster pace of modernizing and expanding its economy that Russia is straining to catch up with. Demographic trends favor China as well. The westward migration within Russia leaves Russia’s Far East depopulated. This population vacuum is filled by the Chinese across the border despite frequent harassment by the Russian government and inter-ethnic tensions in the region. China, meanwhile, has become increasingly dependent upon Russian gas to supply its Northeastern economic powerhouse, but political risks have kept it from seeking stronger supplies from Moscow, pushing the country to continue to rely upon coal and further develop shale gas resources. In Central Asia, Kazakhstan and Kyrgyzstan strengthen their relations with Russia, with the latter becoming increasingly dependent from Russian aid. At the same time, Turkmenistan is progressively forced to export most of its gas to Russia at lower prices, instead of selling it to China, as frequent sabotage compromises the use of the Central Asia-China pipeline.

Climate change continues to affect the region. While some provinces, such as Siberia, become more habitable, generally arid and increasingly unpredictable weather patterns negatively affect the countries in the region. However, a regional effort to combat climate change does not materialize, largely due to the tensions in high-security issue areas such as territorial clashes.

**Security Challenges**

Each scenario brings with it different security challenges. In the optimistic scenario experts foresee fewer high-security problems between Russia and its neighbors, which raises the priority of other issues, such as Afghanistan and the Arctic, to the top (five) of the agenda. In this scenario, most of the main challenges will come from outside the region. Despite the influence of external factors, our experts believe that the countries in the region can mostly manage them through cooperation.

<table>
<thead>
<tr>
<th><strong>Scenario 1: Moscow’s Revival</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Challenge</strong></td>
</tr>
<tr>
<td>Normalizing relations with the West</td>
</tr>
<tr>
<td>China’s encroachment into Russia’s Far East</td>
</tr>
<tr>
<td>Afghanistan</td>
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</tbody>
</table>
One important challenge in the optimistic scenario will be normalizing relations between Russia and the West. Although this scenario assumes a more liberal government in Russia, mistrust toward Russia will linger and its neighbors in Eastern Europe will be especially suspicious of Russia’s motives. A slow but steady improvement of relations driven by confidence- and security-building measures in military and diplomatic matters is likely.

Another important challenge will be China’s growing influence in Central Asia and Russia’s Far East. China is a rising economic power and seeks resources and markets in Central Asia as well as elsewhere in the world. Moreover, Russia’s Far East is a resource-rich but (demographically) rapidly-declining region, which creates a demographic vacuum that the Chinese workers are already filling in. We expect these shifts favoring China to create concern in Russia. Since Russia cannot balance this growing Chinese influence by itself, we predict that Russia will form a deeper strategic partnership with NATO. However, given lingering mistrust between Russia and NATO we do not expect this partnership to reach military cooperation.

Afghanistan is likely to remain unstable in the foreseeable future and attract attention from its neighbors. A concerted effort by surrounding countries (under the leadership of Russia) to mitigate negative spillovers through, for instance, border controls and supporting more acceptable proxies in Afghanistan is the most likely response to this formidable challenge.

Lastly, we foresee two important challenges related to climate change. We analyze changes in the Arctic separately from climate change in the rest of the region, because it may improve or deteriorate relations between Russia and the USA. The opening of a new waterway in the Arctic can be economically beneficial, but the establishment of an international regime managing this waterway will require a significant amount of legal and diplomatic effort. This task will be more difficult if valuable natural resources are found in the Arctic, but we do not expect military clashes over those.

Apart from the Arctic, climate change will affect the region as a whole. Some parts, such as Siberia, may benefit by becoming more habitable, but in other places aridity and increased variability in weather patterns may hurt food security and cause destructive natural disasters. In the optimistic scenario, again under the leadership of Russia, we expect the region to pay more attention to combating climate change.

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**Scenario 2: Russia’s Tighter Grip**

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Nature</th>
<th>Actors involved</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia meddling in Central ASIA</td>
<td>Demographic; Military</td>
<td>Russia, C.A. states</td>
<td>Direct military intervention by Russia; Kazakhstan resistance</td>
</tr>
</tbody>
</table>
In the pessimistic scenario, the primary challenges are territorial and prone to military escalation. If Russia’s current regime remains in power, we expect more confrontations with NATO and more claims by the Kremlin over Russian minorities in neighboring countries (and the areas in which they live).

It is useful to sort these high-security issues between Russia and its neighbors into two categories. The first set of challenges will be Russian meddling in countries of Central Asia, and in particular, Kazakhstan. On the Kazakhstan-Russia border, there is a relatively rich Russian minority, which has expressed interest in seceding from Kazakhstan and joining Russia. The presence of this group is an attraction to Russia, and in coming years, Moscow may find it useful for political purposes to encourage this area to secede and join Russia like Crimea did. Kazakhstan is, militarily, much weaker than Russia, but it is not completely ineffective, and we expect it to show some resistance to this scheme. However, without third-party support, the outcome will favor Russia.

The second category of challenges will be Russia meddling in non-NATO Eastern European countries. This is another case where Russia may use the excuse of solidarity with Russian minorities and conflict may escalate. Given Russia’s direct involvement in Ukraine there is no reason to doubt that Russia would use direct military force in such a crisis to overwhelm its opponents. In an even gloomier scenario, we can imagine Russia fuelling dissent by Russian minorities in the Baltics, with the goal of destabilizing these countries, but without reaching the level of a clear-cut threat to a NATO member.

We highlighted above that the changing ethnic composition of the Russian Federation and the continuation of repressive central authority is likely to instigate insurgency and terrorism in North Caucasus. A recurrence of civil war in Chechnya, later spreading to Dagestan, is likely. These conflicts will mainly take place between the center and Muslim minorities.

The South Caucasus is another area where more international conflict is likely. Russia has already separated chunks of Georgia from the country and has been involved in the Azerbaijan – Armenia conflict. The latter conflict is currently cold but likely to recur in the future, giving the growing disparities between the two countries. When it does, we can expect Russia to become involved (by proxy) and to determine the outcome. In other words, in the pessimistic scenario we expect Russia to increasingly use military power to change international borders in the region.
Finally, climate change and water security will be important challenges, but we do not expect regional actors to respond to these challenges effectively. First, there will be more immediate and salient security issues on the agenda. Second, we expect military conflict between the hegemon of the region and several surrounding countries, which lowers the chances of regional cooperation against climate change.

**Implications For NATO**

<table>
<thead>
<tr>
<th>Scenario 1: Moscow’s Revival</th>
<th>NATO Role</th>
<th>Needed Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normalizing relations with Russia after Crimea</td>
<td>Assurance toward NATO members; Dialogue; Arms control, CSBM’s</td>
<td>Partnership; Military capabilities for NATO members; Tools to cement relationship within NATO and signal it to outsiders</td>
</tr>
<tr>
<td>China’s encroachment into Russia’s Far East</td>
<td>Limited strategic cooperation with Russia and CIS</td>
<td>Partnership; Intelligence; Third-party role (facilitator, mediator)</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>Dialogue and limited tactical cooperation</td>
<td>Intelligence-sharing; Training</td>
</tr>
<tr>
<td>Arctic</td>
<td>Partnership, CSBM’s if Arctic is militarized and gains strategic value</td>
<td>Analysis and forecasts for disaster preparedness; Disaster relief capabilities</td>
</tr>
<tr>
<td>Climate</td>
<td>Flexible role in this scenario</td>
<td>Intelligence</td>
</tr>
</tbody>
</table>

In 2014, NATO-Russia relations reached what was probably a low point over the crisis in Ukraine. Assuming scenario 1 is realized and there is a genuine will to restore relations, one way to build back trust would be to resume cooperation in a number of well-defined areas that already have a record of success, such as arms control, Afghanistan, the Arctic and counter-terrorism. Such practical cooperation can build trust, allow confidence building measures and ultimately spill over into more important areas of policy. However, in the meantime, NATO will have to maintain its deterrent capabilities to assure its members’ safety and signal NATO’s resolve to any possible challengers in the region.

We identified China’s growing demographic and economic influence in the region as a major concern for Russia in this scenario. This “threat” can promote more NATO-Russia cooperation as they try to balance against China. We are reluctant to predict that NATO will be asked to cooperate militarily with Russia and more probable forms of cooperation are strategic (partnership and intelligence-sharing). If tensions between Russia and China escalate, then NATO (and its members) may play a crucial role as third-party actors (facilitator or mediator) in de-escalating a dangerous situation.

Improved NATO-Russia relations have the potential to gain momentum and spillover into
other issue areas. Afghanistan is an easy area to begin this process, because Russia and the West already had dialogue and limited tactical cooperation there. Containing instability within Russia benefits all actors, so we can expect NATO to share intelligence with and train Russian and post-Soviet states’ militaries regarding Afghanistan.

Regarding the Arctic, the role of NATO depends on whether the Arctic is militarized and gains strategic value. If it does not, then similar to climate change elsewhere, NATO may not have an important role to play. Climate change may result in high-security challenges (e.g. through food security), but that would only indirectly create a role for NATO. If the Arctic is militarized, however, NATO will be uniquely placed to manage the situation in this new area. The Cold War gave NATO 50 years of experience of managing a highly tense, crisis-prone area and a combination of deterrence and confidence and security building measures will be crucial to ensure that the Arctic does not hurt the chances of lasting peace between Russia and the US.

<table>
<thead>
<tr>
<th>Scenario 2: Russia’s Tighter Grip</th>
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<tbody>
<tr>
<td><strong>Challenge</strong></td>
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<tr>
<td>Russia meddling with non-NATO E.EUROPE</td>
</tr>
<tr>
<td>Russia meddling with Central Asia</td>
</tr>
<tr>
<td>Russia meddling with NATO E.EUROPE</td>
</tr>
<tr>
<td>S. Caucasus instability</td>
</tr>
<tr>
<td>Climate, water</td>
</tr>
<tr>
<td>Terrorism &amp; Transnational Crime</td>
</tr>
</tbody>
</table>

If Scenario 2 is realized, NATO will need to respond to Russia’s security challenges against its neighbors, some of which are NATO members. It is useful to categorize possible targets of Russian aggression into three groups. The first group are non-NATO countries in Eastern Europe, such as Ukraine and Belarus. When these countries’ territorial integrity is threatened by Russia, NATO has to resist political pressure to become (possibly militarily) involved in this crisis. NATO should pursue a two-pronged strategy: it should increase its deterrent capabilities and clarify its commitment to the safety of NATO member countries, but also restrain itself in defending non-NATO countries. A clear separation between NATO’s resolve
regarding its members and limited engagement for those outside of the alliance will save NATO fruitless and dangerous escalation against Russia. NATO can still play a limited role by building partnerships with non-NATO members and giving them non-military support, but it must be clear to all observers that NATO’s responsibility is to its members.

Russia’s neighbors in Central Asia are also at risk of irredentism. Kazakhstan is a probable hotspot, because it has a Russian minority that expresses secessionist feelings and a central government that may actually resist Russia’s challenges. Again, NATO (and its politician principals) should realize the limited role that NATO can play in a conflict in Central Asia and restrain the alliance from further involvement. Recognition of Russian preeminence in this region could be used “strategically” by NATO to appease Russia’s ego and increase opportunity for cooperation on other issues or areas.

The set of NATO members in Eastern Europe is a third and very different group of potential targets of Russian aggression. By definition, NATO has a very different obligation toward its members and it must demonstrate its resolve to defend member states by increasing its military capabilities and making unequivocal declarations of its commitment. However, in addition to deterring Russia, peace can also benefit from addressing factors that make the idea of irredentism attractive for Russian minorities in NATO states. Political and economic steps that address these ethnic groups’ grievances can reduce the Russian government’s ability to manipulate those grievances and muster domestic support for its military adventures. Finally, NATO should continue to manage the situation by engaging in confidence- and security-building measures toward Russia to assure it of NATO’s peaceful intentions.

The South Caucasus is another region that is at risk of Russian aggression. If another crisis between Georgia and Russia arises, NATO cannot militarily help Georgia, but it can help Georgia at other times by increasing its capabilities. This area is also important because of its energy resources. NATO can play a role by analyzing how, short of military intervention, it can contribute to energy security.

As noted above, in the pessimistic scenario climate change and water security will be given less priority by regional actors. Furthermore, even though NATO could help in case of a disaster, its involvement will likely not be welcome. Therefore NATO does not have a major role to play here, except in preparing plans for disaster relief, if the right political atmosphere exists.

Finally, terrorism and transnational crime are two areas in which NATO and Russia have successfully cooperated in the past. Both actors can benefit from continued cooperation in this area despite tensions in other areas. NATO should maintain existing forms of cooperation and remain open to the idea of intelligence-sharing and providing strategic guidance to regional actors against these threats.

**Recommendations For NATO**

In order to face future challenges, NATO should:

Learn to “choose its battles” in case the worst scenario materializes. This will entail facilitating political deliberation among member states to clarify whether NATO is committed to the
defense of possible targets of Russian aggression (e.g., Poland) and avoiding empty bluffs that could result in military escalation with Russia. At the same time, NATO must be aware that the most likely security challenges coming from the region will take the form of soft warfare rather than hard security confrontation, making drawing clear lines even more complex.

The Alliance needs to enhance its political tools to engage Eastern-European non-member states and their Russian minorities constructively. This will be especially important if the pessimistic scenario comes about. Efforts to prevent territorial clashes will require addressing minorities’ grievances that make them receptive to Russian irredentism. Propaganda techniques, strategic communication assets and tailored identity policies might be the most useful instruments to maintain stability in this area.

NATO needs to focus on demographic and ethnic dynamics, because these may be used to instigate violence within and between states. In particular, changing ethnic composition within Russia and the status of Russian minorities in neighboring countries need to be monitored.

Under every scenario, non-traditional security challenges (e.g., climate change) will be important for this region. NATO can develop analysis and response capabilities for disaster relief.

In either scenario, NATO should seek to build on its previous history of cooperation with Russia on issues such as arms control, counter-terrorism and CSBM’s.
**Main demographic trend: Old-age and Young-age Dependency Ratios**

The ‘youth bulge’ is frequently on the lips of commenters observing developments in the Middle East and North Africa region. However, the very young population of the region is a phenomenon that pertains to today, and is a legacy of trends starting around two decades ago.

Over the next two decades, the region’s main problem is expected to shift from managing the socio-economic effects of a very young population to those of a population that is gradually ageing, and at a much faster pace than other world regions.

Although far from European levels, Middle East and North Africa’s old-age dependency ratio is expected to double in the next two decades, in line with expectation for the Asian region. This means that, by 2035, the number of working age people (15-64 years old) for every 65+ years old inhabitant will have halved.

The worst-hit countries will include Lebanon, Tunisia and Israel, followed by Libya, Morocco, Qatar and the UAE.

**Other demographic trends**

- Total population in the region is expected to increase by 33% over the next two decades. The biggest increases will be recorded in Egypt (+26 million people), Iraq (+22) and Iran (+17). While Egypt and Iran are currently the most populous countries in the region by far, with populations around 80 million each, Iraq is an outlier, having a population...
comparable to Saudi Arabia today (around 30 million). Unlike Saudi Arabia, however, Iraq’s population is expected to increase by 66% during the next two decades.

- Fertility rates in MENA countries have been rapidly declining, from an average of 4.4 children per woman in 1990 to 2.8 in 2010. They are expected to decline further to just above 2.1 children per woman by 2035. Currently, fertility rates higher than 4 children per woman are still estimated for women in Yemen, Palestine, and Iraq. Although these rates are expected to converge rapidly to 2.1 by 2035, Iraq’s is expected to remain stubbornly high, at 3 children per woman, through 2035.

**Drivers of Change**

Beginning from the analysis of demographic trends and their interaction with trends in other dimensions, a number of factors were identified as key drivers of change for the future of the region:

- Demographic imbalances: MENA countries are expected to see fertility rates gradually decline, but not at the same rate everywhere. An increasing old-age dependency ratio will add stress to each country’s healthcare system, while simultaneously decreasing potential economic growth, as gains in GDP will come only from increased productivity and not from an increasing labor force. At the same time, bucking the regional trend, specific countries within the region will continue to experience significant demographic pressure from young people. Specifically, Iraq’s population is expected to increase by nearly 70% in the next 20 years, while Yemen and the Palestinian Territories will follow suit with increases of more than 50%. These populations are thus poised to remain younger, and pressures and risks will continue to arise from a population that continues increasing, undermining real per capita GDP growth.

- Water and food pressures: An increasing population (+33% by 2035) will place stress on already-scarce food and water resources. Scholars estimate that water and food risks are presently higher in MENA countries than in any other region of the world. Even today, Gulf countries import over 90% of their food consumption needs. This has clear effects on their budgets, and exposes these countries to fluctuations in world food prices. With respect to water, the management of scarce resources already poses challenges, especially when such resources are shared (e.g., the Nile and Jordan river) and risk being irreparably polluted or depleted by overuse. Moreover, a trend toward urbanization will increase risks, as countries fail to develop a homegrown agricultural sector and rely more heavily upon imported resources.

- Role as strategic provider of fossil fuels: Today, MENA countries are already starkly divided between hydrocarbon-importing and hydrocarbon-exporting countries. Overall, however, the region remains a fundamental provider of oil and gas to world markets, with MENA OPEC countries contributing over 33% of the global oil supply and over 20% of the global gas supply in 2013. This role is expected to remain unchallenged over the next two decades, even as new producers emerge, and hydrocarbon consumption is poised to rise and remain unchallenged at the top of the world’s energy mix. The increasing population in the MENA region, coupled with an expected economic development averaging around 3% per year, will, however, generate significant and unprecedented risks for the region.
Domestic hydrocarbon consumption, which remains heavily subsidized and skews the energy mix in absolute favor of oil and gas, is expected to increase consistently over the 2015-2035 period, significantly denting export capacity and, therefore, the generation of state revenues.

- Work-force employment ability: The region’s ability to offer proper employment to its increasing workforce will be challenged by the presence of advanced industrialized countries on the opposite shores of the Mediterranean, which may attract a significant number of high-skilled workers, complicating the MENA countries’ process of catching up with their richer (and more inclusive) neighbors. At the same time, a crucial role will be played by these countries’ industrial policies, especially in energy-exporting countries, which will face the daunting task of diversifying their secondary sector, finding alternatives to hydrocarbons or, at least, specializing in hydrocarbon-related industries, such as the refining and petrochemical sectors. Policy choices may significantly alter each country’s ability to retain high-skilled workers and limit ‘brain drain’.

- Political stability/governance: The dormant dictatorships of MENA were badly shaken by the Arab Spring, but the hopes for a democratic wave have given way to uncertainty. With the possible exception of Tunisia, not a single MENA country was able to transition to a stable democracy. In several countries, such as Iraq, Syria, Libya and Yemen, the state’s control over the legitimate use of force has weakened, and armed groups have carved out territories for themselves at the expense of the central government. These groups, most famously IS, are the main non-state actors to emerge in MENA. Elsewhere citizens’ democratic aspirations remain alive, but the high risk of chaos dampens the people’s willingness to challenge the status quo.

- Relationship between radical Islam, moderate Islamism, and secular groups: Unfortunately, democracy is a weaker contender in the MENA region than anywhere else. Political regime type appears to be shifting upon state capacity and the influences cast upon it by radical and moderate, religious and secular groups. Radical Islamist groups which managed to carve out some territory over which to exercise quasi-sovereignty (i.e. IS in Syria/Iraq; the Houthis in Yemen) have so far been unable to build functioning state-like entities over the territory they control. This may or may not be an indication of the effectiveness of asserting power and control over territories in a state-like fashion by different groups, but it causes one to wonder whether these groups really think about statehood in the European sense, or whether they may be content with looser forms of authority. At the same time, the very frequency with which non-state actors emerge in the region over the next two decades will shape the future direction of the region both in terms of state capacity and the number and nature of states and entities that will populate the region in 2035.

**REGIONAL SCENARIOS**

The analysis of the aforementioned key drivers of change leads to the elaboration of two polarized scenarios for the political and economic development of region. The first scenario, named “A Better Future for MENA” imagines a positive development along each of the
dimensions examined, as well as their various interactions, leading to a quite rosy – but still plausible – picture. The second scenario, labelled “Dark Clouds Above MENA” takes the opposite direction, envisaging a vicious circle of negative outcomes in various dimensions affecting each other and leading to a regional outlook that is starkly pessimistic, yet not implausible.

**Scenario 1: A Better Future for MENA**

| Fertility rates decline faster than expected; population increases, but to a lesser extent |
| Sustained economic growth |
| Inclusive political institutions |
| Energy revenues go up and/or economic diversification kicks in |
| A young, educated workforce remains in the region |
| Relative political stability, increased regional cooperation |
| Declining relevance of religious-ethnic divides |
| State capacity increases |

**A Better Future for MENA**

In this scenario the global economy improves and MENA remains a key producer of oil and gas. MENA countries in general will continue to have a young and increasing workforce. However, countries in trouble will produce migrants and refugees going both to other MENA countries and to Europe. They may even face declining populations.

The main source of wealth will remain oil. MENA is infamous for corruption and inequality and neither of those is likely to end. In fact, where corruption grows, so too will inequality. However, economic stability has the potential to attract significant foreign direct investment. In this scenario, we also expect to see improvements in human capital, especially for women who make up a larger portion of the educated public. People will take advantage of new technologies and offer opportunities to global capital. The position of women will improve as a consequence and average fertility levels will continue to decrease.

MENA countries’ abilities to feed their populations depend on soil and water resources, which are rapidly declining. However, countries like Saudi Arabia are investing major funds in technologies to improve agricultural productivity. Also, countries are increasingly looking into buying land in other regions of the world where they can grow food to feed themselves.

The role of the army in domestic politics will remain important, implying continued military spending. A major regional factor concerns the Iranian government, which we expect to moderate. This moderation may improve relations for Sunnis and Shias alike. However, even in this optimistic scenario we expect most sectarian conflicts to continue.
In every country in MENA we expect increased life expectancy, migration, and urbanization. On other dimensions - namely fertility, ethnic/religious relations and gender relations - we expect countries to display significant differences. In countries like Syria we expect ongoing troubles to have contradictory effects on fertility, exacerbate ethnic/religious tensions and lower the status of women. In others, however, where economic development is likely, we expect lower fertility, improved ethnic/religious relations and improvements in the status of women.

**Scenario 2: Dark Clouds above MENA**

<table>
<thead>
<tr>
<th>Event</th>
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<tbody>
<tr>
<td>Fertility rates remain steady; population increases and starts to age faster by the end of this period</td>
</tr>
<tr>
<td>Recurring economic crises</td>
</tr>
<tr>
<td>Extractive political institutions</td>
</tr>
<tr>
<td>Energy revenues decrease and/or no economic diversification</td>
</tr>
<tr>
<td>Political unrest, regional conflicts</td>
</tr>
<tr>
<td>Sectarianism continues</td>
</tr>
<tr>
<td>State failures proliferate</td>
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</table>

**Dark Clouds above MENA**

In this scenario, the global economy in 2035 has not fully recovered from the Great Recession. Additionally, the currently-limited degree of investment in the oil and gas industries will have reduced oil producers’ budgets. Consumers in Europe will adopt greener technologies, but China and India will remain dependent on MENA oil.

Again, MENA countries in general will continue to have a young and increasing workforce. But the smaller economic pie will imply higher unemployment. There will be less money to distribute to the public, and consequently, we expect greater social unrest. Countries with severe problems will again be producing significant (though not catastrophic) numbers of refugees and migrants. Most will go to the EU.

Corruption and inequality will remain major problems. Because of political and economic instability MENA will attract less foreign direct investment. However, we expect a few countries, such as Turkey, Iran and the Gulf Cooperation Council (GCC), to attract foreign investment. We also expect them to achieve modest economic growth. More young people will become educated, but they will be unable to find jobs, making them more likely to protest and to attempt to migrate. As the job market contracts, opportunities for women will decrease and the gender balance will suffer. Military spending will increase, cutting into education spending. Consequently, we expect talented workers to seek jobs in the military, further lowering other sectors’ productivity.

Given the desert geography of MENA, we expect greater food scarcity. In this
scenario, countries will be less able to cope with scarcity through technology or farming elsewhere.

Iran’s ideology and integration with the region is crucial, but in this scenario Iran remains in conflict with its neighbors. As a result, economic instability and sectarian conflict continue unabated across the region. In case of a political disruption (e.g., the founding of an Islamic state) or an economic crisis (e.g., disruption of the oil and gas markets) we expect ethnic/religious relations to worsen and life expectancy and the rate of primary education to decrease.

**SECURITY CHALLENGES**

Each scenario brings with it different security challenges. In the positive scenario, experts foresee fewer high-security problems between and within MENA countries, which raises the priority of other issues, such as facing the challenge of water scarcity and diversification, or containing radicalization. Despite the continuing geopolitical importance of the region, the ‘rosy’ scenario foresees that external actors will exert a stabilizing, not destabilizing, influence upon the region, and that any rift between MENA countries will be stemmed through cooperation.

<table>
<thead>
<tr>
<th>Scenario 1: A Better Future for MENA</th>
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<tbody>
<tr>
<td><strong>Challenge</strong></td>
</tr>
<tr>
<td>Cybersecurity, infrastructure protection</td>
</tr>
<tr>
<td>Radicalization, terrorism</td>
</tr>
<tr>
<td>Proliferation of unconventional weapons</td>
</tr>
<tr>
<td>Water availability and desertification</td>
</tr>
<tr>
<td>Military threat</td>
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</tbody>
</table>

In this scenario, the challenges for MENA countries tend to be similar to those experienced by more advanced societies. Now that most countries in the region have been able to decrease their dependence from hydrocarbons through economic diversification, they face the problem of protecting critical infrastructures from traditional (military) and non-traditional
(mainly cyber) attacks. A gradual but steady improvement in critical infrastructure security and resilience would be the best response to possible cyber challenges, while more traditional deterrence measures could help in facing military threats. However, it is unlikely that MENA countries will have the capacity to develop and implement effective measures in this sector autonomously.

Another challenge in this scenario will come from proliferation of nonconventional weapons, which, in 2035, will be a major area of concern in the region. Indeed, Iran achieving nuclear status, and the spread of technological innovation throughout the region will probably push some MENA countries to start (or re-start) nuclear and nonconventional weapons research programs. In order to prevent proliferating countries from following this path, it will be important to implement issue linkage strategies aimed at dissuading them, offering rewards in exchange for nonproliferation. This can be done by establishing regional fora for cooperation and integrating proliferating countries into international economic and trade organizations.

A further challenge in this scenario has to do with sectarian infighting between Sunni and Shia groups, which is still ongoing in some weaker countries. Although the relevance of immaterial claims has generally decreased in the region, in some cases radical groups have resorted to terrorist tactics. However, as was suggested in the working group, it will be important to distinguish between radical and terrorist organizations, since the best response to each of them will be different: building institutional capacity to dissuade potential rebels in the first case, and sharing intelligence information and implementing effective counterterrorism strategies in the second.

Finally, by 2035, climate change will very likely exacerbate the problem of water availability and desertification, meaning that nearly all MENA countries will experience severe water shortages and land deterioration. In order to cope with this last challenge, MENA countries should further enhance their state capacity, investing in technological innovation to a greater degree. Indeed, environmental issues may be tackled by increasing the rate of technology utilization in water and land management. Overall, this set of possible responses is unlikely to be enough, since environmental issues are transnational and require more negotiated solutions between MENA countries: regional diplomacy, for example, may be important for bargaining over water issues.

<table>
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<tr>
<th>Scenario 2: Dark Clouds Above MENA</th>
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<tbody>
<tr>
<td><strong>Challenge</strong></td>
</tr>
<tr>
<td>Radicalization, Social unrest, Terrorism</td>
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<tr>
<td>Proliferation of unconventional weapons</td>
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</tbody>
</table>
In this scenario, social, political and economic issues currently affecting the MENA region have heavily intensified. MENA countries are now facing several challenges, directly and indirectly linked to the past population boom: explosion (radical groups vs more secular elites), implosion (intra struggle between Sunni and Shia populations, and their respective sponsors) and a vacuum of governance. In turn, these challenges are likely to produce a set of humanitarian crises stemming from high levels instability (refugees and transnational conflicts). As in the first scenario, proliferation of nonconventional weapons programs will be a major source of concern for MENA countries. Overall, MENA countries seem not to be sufficiently well equipped to deal with these challenges by themselves, due to their economic and political instability, and their lack of state capacity.

A first set of challenges will emerge from high rates of unemployment, which is likely to prompt radicalization and social unrest throughout the region, undermining territorial integrity and the capacity to exploit hydrocarbon resources. As a result, many MENA countries will be mired in a sort of “Conflict-Poverty Trap”, which may lead to state failure or disintegration. Some of the weakest countries (such as Iraq, Syria and Yemen) could even split into sub-national independent political entities. To cope with such social and immaterial issues (radicalization), soft foreign intervention would be the best response: international community should implement targeted soft measures to foster MENA states’ capacity building (such as the promotion of inclusive growth and good governance), and to empower civil society.

A related challenge for MENA region has to do with the huge outflows of refugees and low-intensity civil conflicts that may emerge from political, economic and social instability. In this more negative scenario, some of these tribal, ethnic and religious conflicts will spill over, representing major transnational threats. Additionally, external aid and humanitarian assistance provided by external actors may help to alleviate the burden of refugee influxes for countries in the region.

Of course, this set of soft measures will not be sufficient to combat a third category of more severe security threats. Indeed, a further challenge for the MENA region comes from the proliferation of nonconventional weapons programs and from the intensity of transnational warfare, which are both expected to increase substantially in this scenario, worsening the relationship among regional powers. Additionally, the disruption of energy supplies may emerge as a challenge in this scenario, not only for MENA countries but also for countries that rely on MENA Hydrocarbons to sustain their economic growth. In this case, the only
option on the table will be stronger intervention by the international community, in the form of protection of critical infrastructures (for energy supplies), extended deterrence (to cope with proliferating countries) and military intervention—with boots on the ground—to counter terrorism and stop interstate hostilities.

**Implications for NATO**

<table>
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<tr>
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<tr>
<td>Military threat</td>
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<tr>
<td>Water availability and desertification</td>
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</table>

In order to face future challenges arising from this scenario, NATO should develop new bottom-up approaches to security. As is evident from both scenarios, relying on the use of force to address social and civilian issues may not solve these problems, and may even be counterproductive. Of course, some traditional challenges (such as interstate conflicts and proliferation of nonconventional weapons programs) can only be prevented through the implementation of “hard” and targeted military measures (such as embargoes, sea and air patrolling, expeditionary forces). However, some upcoming, more immaterial challenges require a more balanced set of instruments, ranging from the training of local military forces to institution building. In addition, a higher degree of cooperation among NATO members on intelligence activities and diplomacy is seen as crucial for facing future threats, which we expect to arise across three different categories.

First, if scenario 1 is realized, MENA countries will be wealthier and more technologically advanced. This means that they will be vulnerable to possible cyber-attacks coming from both state and non-state actors. It is very unlikely that MENA countries will have the capacity to implement effective cyber-security measures themselves; at the same time, in twenty years, we expect that NATO will have developed a more advanced capability to cope with this kind
of threat, and providing intelligence information to more vulnerable MENA countries will enhance their infrastructure resilience.

Second, some challenges are likely to emerge from weaker countries in the region, meaning that social unrest, radicalization and even terrorism may generate zones of instability. The nature of these threats tends to be more socio-political, and in order to face them, NATO countries should enhance their level of cooperation on intelligence activities (such as the sharing of reports and information). This is an area that still seems underdeveloped within the Alliance.

Third, by 2035, the MENA region is likely to confront political and military challenges coming from stronger states, such as the escalation of interstate wars and the proliferation of nonconventional weapons programs. While the former can be addressed through arms embargoes, the patrolling of seas and air, and the deployment of expeditionary and ground forces as a means of last resort, the latter also entails (besides traditional strategies of dissuasion and deterrence) the implementation of more diplomatic measures, such as multi- and bilateral negotiations and the application of UNSC decisions.

A final set of challenges will emerge from climate and environmental issues, whose impact is likely to be detrimental to the health of MENA populations. NATO does not have specific capabilities in this sector (besides fostering intra-regional cooperation), and it is unlikely that the Alliance will play a major role here. However, addressing the consequences of desertification and water shortage in the region (rather than preventing their occurrence) will probably help MENA countries to better manage these issues.

### Scenario 2 – Dark Clouds Above MENA

<table>
<thead>
<tr>
<th>Challenge</th>
<th>NATO Role</th>
<th>Needed Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major refugee crises</td>
<td>Sea patrolling/humanitarian assistance</td>
<td>Patrol forces</td>
</tr>
<tr>
<td>Proliferation of unconventional weapons</td>
<td>Implement UNSC decisions /promote multi- and bilateral solutions/deterrence and dissuasion</td>
<td>expeditionary forces, diplomatic pressure</td>
</tr>
<tr>
<td>Transnational conflict (tribal, ethnic, religious)</td>
<td>Implement arms embargoes / patrol seas and air</td>
<td>Countries’ naval forces, air forces (drone forces)/ground forces</td>
</tr>
<tr>
<td>Disruption of energy supplies</td>
<td>Targeted intervention, sea patrolling</td>
<td>Patrol forces / military forces</td>
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</tbody>
</table>

To cope with future challenges arising from this more negative scenario, NATO should be
prepared to intervene in the MENA region, since the majority of countries in the area won’t have the capability to face them alone. Also in this case, NATO should increase the level of its ongoing activities in the area while simultaneously developing non-traditional approaches to security. Although the situation is expected to be worse in the second scenario, using military means to address social and political challenges may not only be ineffective, but could also undermine NATO reputation among MENA people. We expect four major types of challenges. First, to face social unrest and radicalization stemming from high rates of unemployment, NATO countries should revise their current training missions in the region, by increasing the civil society/military interface, military-to-military cooperation and the training of civilian, military and police forces. This set of measures would be particularly important in the case of state failure, especially when coupled with institutional and state building provisions. Additionally, the spread of terrorist groups can be countered by improving intelligence information sharing between NATO members and local governments.

Second, in order increase preparedness to face major migration and refugee crises (which could be the likely consequence of political and institutional failure), NATO should couple traditional maritime patrolling activities with more non-traditional measures aimed at providing humanitarian assistance and disaster relief.

Third, if this negative scenario is realized, regional rivalries could intensify as a result of tribal, ethnic and religious differences. This problem may be even more relevant if, as suggested in the Working Group, the fight over regional hegemony prompts some states to begin (or restart) nonconventional weapons programs. NATO already has the capabilities to face this kind of threat, but the over-reliance on hard instruments may hinder achievement of these goals. This means that, apart from traditional anti-proliferation strategies (like dissuasion and deterrence) and the patrolling of seas and air, NATO should be ready to implement diplomatic measures, and, as a mean of last resort, be ready to send ground forces (with boots on the ground) into the region.

Finally, war, terrorism and state failure may pave the way for the disruption of energy supplies, which would not only affect local governments, but Western countries as well, as they are major consumers of hydrocarbons. In order to face these threats, NATO should be ready to implement targeted intervention and, if necessary, increase its current level of military presence in the region (from sea patrols to the deployment of military forces). Of course, the driving forces behind the effective implementation of these measures remain the lack of political will to undertake them, and member countries’ unwillingness to share the burden of the intervention.

**RECOMMENDATIONS FOR NATO**

In order to face future challenges, NATO should:

Develop a broader range of bottom-up approaches, to promote inclusive growth and good governance, and to empower civil society. The implementation of this kind of measures seems to be important in both cases, regardless of the scenario that emerges in the MENA region. Indeed, relying on the use of force to address social and civil issues may not solve problems,
and may even be counterproductive, because it may alienate the local population. On the contrary, soft measures aimed at building state and institutional capacity could be crucial to avoid state failure and disintegration.

Continue its current maritime operations in the Eastern Mediterranean (Active Endeavour) and continue investing in multilateral and bilateral partnerships and initiatives (Mediterranean Dialogue, Istanbul Cooperation Initiative). This seems to be important for preventing major energy disruptions, addressing possible military threats and managing migration flows stemming from state collapse, especially in scenario 2.

Improve the degree of intelligence sharing and military coordination among NATO members, to face the threat of terrorism (in both scenarios) and to protect MENA countries’ critical infrastructure (in scenario 1). Some issues may hinder the achievement of these goals: the lack of political will, poor coordination, and unbalanced burden sharing among NATO countries may result in the implementation of ineffective measures, such as an overreliance on the use of force.
During the next two decades, Sub-Saharan African (SSA) countries will continue to display the highest fertility, by far, among world regions. Fertility rates in Sub-Saharan Africa will decrease more rapidly than any other region in the world (-1.4% per year), falling from 5.14 to 3.64 children per woman. However, in 2035 Sub-Saharan countries will still show fertility rates double those of Europe.

Within Sub-Saharan Africa, some countries’ fertility rates are expected to remain stubbornly high. In 2035, both Niger and Mali will have fertility rates upwards of 5 children per woman, while Zambia, Nigeria, Somalia, Burundi, and Gambia will remain above the 4 children per woman threshold.

On the opposite end, South Africa’s fertility rate is expected to fall below replacement level, though this will be more than compensated by net migration towards the country.
OTHER DEMOGRAPHIC TRENDS

• Total population in the region is expected to increase by 70% in the next two decades, surpassing 1.5 billion people by the end of 2035. The biggest increase by far is expected to come from Nigeria, whose population will increase by 80% growing from 174 to 310 million, while the largest relative increase will come from Niger---whose population will more than double (from 18 to 42 million)---and a cluster of countries whose populations will nearly double: Zambia (from 15 to 29 million), Mali (from 15 to 30) and Uganda (from 38 to 73).

• Life expectancy is foreseen to increase by more than 8 years on average, and to become much more uniform across the region. Of the 48 countries in the region, only four (the Democratic Republic of the Congo, Lesotho, Swaziland, and Guinea-Bissau) are expected to have average lifespans of less than 60 years by 2035.

• Net migration rates are expected to remain consistently negative (i.e. net emigration) throughout the entire forecasting window in 80% of Sub-Saharan countries. Countries bucking this trend (i.e. experiencing net immigration) include Equatorial Guinea, Botswana, Gabon, and South Africa.

• In 2035, Sub-Saharan Africa is expected to remain the least-urbanized region in the world, with urbanization levels just above 50%. The most urbanized countries with a population above 30 million will be Angola (74% of urban population) and South Africa (73%). On the opposite, major rural countries will include Ethiopia (29% urban), Uganda and Niger (30%).

DRIVERS OF CHANGE

Starting from the analysis of demographic trends and their interaction with trends in other dimensions, a number of factors were identified as key drivers of change for the future of the region.

• Population growth: demographic change, and the way in which it will be managed, will decisively shape Africa’s future. Projected population growth might represent a demographic “window of opportunity” for the continent. Demographic projections tell us that SSA will have a young and large workforce in the near future, closely following Asia, as the second largest recipient of global labor force. However the African workforce is expected to remain mostly unspecialized: the working-age population that has a secondary diploma will remain below 50% of the total, while fewer than 10% will attain a tertiary education. Unless these young people can be employed fruitfully they will, at best, become a burden on their already poor societies. At worst, they will become reservoirs of discontent that feed rebellion and crime. Building effective education systems is difficult but crucial for addressing this problem.

• Political institutions: Population growth will be accompanied by rapid urbanization, with mass migrations toward the cities, and the creation of mega-cities in several parts of the continent. This will create pressures for better management of existing resources, to avoid depletion and ensure access to large parts of the population. On the other
hand, the coincidence of youth bulges with rapid urbanization, especially in the context of unemployment and poverty, might significantly increase the risk of political violence, thus exacerbating the volatility of African political institutions.

- Population movements: large movements of people are likely to take place also across some countries of the continent and toward other regions. “Economic migrants,” in search of jobs or better salaries, will probably make up the majority of this erratic population. However, “climate change migrants” are expected to grow as climate change will have different impacts on the continent (particularly in terms of changing precipitation patterns), worsening food security conditions in some areas, and improving it in others. A mix of push and pull factors is also behind the second type of migration, the one directed outside the region, which will continue to be primarily directed toward European countries and thus affected by economic trends in that area.

- Inequalities: high levels of income inequality and poverty will be with the region for a significant period of time, even if economic growth continues steadily. Growing population will translate to an increased pressure on scarce public resources (such as social services and education) and these conditions are likely to exacerbate social conflict, leading to increased political demands. While these pressures from below might be absorbed by some democratic regimes in the region, or could even push toward a transition to democracy, in some cases the continuation of authoritarian regimes might be seen by some actors (such as armies or neighboring autocratic states) as necessary to provide order in difficult situations.

- Middle class: the next 20 years will see deep transformation in the socio-economic characteristics of the population. Increasing income and education levels will favor the growth of an urban middle-class, also with tertiary education. The real question is whether this middle class will find sufficient job opportunities. Increasing levels of education and income will lead to further demand for better governance; however, higher education combined with widespread unemployment could well push younger generations toward anger and radicalism.

- Health challenges: Demographic transformations also closely interact with developments concerning the health domain. Urbanization and population growth might reduce the continent’s ability to contain the spread of diseases, creating strong pressures for the improvement of the public health systems. In parallel, an investment in education would be instrumental in addressing the primary health challenges. Educated people are healthier and more productive. In a region that is combating poverty and epidemics like HIV simultaneously, producing a healthier and more productive population would be an important boon.

- Technology for development: Technological developments have the potential to affect access to knowledge positively, which in turn will increase the number of educated individuals in Sub-Saharan Africa, and decrease their choice to migrate. Although there is still no consensus, it is largely expected that the application of biotechnology to agriculture and food processing will lead to a new “green (& blue) revolution” that will allow SSA countries to overcome problems related to nutrition and its health consequences for growing shares of the population. However, economic and social development cannot
be achieved through technological solutions alone: it requires that society transform its politics, its norms and its economy. Africa is far behind other regions, and a few decades of development will not bring it to the level of developed societies, but if it can achieve upward momentum, then, almost by definition, Africa will be fully transformed.

- Regional governance structure: Countries around the world are increasingly addressing common problems through formal interstate institutions. In Africa, regional organizations could play a big role, because many SSA states are weak and could benefit from the military, political and economic support of their regional partners. The AU and ECOWAS are important African initiatives that may allow SSA countries to pool resources, but they have not yet reached the level of coordination and commitment necessary to be truly effective.

**Regional Scenarios**

The analysis of the aforementioned *key drivers of change* led to the elaboration of two polarized scenarios for the political and economic development of the region. The first scenario, named “Africa rising” imagines a positive development for each of the dimensions examined, as well as for their interaction, leading to an extremely rosy – but still plausible – picture. The second scenario, labelled “Africa sliding into chaos” takes the opposite tack, envisaging a vicious circle of negative outcomes in various dimensions, affecting each other and leading to a regional outlook that is pessimistic, but, according to many experts, still very likely.

**Scenario 1: Africa Rising**

- Better governance: both democratic and authoritarian regimes
- Improving human capital
- Emergence of internal market
- Increase in economic growth = increase in military capabilities = incentives to use and project force
- Expansion of tertiary education but with economies with low capacities to offer jobs.
- Better public health but rising NCDs
- More regionalism, but with winners and losers

**Africa Rising**

In this scenario, the majority of African states are able to improve their governance, their economic conditions, and their human capital by 2035. The economies of the African countries continue to grow, making Africa a more relevant actor on the global scene. This growth is sustained, and through a virtuous circle it reinforces the legitimacy of the traditionally weak political institutions of most African countries. The expansion of vocational and tertiary education is accompanied by an increase in white-collar jobs. Economic growth accompanied by good governance leads to improvements in quality and coverage in public health. Economic expansion can also lead to interstate
cooperation as the benefits that can be reaped by enhancing trade agreements as well as other provisions (related for instance to jointly dealing with security and health challenges) are increasingly recognized.

Technological innovation spreads to Africa and brings further gains in several of the aforementioned fields. In particular, technologies help to boost agriculture, increasing food security, drastically improving sanitation and – more broadly – public health, and advancing the economy and individual well-being (by, for instance, improving access to education). Notwithstanding these advancements, as SSA succeeds in becoming “the next China”, it is likely to also counter China’s environmental problems such as deteriorating fresh water, air pollution, CO2 emissions, etc. Indeed, even in this good scenario, economic growth has some negative and destabilizing effects. In some countries of the region, the economic upturn leads to “sustainable autocracies” that are able to exploit the benefits of growth to gain legitimacy and strengthen state authority while staging manipulated elections. In other states, irrespective of political regime, economic growth can help to increase military capabilities, raising the incentives for the use and projection of force within the continent – particularly by the adoption of hybrid forms of warfare, such as support to militias in other countries.

Moreover, economic growth does not lead to dramatic increases in job creation everywhere that would be needed to absorb the increasing number of higher education graduates. This has both domestic consequences, in terms of potential for social conflict, and international consequences, in terms of migration flows of higher educated Africans that have incentives to go abroad to look for better jobs. At the same time, economic growth might lead to growing inequality, or at least an inability to reduce substantively the staggering levels of poverty on the continent. In addition, while disease prevention and basic health service progress leads to a general reduction in communicable diseases, prosperity will bring an increase in non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, and cancer that will exact a high toll on the national health systems. Even in a positive scenario, therefore, there will be winners and losers.

Internally stabilized and equipped with better institutions, SSA countries are able to invest in projects to improve their economy and human capital. In the medium term, consistent efforts to make secondary education compulsory have the effect of reducing fertility and slowing down population growth in most – albeit not all – countries in the region. In a virtuous circle, education also produces a healthier and more productive workforce that encourages domestic and foreign investment. For successful countries, migration out of Africa slows and so does the brain drain. Circular migration (to and from the EU) brings new skills and helps economic growth. Urban centers rise across the region, but urbanization is generally managed well: large cohorts of young, educated workers find suitable jobs and contribute to the growth of a solid middle class.
In 2035, weak political institutions in African countries have further deteriorated, becoming more unstable, more extractive and corrupt, and less inclusive. In many countries, politicians resort to ethnic polarization to gain support among their constituencies and then enact policies that benefit them while excluding others, leading to social as well as political exclusion. Conflict and violence follow. Where politics deteriorates, bad economic governance can lead to stagnation or recession. In countries rich in commodities, bad governance – while not necessarily altering revenues – might lead to extraction of resources by elites and further inequalities and, potentially, conflict. External factors also play a relevant role. Aid flows will contract as a result of slow European economic growth and of dissatisfaction with the consequences of aid in the United States and Europe. In such a context, drops in states revenues are reflected in lower educational spending, and population growth continues steadily, increasing the cohort of young uneducated people with few prospects.

Poor governance inevitably impacts other dimensions. Health is severely affected: health care structures are unable to keep pace with increasing challenges brought from population growth, migrations, the emergence of new diseases and persistence of old ones (such as HIV/AIDS).

While migrations are very likely to take place in Africa in all cases, mass movements in this scenario are disruptive. The rapid pace of urbanization becomes impossible to manage and urban planning fails to provide satisfying solutions to expansion of cities, with the creation large slums where social order is difficult to establish and basic services (that affect health) impossible to guarantee.

In this scenario, a major concern comes from the potential re-emergence of the type of regional wars that occurred in the DRC, Sierra Leone, and Liberia in recent decades, with internal conflicts that result in military intervention of other countries – that is, a combination of intra- and interstate wars. In the context of diffused conflicts, weak governance and mass unemployment, radical movements gain support and become a substantial threat to order and security. Situations similar to those occurring in Northern Nigeria or in northern Mali in 2010-15 spread, with the Sahel hosting different groups that threaten the stability of individual states and of the region.
Additionally, transnational organized crime expands from small areas like Guinea Bissau, gaining a major foothold in areas where international trade is growing, such as Nigeria, South Africa, the DRC, and Tanzania.

In the context of the deterioration of African political structures, population growth becomes uncontrolled, and exacerbating existing problems in many areas. Unemployment soars, particularly among young people: youth bulges become a real challenge for many governments, specifically in capital cities, where these masses tend to concentrate. Reductions in state revenues result in less education and health spending, worsening education levels and health indicators. As a consequence, mortality rates increase, but the increase in mortality is more than compensated by sustained birth rates. Migration increases, but particularly in the form of short-term, short-distance displacement due to diseases, conflicts, or worsening food security conditions.

**CHALLENGES TO SECURITY**

<table>
<thead>
<tr>
<th>Scenario 1: Africa rising</th>
<th>Nature</th>
<th>Actors involved</th>
<th>Response</th>
</tr>
</thead>
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<tr>
<td>Incentives to use and project force</td>
<td>Military</td>
<td>States</td>
<td>Strengthen UN, AU and REC's capacities for mediation and response</td>
</tr>
<tr>
<td>Lack of jobs</td>
<td>Economic, Social</td>
<td>Society, governments, donors and private sector</td>
<td>Inclusive growth strategy</td>
</tr>
<tr>
<td>Public Health: rising NCDs</td>
<td>Social</td>
<td>States, NGOs, donors, private sector</td>
<td>Modernizing public health</td>
</tr>
<tr>
<td>Energy and environmental risks</td>
<td>Economic, political, and social</td>
<td>States, private sector, NGOs</td>
<td>Innovative energy and urban planning</td>
</tr>
<tr>
<td>Regional diversity: progress in some areas, and deterioration in others</td>
<td>Political, Economic and Social</td>
<td>States, NGOs, donors, private sector</td>
<td>Economic integration through RECs and flexibility with donors and NGOs</td>
</tr>
</tbody>
</table>

In this scenario, the challenges are moderate but still substantial and are related to both military and human security. A major cause for concern is that some of the strongest and most successful African states may be tempted to project force in their own regions. Thus, if for instance Nigeria, Ethiopia, Rwanda and South Africa become stronger military powers, they may intervene in the politics of other countries or may back armed militias acting there.

Even in this scenario, it will be difficult for the private sector alone to provide enough jobs for
the growing African youth. In order to provide an inclusive growth strategy that maximizes job creation rather than simple GDP growth, it will be necessary for society, governments, donors, and the private sector (also international, as they provide FDIs) to cooperate. To avoid GDP growth being merely capital intensive, with no creation of jobs (as recently occurred in North Africa and in the Middle East), African governments should take a more conscious and deliberate growth strategy focusing on job creation. Social and political conflict can arise in this scenario, as increasing demand for jobs and political accountability are not met. Political conflict might take traditional forms in the continent, such as the armed forces intervening in politics and overthrowing the civilian regime or the army splitting and giving rise to more intense civil strife. Popular uprisings can also emerge, especially if the pace of urbanization is rapid.

In the optimistic scenario, public health improves and diseases such as HIV/AIDS decline through the spread of better therapies, but there is a rise of NCDs. Modernizing the public health system to deal with NCDs is the best response.

Regional diversity in terms of development, governance and capabilities is a likely outcome. If progress is strong in some areas, but feeble in others, there will be a need to achieve enough regional integration to ensure that the laggers are not left too far behind. It is thus very important to strengthen the African Union’s and Regional economic communities’ capacities, as they will have to deal with the problem of relations between the most and least successful states.

In a scenario where weak governance persists, the answer is in the very long and difficult task of institution building. Curbing corruption and getting states to be more responsive to demands for accountability involve efforts from both governments and society. The
contribution of external actors to this process seems very limited.

Radical movements pose a significant military, political and social threat. Inclusive policies and security sector reform (SSR) to prevent abuses are the best ways to limit the growth of radicalism.

While an increase in transnational crime is expected in both scenarios, the more African governments lack the ability to control their borders and manage their economies, the bigger the opportunities for international crime to move in. Even in the positive scenario, however, criminals will try to reap benefits from increasing opportunities, especially in thriving cities and areas (including the sea-lanes for trade).

In the pessimistic scenario there will be a recurrence of international and domestic warfare. This is a military problem, but it is not clear whether NATO can be effective or not, given the toxicity from NATO intervention in Libya and the broader mistrust toward Western presence and intervention. NATO can be effective only after having built good relations with African continental and regional organizations. This is why it seems important to strengthen the international and regional capacities within Africa, for intervention, mediation, and peacekeeping.

Finally, there are worries that climate change, conflict and persistence of large chunks of the population in a situation of poverty and political exclusion could lead to massive migrations both within and out of Africa. In order to deal with this potential eruption of migrants, a more effective immigration policy, which accepts and regulates frequent two-way movements, is needed. There is a need for effective urban planning to ensure that cities can manage very large inflows of migrants from the countryside and improved rural development to reduce the incentives of people to abandon the countryside.

### Implications For NATO

<table>
<thead>
<tr>
<th>Scenario 1: Africa Rising</th>
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<tbody>
<tr>
<td><strong>Challenge</strong></td>
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<tr>
<td>Incentives to use and project force</td>
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<td>Regional diversity: progress in some areas, and deterioration in others</td>
</tr>
</tbody>
</table>
In the first scenario, most of the challenges in SSA are political and social in nature. While NATO could be dealing with some of the consequences of these challenges, it likely cannot intervene (now or in 20 years’ time) with respect to their root causes. Thus, other actors such as African governments, aid donors, NGOs, local, regional and continental African organizations will be better equipped and placed to respond to these challenges. NATO’s role will thus remain limited in the region, and strictly coordinated with these other actors. To play a positive role in this scenario, NATO needs to emphasize its political power, rather than its military might: building a pure military strategy in these areas risks securitizing problems that are not military in nature.

For these reasons, NATO needs to improve its cooperation with African regional and continental organizations in order to increase their capacities – both in terms of Mediation/diplomatic/CBM instruments and peacekeeping/enforcing – and strengthen partnerships. Humanitarian interventions following natural disasters or mass migrations are tasks NATO can efficiently perform (or help to perform) and are also opportunities for NATO to be increasingly perceived as a reliable partner for Africans in building their future.

The provision of strategic assets, such as air-lifts for emergency, satellite imagery to help with urban and agricultural planning, intelligence, as well as serious investment in terms of training of African forces, all work in this manner.

<table>
<thead>
<tr>
<th><strong>Challenge</strong></th>
<th><strong>NATO role</strong></th>
<th><strong>Needed Capabilities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak governance</td>
<td>Assist and cooperate with regional organizations; intervention after state collapse</td>
<td>Political analysis, post-conflict management</td>
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<tr>
<td>Radical movements</td>
<td>Assist and cooperate with regional organizations</td>
<td>Training/assistance for security sector reforms (SSR)</td>
</tr>
<tr>
<td>Increase in transnational crime</td>
<td>Assist and cooperate with regional organizations</td>
<td>Intelligence sharing and cooperation</td>
</tr>
<tr>
<td>Intra and inter-state wars</td>
<td>Increase regional organization capacities of intervention, mediation, and peacekeeping; direct intervention upon request</td>
<td>Training for AU and RECs; Mediation/diplomatic/CBM instruments; increase response capacity</td>
</tr>
<tr>
<td>Mass migrations</td>
<td>Humanitarian intervention following mass migration</td>
<td>Crisis preparedness and relief capabilities; NATO-AU-UN coordination</td>
</tr>
</tbody>
</table>

In the second scenario, the demand for NATO help and cooperation will increase, but the same caveats apply. NATO should prepare contingency operations and forces to deal with state collapse and with requests for military intervention, when the local government cannot handle the military threat. Transnational threats like piracy, cyber-security, and terrorism are areas in which NATO and local governments and regional organization could positively
cooperate. In a context characterized by mass migrations, NATO could not only help to increase the crisis preparedness and relief capabilities of local actors, but could also directly intervene with humanitarian mission upon request by governments or regional organizations. Before engaging militarily in Africa, NATO needs to be prepared with high levels of knowledge about local forces and actors, and comprehensive plans for post-conflict management that involve all relevant actors, from political forces to regional organization and international donors. Analysis, coordination, and planning capabilities (particularly civilian) thus need to be significantly strengthened in order to make NATO contribution to the stability of African security context positive both for the region and for the Alliance.

**Recommendations For NATO**

In order to face future challenges emerging from these scenarios,

NATO should recognize that most of the challenges in SSA are political and social in nature. Other actors (aid donors, NGOs, local, regional and continental African organizations, and African states) are better equipped and placed to respond to these challenges. NATO’s strategy for the region needs to be carefully crafted, in order to avoid an unnecessary securitization of issues that are non-military in nature.

NATO needs to improve its cooperation with African regional and continental organizations by providing strategic assets, such as air-lifts for emergency, satellite imagery to help with urban and agricultural planning, intelligence, etc.

Finding opportunities for NATO to build positive relations and contributions is important at present because currently NATO is largely perceived as a self-interested actor and not as a reliable partner for Africans in building their future. It is important to change this perception regardless of the scenario.

NATO should be prepared to face transnational threats like piracy, cyber-security, and terrorism. It should also prepare contingency operations and forces to deal with state collapse and with requests for military intervention, such as what happened in Mali, where France intervened on the demand of the local government, which could not handle the military threat.

The shortfalls of the operation in Libya have shown lessons that the Alliance should learn. Before engaging militarily, NATO needs to be prepared with better knowledge on local forces and actors. It should have better plans for post-conflict management rather than simply getting involved in a war without clarity as to how to keep the peace afterwards.

Finally, we urge keeping any NATO missions limited, focused and based on a solid consensus, built beforehand, through consultation and close cooperation with countries and regional organizations.
Conclusions

In order to provide an overview of the amount of research and analysis involved in the PREDICT project – which has produced four interim reports, two read-ahead papers, two international workshops, one questionnaire and a video presentation – this conclusion summarizes the main findings in three broad steps.

First, the section "From demographic trends to demographic challenges" recalls the main demographic trends forecasted at the global level up to 2035, highlighting both the common patterns and the different implications of these trends in relation to specific contexts.

Second, the section "From demographic challenges to security challenges" emphasizes some demographic phenomena which – given their likely interaction with other trends in the economic, environmental, technological, energy and health domains – are likely to turn into serious security challenges by 2035.

Third, in the section "From security challenges to implications for NATO", the security challenges arising from each of the chosen regions – Europe, Russia and Post-Soviet States, Asia-Pacific, MENA, Sub-Saharan Africa – are recalled in order to identify related implications for NATO.

Finally, the concluding part summarises the overall implications for NATO as a security actor considering challenges regarding both its internal solidity and its external role, to face both conventional and new challenges that have emerged from the scenarios constructed in the PREDICT project.

From demographic trends to demographic challenges

Available forecasts on demographic trends seem to agree on the following patterns out to 2035:

- World population is projected to increase to 8.7 billion in 2035, that is 1.6 billion people more than in 2013;
- This increase will mostly occur in the less developed areas of the world;
- Population growth rate, however, will slow down nearly everywhere. Behind this trend lays the fact that, at the global level, total fertility is projected to decrease by 2035,
independently of ethnic or religious differences. However, fertility levels in Africa will remain relatively high.

- Ageing is another global phenomenon, but with significant distinctive features: people aged 60 or more are expected to account for 30% of the population in developed regions which, consequently, will also experience a decline in the share of their working age populations.

- The developed world will also experience most changes in ethnic composition, as a consequence of immigration.

- At global level, the Muslim population will increase by 2035, though the rate of growth is expected to slow down in the subsequent two decades.

- The increase in life expectancy, which is expected to reach an average of 74.5 years, is another global trend, although discrepancies will persist among different geographical areas. In particular, the extension of life expectancy in certain regions of the globe will depend on the diffusion of HIV and other diseases.

- Similarly, urbanization is growing everywhere: the global increase in population will be almost entirely absorbed by cities and, by 2035, urban populations will surpass rural populations in all regions.

- Migrations will remain a major determinant of population change, impacting on population growth and composition, fertility rates, life expectancy and urbanization dynamics. The ongoing change in migration trajectories, with an increase in “South-South” flows, will significantly affect both developing and developed countries.

A detailed assessment of current and projected demographic trends is a necessary precondition for our analysis. However, assuming that demographic trends may be a security challenge on their own is a flawed starting point. Recent data and forecasts on demography show that the direction of trends is similar across regions for almost all the demographic dimensions considered in the PREDICT work. Nonetheless the consequences of demographic patterns may diverge depending on a series of elements:

- The speed of change may diverge;

- Moving from different starting points, the degree of change may be different;

- Although there seems to be predetermined patterns of “demographic transition” that all countries tend to follow, different countries and regions may find themselves in different stages of this transition;

- Demographic trends occur in different geographical contexts and hence they may be affected by specific conditions taking place in each of them;

- Demographic trends feed into and interact with trends in other dimensions, be they economic, political, environmental, technological or otherwise.
While the first three assertions allow us to appreciate the specificities of demographic developments, the last two suggest that challenges can only be singled out by looking at the context in which these trends occur and at how they interact with other patterns. If that is the case, for example, even the ‘youth bulge’ should not necessarily be interpreted as a challenge: on the contrary, it would be a challenge if the situation in a specific context is sufficiently adverse to prevent the possibility to positively exploit this demographic phenomenon.

The slow-down of population increase, for example, is a global phenomenon affecting developed countries in all continents, as it is ageing. Both trends, however, not only seem to have a dissimilar direction on the two sides of the Atlantic, but they will also unfold across different time-spans, with relevant effects for NATO. In Europe, ageing is an already observable phenomenon: by 2035 it is going to put a strain on the welfare system, particularly if Europe does not find sustainable political solutions to the economic crisis. Moreover, when combined with slower population increases (that in Europe is going to be negative, absent immigration), ageing would have broader repercussions on Europe’s economic drive, competitiveness and ultimately its international role. In fact, Europe may be increasingly less willing and able to engage in international affairs first, because of an older inward-looking and ‘less interventionist’ society, and second, because welfare policies are likely to take precedence over defence expenses. On the other side of the Atlantic, the United States will exhibit a comparatively younger and more rapidly increasing population: accordingly, such developments may propel new energies in the American system, potentially igniting in turn renewed engagements in international affairs.

Migration is another case in point. Immigration is expected to be a relevant factor in the development of Europe over the next two decades, resulting by 2035 in a multicultural continent. While immigration and multiculturalism per se do not represent a direct security challenge, this is likely to have two sets of repercussions. First, armies will be more ethnically diversified in those European states that will experience more immigration. Second, European states’ foreign policies may evolve accordingly, with more or less incentives to intervene abroad in different regions of the globe. Furthermore, in Europe immigration is becoming an increasingly securitized issue, which populist forces could exploit to gain popular support. Ultimately, how Europe will be able to integrate this increased number of migrants represents a huge question mark for its future, since it will be crucial for its social cohesion, its economic progress and its international role. Conversely, the US already is a multicultural country, which has experienced the challenges of migration and integration since its very creation, transforming the phenomenon into an opportunity and a point of strength for the nation. In the next 20 years immigration will continue to add new and diverse forces in the American economy and society: while adaptation to these trends may involve more than just “growing pains,” the US stands in a position to consider them more an opportunity for its growth rather than a direct challenge to the American identity or to the US political system.

The evolution and consequences of this “transatlantic demographic divide” need to be closely monitored as they are likely to have significant repercussions on the solidity of both the liberal model embodied by the transatlantic partners, and on NATO itself, as they will complicate both burden-sharing and consensus building within the Alliance.
The study identifies some demographic phenomena that, given the specific socio-political context in which they will take place, and their likely interaction with other trends in the economic, environmental, technological, energy and health domains, could easily turn into serious challenges. The analysis of the interactions of trends in these different dimensions highlighted a number of possible challenges associated with demographic developments. Among those, there are three regional/national demographic phenomena that NATO should be very attentive to, as they are likely to turn into security issues of particular interest to the Alliance.

- **Youth bulges**: they are peaks in the proportion of young people (15-24) over the total population. The body of empirical research shows that youth bulges are directly related to surges of domestic instability, particularly in the form of low-intensity unrest, protest and rioting. Conversely, governments confronting a youth bulge are more likely to engage in repressive behaviours, possibly with the misguided intention of preventing the instability that large numbers of young people can trigger. At the same time, recent studies caution against overstating the problem of youth bulges. As the likelihood of youth-driven conflict can be tempered by the presence of good education systems and democracy, youth bulges should not be considered a security challenge in isolation. Sustained economic growth, and the possibility for these masses to find a suitable job in their country, is regarded as another – and fundamental – intervening factor. At the same time, it is important to note that youth bulges in the next two decades will occur primarily in Sub-Saharan Africa. This region is in fact comprised of many underdeveloped and autocratic countries where many of the abovementioned mitigating features do not apply. It is therefore recommendable that NATO pays particular attention to the evolution of the situation in these countries where the combination of political, economic and demographic trends might have explosive effects.

- **Rapid urbanization**: urbanization is a global phenomenon. In 2010, for the first time in human history, people living in cities outnumbered those living in rural areas. Urbanization is generally seen as a positive fact, since it is associated with a western-style modernization process, but rapid urbanization in underdeveloped countries could pose important challenges at various levels. First of all, urbanization leads to an increase in political demand, because urban dwellers can more easily overcome problems of collective action, attack their government and try to topple it. Indeed, as shown by the data, authoritarian regimes are less stable where urban populations are larger. In addition, youth often constitutes a disproportionately large part of rural-to-urban migrants. In the face of large youth cohorts, strong urbanization may be expected to lead to an extraordinary crowding of youth in urban centres, thus causing further stress to the job market and potentially increasing the risk of political unrest and violence. The general trend of rapid urbanization in the developing world, and especially in Asia and Sub-Saharan Africa, thus portends near-term political instabilities, particularly in fragile democracies and poorer societies.

- The location of mammoth urban aggregates should also be considered in connection with possible effects of climate change – such as extreme weather events – or even environmental disasters. Although the timing of floods, earthquakes or volcano
eruptions cannot be foreseen with precision, there are “maps of risks” which weight the probability of these events to occur in certain environments – with Asia Pacific figuring prominently. By crossing these data with major urbanization patterns, it may be possible to anticipate the entity of a disaster in highly inhabited environments. This could enable the identification of destination areas for refugees’ outflows, in turn enhancing NATO’s ability to develop appropriate contingency plans: a task for which there will be increasing demand in the near future.

• Migration: a longstanding body of research suggests that security externalities of migration movements can indeed impact on the course of domestic politics. In many wealthy countries, immigration (in particular of low-skilled and culturally distinct people from poorer countries) is an extremely contested phenomenon that has the potential to lead to social tensions involving demonstrations, strikes and street violence. This occurrence is especially relevant in Europe. While the correlation between international migration and national security in Western countries is in many cases the focus of research on this topic, it is also very important to explore the relationship of internal migration flows and internal security. Given the growing relevance of South-South migration routes, this issue appears to be particularly relevant for developing countries and is likely to have an impact on NATO both in direct and indirect ways.

• On the other hand, the relationship between instability/violence and migration is circular: evidence consistently shows that conflicts and political instability affect migration at an aggregate level. Government terror, dissident violence, civil and international wars all increase the probability of “forced migrations.” In turn, massive refugee outflows exacerbate regional instability. At the same time, the characteristics of neighbouring states have an impact on the probability of refugee flows. States that are surrounded by authoritarian regimes are less likely to generate forced migrants because refugees have little hope of receiving a better treatment than in their home country. Moreover, the research shows that refugee flight may cause disputes between states, aimed at preventing future refugee outflows or at pursuing rebels across territorial boundaries.

• Therefore, further research should focus on migration within developing regions – especially in Sub-Saharan Africa – and on the reasons that turn “forced migrants” into a source of instability for other countries: from food security, to human rights abuses to epidemics. The way in which pending refugees issues will be dealt with in the future would be of fundamental importance for processes of conflict resolution and, as such, the issue should be taken into account by security institutions like NATO.

In addition, the research highlighted how demographic trends might also exacerbate existing problems: for instance, a considerable population growth in a developing country is likely to have a negative impact on health conditions and food security, increasing pressure on scarce resources like water or arable land. Conversely, aging and population decline could put state budgets under significant stress – with increasing welfare expenditures for the elders, and a decreasing fiscal base – and negatively affect domestic economic demand. Thus, once again, challenges and opportunities emerging from demographic trends should be assessed considering how the above-mentioned phenomena take place within specific national and regional contexts.
The analysis and collection of main demographic trends and of their interaction with trends in other dimensions - i.e. economics, environment, technology, health, politics and energy – has provided the background material for an assessment of security implications in different regional contexts. PREDICT decided to focus first on potential regional security challenges arising from these multiple crossings, envisaging two potential scenarios (‘a rosy and a gloomy’ scenario) for each of the chosen regions: Asia-Pacific, Europe, Russia and Post-Soviet States, MENA and Sub-Saharan Africa. The research was carried out through a two-round evaluation by experts in each geographical context. After being informed about trends in different dimensions, they weighted and refined security threats and related implications for NATO. In a second phase, PREDICT investigated overall implications for NATO, considering the challenges that relate to both its internal endurance and its external role as a security actor that is going to face both traditional and new challenges.

**Asia-Pacific** is a very peculiar region for NATO: while geographically speaking it remains the furthest from the Euro-Atlantic basin, the Alliance has had a Pacific flank since its creation, by virtue of the West coast of its North American members. Moreover, given the current and projected shift of demographic and economic weight towards the region, a rebalancing strategy by the US towards the Pacific is currently ongoing. It should not come as a surprise then, that developments in this area are expected to have a significant relevance for NATO. Indeed, as described in the previous section, urbanization is likely to put a stress on Asian social and political systems, particularly in terms of high rates of unemployment and poor living standards, thus paving the way for social uprisings. To defuse domestic political turmoil, Asian political leaders may then resort to nationalism and to aggressive or imperialist ideologies. In turn, this may lead to military confrontations between Asia’s main regional powers (Japan, China, and Vietnam) or – worst – between China and the US. Under these circumstances, and especially in case of US involvement in Asian disputes, NATO could be asked by the US to intervene by virtue of Art. 5. This hypothesis would put the internal cohesion of the Alliance greatly under stress, since most European members will be unwilling and unable to intervene in Asia-Pacific. Since Asian countries tend to refuse NATO presence in their territories, this make an American-led NATO intervention less likely, because it could only add fuel to Asian nationalist fire, contributing to escalation. Furthermore, as the global center of gravity continues its eastward shift and the United States continue with their “rebalancing” strategy, NATO will face a trade-off between continued effectiveness and relevance at the global level on one side, and deeper commitment from its European members on the other. The search for deeper cooperation between NATO and the European Union, albeit politically very sensitive, could then be, for the Alliance, an indirect implication of developments occurring in Asia-Pacific. At the same time, given the distance of the region – in geographical and cultural terms – from the transatlantic community, NATO needs to develop a corporate knowledge of the area. That in turn would also help the Alliance to play a role in the region, should the appetite or the necessity for it arise.

**Europe** is the region where the majority of NATO member states are located, and where the Alliance is headquartered. There is thus a high probability, that by 2035, the role and the nature of the Alliance will be challenged to a degree that it has been thus far. Ultimately,
this risk, which relates to the way in which Europe develops itself, will be a test to NATO’s internal cohesion and external potential margin of manoeuvre. If Europe were to become a much more powerful actor in the international arena through an increase in its population and a buoyant economic recovery, NATO would probably have to accommodate and adapt to major European activism both on defence issues and on interventions abroad. On this latter account, a more multicultural society in Europe may have an impact on the direction of external engagement. Even in the (more likely) case of a European economic stagnation and political weakness, NATO would be challenged, mainly because of the lower capability to provide resources to the organization given the mounting needs of an ageing population and multiple centrifugal forces in place. And yet, in this case, NATO would probably be the only institution able to provide traditional and new security needs. The maintenance of adequate defence and deterrence capabilities will be a significant internal challenge. However, notwithstanding how Europe will turn out, there will still be a set of issues where NATO would prove key, including: intelligence sharing; military coordination; standards for interoperability; and diplomatic tools for new and renewed partnerships. Fundamental will be to develop and strengthen risk assessment and cyber capabilities; something that only an institutionalised and multi-directional organisation such as NATO would be able to provide.

As for **Russia and Post Soviet States**, the analysis had to take into account the degradation of NATO-Russia relations over the crisis in Ukraine. Assuming that there is a genuine will to restore relations in the next two decades, one way to rebuild trust would be resuming cooperation in a number of well-defined areas that already have a record of success, such as arms control, Afghanistan, the Arctic, counter-narcotics and counter-terrorism. However, in the meantime, NATO will have to maintain its deterrence capabilities to assure its members’ security and signal its resolve to any possible challengers in the region. Specific demographic phenomena taking place in this region need to be attentively monitored. China’s growing demographic and economic pressure in the Russian Far East and in Central Asia represents indeed an issue of major concern for Russia and this might translate into an escalation of tensions. In this context NATO and its members may play a crucial role as third-party actors (either as facilitators or as mediators) in de-escalating possible dangerous situations. The presence of significant Russian minorities in NATO and non-NATO members in Eastern Europe is another point in case. In addition to engaging in confidence and security building measures toward Russia, security can also benefit by addressing those factors that make irredentist ideologies attractive for these groups. Political and economic steps that address these ethnic groups’ grievances can reduce Russian government’s ability to manipulate those grievances and muster domestic support for its military adventures. This strategy would require NATO to increase its cooperation with the EU, whose vast array of integration policies and civilian capabilities could be particularly appropriate to deal with these non-military security challenges.

As far as the **Middle East and North Africa** is concerned, the peculiarity of the area requires NATO to further develop a deeper understanding of the regional dynamics in order to achieve an adequate and comprehensive approach. Military might – while necessary – has in fact proven insufficient by itself in tackling the challenges arising from the region, and projecting forward, “more immaterial” challenges require a balanced set of instruments, ranging from the training of local military forces to institution building and cyber capability
needs. At the same time, NATO can already count on a wide array of partnerships in the region that may serve as the starting point for a renewed engagement effort. Information sharing and intelligence coordination are two fields where cooperation will be most needed: both internally in NATO – among member states – and externally between the Alliance and its regional partners. Independently from future economic performance and from a more collaborative relationship among countries in the region, which would indeed decrease the probability of major confrontations, massive outflows of refugees may still be possible due to the invariable trend of climate change that would worsen water and food provision. Ultimately, NATO should be ready to mitigate the impact that huge outflows may have both in the region and towards other geographical contexts, with Europe at the forefront through diplomatic and relief measures. Furthermore, and different to the case of Russia and the Post-Soviet space where ethnic grievances loom large, the MENA region will still be characterised by a highly fragmented population in ‘religious’ terms with possible radicalisation tendencies (especially in the case of poor economic performance enticing unemployment and social unrest). NATO should be a part of the broader attempt to contain these phenomena, through partnerships established in the region and its unique military assets in supporting the contrast to extremist organizations.

The challenges emerging from Sub-Saharan Africa are mostly political and socio-economic in nature. Indeed, demographic phenomena such as youth bulges, rapid urbanization and mass migrations here seem to have the highest likelihood to manifest. However, their management – and prevention – primarily involve actors which are better equipped and placed to respond: African States, International and regional organizations, and NGOs. For this reason, implications for the Alliance are more indirect and NATO’s strategy for the region needs to be carefully crafted in order to prevent unnecessary securitization of issues that are not military in nature. In this regard, Sub-Saharan Africa will provide opportunities to test NATO’s willingness and capacity to cooperate and coordinate with other international organizations in a wider spectrum of tasks: both in crisis management – particularly in scenarios associated with urban riots or mass migrations – and prevention. In other areas such as piracy, cybersecurity and terrorism, NATO could certainly bring its specific expertise as an added value for stronger regional partnerships. Furthermore, the Alliance, rightfully or not, is still perceived by several actors in the region to be a self-interested actor: if NATO intends to successfully play a significant role in Sub-Saharan Africa it has to exploit opportunities to cooperate with regional actors in order to change this perception.

**Final remarks**

Emerging challenges and opportunities can also be assessed considering how the above-mentioned features affect and interact with the trends and peculiarities of other regional contexts. This is something that PREDICT only started to investigate, but which would require further research and a different methodology in order to reduce the complexity of the matrix arising. Nonetheless, the whole analysis conducted by the PREDICT project allows us to highlight some general points that appear to be particularly relevant for the evolution of the Alliance.
First, demographic trends per se are neutral phenomena or, to put it differently, their effect is undetermined. Their likelihood to turn into socio-political challenges, and more specifically into security issues, indeed depends on the specific socio-political context in which they will take place, and on their likely interaction with other trends in the economic, environmental, technological, energy and health domains. Having said that, our analysis highlighted youth bulges, rapid urbanization and migration as specific, demographic phenomena that NATO should be very attentive to for their likelihood to turn into security issues, particularly in specific regions (Sub-Saharan Africa and South Asia). In addition, population distribution has emerged as another sensitive issue, both concerning population distribution within countries (depopulation of Russia Far East), unbalances in terms of growth rates among different ethnic/religious groups (Muslim growth the Caucasus) and the presence of substantial ethnic/linguistic/cultural minorities in third countries (such as Russian minorities in Eastern Europe). Again, although these are not security challenges on their own, they could be opportunistically manipulated by certain political actors in order to gain influence – or even to destabilize the security context of specific areas.

Second, the development of regional scenarios has enabled the identification of a significant number of relevant implications for the future of the Alliance. Many of these implications have, quite obviously, a strong geographic connotation. At the same time, the recurrence of similar implications across regions allows the identification of some common patterns that have a clear relevance for the evolution of NATO. The most evident, concern the nature of the tasks NATO might be asked to perform in the near future.

Not surprisingly, the maintenance of appropriate defence and deterrence capabilities is a recurring implication stemming from different regional scenarios. NATO is an organization created to safeguard the security, freedom, common heritage and civilization of its member states’ populations, and such a task necessarily requires an adequate level of capabilities across all domains of the defence sector. However, an equally – or maybe even more – important finding is the recommendation for NATO to develop strategies and capabilities to intervene effectively in a number of non-traditional security contexts: from conducting contingency planning after natural disasters or extreme weather events, to the coordination of relief strategies in the Arctic, to the provision of assistance to maintain order during urban riots or in cases of mass migrations.

This demand for new tasks is intimately connected with the recommendation to pursue greater cooperation with regional (and global) International Organizations (IOs). For instance, NATO can act as a catalyst for the further development of existing IOs, sharing its expertise and lessons learned, and thus attaining a respected status within a foreign regional context. Furthermore, the nature of many of the identified challenges – and particularly those with a demographic origin – goes well beyond the traditional purview of the Alliance. In order to successfully tackle them, NATO would be ill-advised to resolve to a “do-it-all” strategy, and it would find instead of great utility to coordinate with other IOs. A “comprehensive coordination” – with the UN and its agencies among others – would allow the employment of a vast spectrum of resources, including diplomatic (sanctions), military, political, and economic tools. Although particularly sensitive in political terms, many scenarios identified the opportunity for NATO to significantly increase its coordination with the European Union – especially if the EU manages to maintain a significant level of resources devoted to its
external projection (including trade, aid, humanitarian assistance, neighbourhood policy, civilian and military capabilities for conflict prevention, crisis management operations and reconstruction). A closer NATO-EU relationship could prevent the two organizations from pursuing un-coordinated or even diverging strategies, as well as from fragmenting defence investments into un-necessary, un-effective and un-efficient duplication, and consequently enable a better use of limited European resources and a fairer burden-sharing among the two partners.

Fourth, the regional scenarios combined provide a glimpse of a ”global”, complex landscape. While the appetite to develop a global reach remains inherently a political debate internal to the Alliance, it appears quite clear that the nature of many forecasted challenges require NATO to increase its research capacity in order to develop adequate “regional knowledge”. The further enhancement of regional partnerships is one way to respond to this challenge. The history of NATO’s partnerships has been so far a successful one, and it shows that solid engagement frameworks provide long-term benefits because they keep diplomatic avenues open, and allow different actors to familiarize and trust each other. The more distant a region is – both geographically and culturally – the more reciprocal acquaintance is needed in order to make engagements successful. Without a coherent and consistent effort devoted to regional partnerships, this task may become increasingly challenging in the next decades.

Just one scenario openly questioned the continued relevance of NATO as of 2035: that of a strong, peaceful and secure Europe in good relations with all its neighbours, in which the core, traditional tasks of defence and deterrence would be less and less useful. In this view, external security challenges and the internal challenge of the strength and the very survival of NATO seem to compound themselves. In order to maintain its relevance, once again, the Alliance might be forced to adapt its mission, structures and strategy to an ever-evolving security context.


Black, R., et al. (2008), Demographics and Climate Change: Future Trends and their Policy Implications for Migration, Development Research Centre on Migration, Globalisation and Poverty (University of Sussex), Brighton.


Cranfield Universit et al., (2011), Africa wide water, sanitation and hygiene technology review, Washtech Report 2.1 Website: http://washtechafrica.wordpress.com


KC, S. et al. (2010), Projection of populations by level of educational attainment, age, and sex for 120 countries for 2005-2050, Demographic Research, Volume 22, Number 15, pp. 383-482.


Rogers, R. et al. (2010), *Social, Behavioral, And Biological Factors, And Sex Differences In Mortality*, Demography, Volume 47, Number 3, August 2010, pp. 555–578.


Stratfor (2013), In China an unprecedented Demographic Problem takes shape, analysis, 21 August 2013.


U.S. Census Bureau (2013), International Data Base, December 2013 update.


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## ANNEX B

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The UN makes projections based on different “variants” of fertility: high, low, medium and constant.

Average number of children if fertility rates remained unchanged during a woman’s lifetime.

Replacement level fertility is the level that should be sustained in the long run to ensure that a population replaces itself. 2.1 children per woman circa is the replacement level that most countries with low or moderate fertility exhibit.

As far as fertility transition in Sub-Saharan Africa is concerned, the WPP 2012 Revision recognizes, together with other studies, that the assumption of a path towards low fertility as experienced by other countries could be far too optimistic with a view to recent empirical evidence (Bongaarts and Casterline 2013).

Projections on future ethnicity data are not available in a systematic manner and are missing for most countries in the world.

The US Office of Management and Budget (OMB) and the U.S. Census Bureau consider race and Hispanic origin to be distinct. Therefore, Hispanic falls across all race categories.


International migration as a part of population change is very difficult to project and estimate with a certain dose of confidence. Contingent phenomena may soon change migration patterns or speed, so that migration is very volatile and projections are based on main observable trends and levels.