Strategic Foresight Analysis
2013 Report

North Atlantic Treaty Organization
Headquarters Supreme Allied Commander Transformation

This page intentionally blank

FOREWORD

Leading NATO's military transformation and developing capabilities to address defence and security challenges by providing future military estimates, perspectives and advice is one of the key tasks given to Allied Command Transformation (ACT). ACT has developed an enduring capability to meet this task; the persistent foresight and future studies.

The initial part of this effort, the Strategic Foresight Analysis (SFA), addresses the opportunities and challenges of the future. The aim of the SFA is to identify trends that shape the future strategic context and derive defence and security implications for the Alliance to 2030 and beyond. It serves as the foundation of the Framework for Future Alliance Operations (FFAO), a strategy document to assist with preparations for the future military capabilities of the Alliance.

Concepts of defence and security evolve. As a consequence, the security and operating environments continue to change in ways that will have significant effects on how NATO executes its three core tasks as defined in the Strategic Concept: Collective Defence, Crisis Management and Co-operative Security. In order to understand the impacts of these changes and be prepared to meet emerging challenges, we must visualise the future security and operating environment. In this context, this inaugural edition of the SFA provides a baseline that builds upon the principles described in the Strategic Concept and is based on recent national and international studies that address emerging challenges.

The SFA is an iterative process which we will update regularly to provide NATO, national leaders and defence planners with a perspective of the challenges facing the Alliance in the decades to come. The subsequent FFAO will deliver a future organising framework, informed by a set of broad strategic insights and military implications through an assessment of required mission types. Together, the SFA and the FFAO will inform and support the NDPP. If Nations choose, the SFA and the FFAO can also provide an input into the development of national security and defence plans as well as strategies for the near, mid, and long term.

We must continue to engage in this meaningful discourse and the open exchange of ideas among the Nations if NATO, as the most successful Alliance in history, is to continue to ensure that we are fully prepared for the uncertainties that lie ahead.

General Jean-Paul Paloméros
General, French Air Force
Supreme Allied Commander Transformation

TABLE OF CONTENTS

EXECUTIVE SUMMARY

1. The **Strategic Foresight Analysis (SFA)** is the initial component of the Long-Term Military Transformation (LTMT) and will serve as the foundation for the Framework for Future Alliance Operations (FFAO); a blueprint for how the Alliance might transform to anticipate a future which is different from today. Both the SFA and the FFAO will support and inform the NATO Defence Planning Process (NDPP) and other future-focused processes. The SFA is based on recent national and international studies that address the 2030 and beyond timeframe, previous Allied Command Transformation (ACT) futures analyses, and the results of four separate ACT-led workshops.

2. The SFA identifies trends that will shape the future strategic context and, from these trends, derives defence and security implications for the Alliance out to 2030 and beyond. It is acknowledged that these implications are derived from specific trends under a single theme. However, any number of multiple accelerating trends could interact in unforeseen ways and increase complexity with unknown consequences and implications not listed here. The report concludes that the future is neither completely predictable nor predetermined and, moreover, there is always the possibility of strategic shock. However, the SFA does deduce that the current period of transition will become even more complex and uncertain, presenting threats as well as opportunities which are fuelled by an accelerating rate of social and technological change and combined with the pervasive effects of globalisation. It is important that the Alliance continues to observe the global security environment in order to build a common understanding of trends and inform its continuing transformation efforts.

The period of transition which humanity is currently experiencing will become even more complex and uncertain

3. The SFA identifies trends in five broad themes: Political, Human, Technology, Economics/Resources, and Environment. A summary of key findings related by each theme is provided in the following paragraphs.

4. At the political level, global power shifts will continue to have significant effects.
- Emerging powers will exert increasing global influence. This shift in power may cause instability.
- The increased relevance of certain regions may support the pursuit of new types of partnerships and associations for NATO.
- NATO could be affected by crises further from Alliance territory, where non-state actors may play a larger role and Nations' interests might not always align.

5. The future is likely to be characterised by changing demographics, urbanisation, human networks and fractured identities.
- Most NATO nations will experience overall ageing, leading to a shrinking military-able population. In developing nations, youth bulges could lead to potential challenges.
- Urbanisation will increase the likelihood that the Alliance may need to conduct combat or security operations in condensed urban environments.
- Human networks and demands for transparency will bring new challenges and opportunities for NATO.
- Changes in the relationship of individuals to the state could present governance challenges and create the potential for social and political disruption.

6. Accelerating technological change will contribute to how the future is shaped.

- Technological innovation has the potential to provide significant global benefits, but it also creates a greater likelihood of adverse consequences.

- Potential adversaries will have greater access to innovative science and technology, and will continue to attempt to obtain Weapons of Mass Destruction/Effect (WMD/E) information or material.

- The Alliance must continue to anticipate technological advances in order to maintain its technological edge.

- There will be increased potential for cyber-attacks against Alliance networks or military systems.

- The ubiquity of information and social media will present both challenges and opportunities for NATO's strategic communications.

7. Globalisation and increasing resource scarcity will directly influence international security.

- Global markets, financial institutions and national economies will become even more interdependent, thus increasing the risk of a cascading global crisis.

- International flows of goods, people, information, services, ideas and money will be the crucial arteries of a globalised world. Disrupting the flow in one of them will have far-reaching consequences for the whole body.

- The competition for scarce raw materials, food, water, and energy resources, inside or outside traditional Alliance regions, will have global consequences.

- The potential for declining defence expenditures and slow economic growth would threaten the Alliance's full spectrum of military capabilities.

8. Environmental changes will have an impact across many global issues.

- Climate change will have positive effects in some regions, while other areas will suffer from its negative impacts.

- Other environmental threats like air and water pollution or deforestation may contribute to insecurity and instability.

- Natural and man-made disasters will continue to lead to the requirement for humanitarian assistance or disaster relief operations.

9. The analysis acknowledges that some identified trends will have divergent impacts both on the Alliance and on individual Nations. However, Nations should have a common understanding of those trends that are likely to affect the Alliance's core tasks. This requires Nations to share their perspectives of the future and maintain an active role in the continued identification of those defence and security implications that may entail a consensual response. ACT intends that the SFA will be a living document that will be updated regularly and synchronised with the NDPP timetable. As the foundation for the FFAO, the SFA is designed to be a persistent, collaborative, transparent and iterative effort that encourages meaningful discourse and an open exchange of ideas about the collective future of the Alliance.

> **SFA will be a living document that will be updated regularly and synchronised with the NDPP timetable.
> As the foundation for the FFAO, SFA is designed to be a persistent, collaborative, transparent and iterative effort**

NATO Headquarters Supreme Allied Commander Transformation

INTRODUCTION

Strategic Foresight is the ability to create and sustain a variety of high quality forward views and to apply the emerging insights in organisationally useful ways; for example, to detect adverse conditions, guide policy, and shape strategy.[1]

AIM

1. The aim of the **Strategic Foresight Analysis (SFA)** is to identify trends that will shape the future strategic context and derive defence and security implications for the Alliance out to 2030 and beyond.

BACKGROUND

2. The SFA is the initial phase of the ongoing Long-Term Military Transformation (LTMT) futures work at Allied Command Transformation (ACT) and will serve as the foundation for a follow-on report, the Framework for Future Alliance Operations (FFAO).[2] Together, the SFA and FFAO are designed to improve the Alliance's long-term perspective of the security environment to support and inform the NATO Defence Planning Process (NDPP),[3] as well as other processes that require an assessment of the future.

SFA is the initial phase of the ongoing Long-Term Military Transformation will serve as the foundation for a follow-on report, the Framework for Future Alliance Operations

3. This first edition of the SFA suggests that the future will be no less complex or uncertain than today. Therefore, the challenge of the SFA is to share of future perspectives,   assisting the Alliance to transform coherently in order to prepare for potential future threats, meet diverse challenges and capitalise on emergent opportunities.

SCOPE

4. The SFA builds upon the principles described in NATO's 2010 Strategic Concept as the basis for ensuring Alliance security in the future. It is based on recent national and international studies that address the timeframe out to 2030 and beyond.[4] The SFA used previous ACT futures analyses (e.g. the Multiple Futures Project) as a starting point for its investigation. The report also captures the results of four separate ACT-led workshops that discussed political, sociological, economic, technological, scientific and environmental trends and their implications for NATO as an organisation and for Alliance members' security as a whole.

---

[1] Australian Foresight Institute, publicity flyer, Melbourne, Dec 1999, from "Thinking About the Future" edited by Andy Hines and Peter Bishop, 2006.
[2] The FFAO will be a Bi-Strategic Command document that will supply best military advice to the Military Committee, the International Military Staff, and the International Staff. It will aim to provide strategic recommendations for preparing Alliance forces to succeed in executing NATO's core tasks and achieving the Level of Ambition within the shared perspectives of the long-term future.
[3] The SFA will inform Step 1 (Political Guidance) in accordance with AC/281-N(2012)0154-REV9(R) "Enhancing the NATO Defence Planning Process" dated 12 March 2013.
[4] Footnoting the same list of sources multiple times throughout the document in every sentence would have been too unwieldy and unnecessary. Therefore, unless otherwise noted, consider all of the themes, trends and implications in the SFA to be derived from unclassified material in the multiple sources listed in Appendix A. The SFA will, of course, cite specific quotes, figures or material from sources listed in the Bibliography.

5. This initial report identifies a range, or menu, of defence and security implications based upon currently recognised trends that are likely to shape events towards 2030 and beyond. It does not imply a particular or specified future. The implications are a reflection of military judgement and academic expertise, and are not intended to be prescriptive or necessarily linked to specific capability sets. The SFA is designed to be a continuous, regularly updated, collaborative, and transparent effort which encourages meaningful discourse and an open exchange of ideas among the Nations about their collective future.

6. In recent decades the concepts of defence and security have evolved. The security architectures that contribute to defence and security will need to be developed to counter future threats and non-military risks. The results of the analysis demonstrate that the security and operating environments continue to change in ways that will have significant effects on how NATO will execute its three core tasks: Collective Defence, Co-operative Security and Crisis Management.[5] ACT is the natural platform for the development of futures work as part of LTMT, which will have a paramount importance in guiding the long-term strategic vision of the Alliance. The futures work is designed as a forum for identifying many different, and sometimes opposing, views and opinions regarding the future.

TERMINOLOGY

7. For the purpose of this study, themes, trends, and implications are defined as:

   a. Theme. A theme is a collection of similar or related trends.

   b. Trend. A trend is a discernible pattern or a specified direction of change.

   c. Implication. An implication is the result of at least one trend significantly affecting
      the defence or security of one or more NATO Nations.

This initial report identifies a range, or menu, of defence and security implications based upon current recognised trends that are likely to shape events towards 2030 and beyond

---

[5] NATO. Active Engagement, Modern Defence. Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organisation. Adopted by Heads of State and Government at the NATO Summit in Lisbon, 19-20 November 2010, 7-8.

SFA STRUCTURE

8. After a chapter describing the general **Characteristics of the Future**, the subsequent five chapters examine each of the principal themes. Each chapter discusses the main trends of global change with the resultant implications for NATO. SFA identifies commonalities from the research with the findings categorised into five principal themes:[6]

    a. Political. Includes geopolitical power shifts; regional vs. global interests; concepts of power and security; role of governments, Intergovernmental Organisations (IGOs), Non-Governmental Organisations (NGOs), multinational corporations, and other international institutions.

    b. Human. Includes demographic changes (age, gender, ethnicity); nationalism; globalisation of information; migration; urbanisation; wealth distribution; ideology; culture; and religion.

    c. Technology. Includes industry; technological advancements (space industry and exploration, miniaturisation, robotics, biotechnology); proliferation of WMD/E; communications; and computer networks.

    d. Economics and Resources. Includes globalisation and financial networks; the availability and scarcity of resources (rare earth elements, water, food, energy); and decreasing defence expenditures.

    e. Environment. Includes climate change; desertification; deforestation; water stresses; and natural and man-made disasters.

---

[6] Appendix B contains a complete summary of the themes, trends and implications discussed in this SFA.

CHAPTER 1

CHARACTERISTICS OF THE FUTURE

1. **For the Alliance to comprehend fully how the world will develop in the coming decades, it is useful to identify key characteristics that likely will shape the future strategic context.** The future will be increasingly complex and uncertain, thereby presenting threats as well as opportunities fuelled by an accelerating rate of social, economic, scientific, technological and environmental change.

PERIOD OF TRANSITION

2. Humanity is currently experiencing a period of considerable transition. Historically, such periods of transition have presented the greatest challenges to the security of nations and the stability of international affairs. During these periods of global change, emerging powers may attempt to define or redefine their own role in the developing system. Additionally, an increasing number of actors challenging for an influential role in the world community may further destabilise international affairs. Attempts to understand the potential outcomes from this period are complicated by the difficulty of predicting its duration among other variables.

RAPID RATE OF CHANGE

3. The current period of transition is an outcome of some of the most rapid changes in human history. The rate of change in many aspects of human society is moving at an exponential, as opposed to a simple linear, rate. The future is increasingly characterised by an accelerating rate of change resulting from the rapid interaction of technology and innovation. [7]

Increasing number of actors challenging for an influential role in the world community may further destabilise international affairs

[7] Ray Kurzweil and Chris Meyer, "Understanding the Accelerating Rate of Change", 2003.

NATO Headquarters Supreme Allied Commander Transformation

UNCERTAINTY

4. Transition and the unprecedented rate of change, coupled with the emergence of new threats, have increased global uncertainty.[8] The potential shift from the current international system to a polycentric world - a world dominated not by one or two, or even several states, but rather by dozens of actors possessing and exercising various kinds of power - contributes to growing uncertainty. This possibility presents a significant shift from the past, potentially increasing instability.

5. Adding to the uncertainty and growing complexity of the future, single events could provide discontinuities that cut across existing trends and reshape the strategic environment. Such events are 'strategic shocks'.[9] These are not addressed individually in the SFA; instead the elements of change that they could rapidly precipitate are considered generally within the five main themes.

GLOBALISATION

6. The current period of globalisation[10] can be characterised as "almost the vertical rise in scope, connectedness, and speed of all of humankind's activities and impacts."[11] It can be further defined as the reduction of barriers to free international movement of goods, people, information, services, ideas and money, producing a more inter-connected world. Globalisation has been uneven in both its processes and its effects,[12] and though it will ebb and flow, it is likely to continue to strengthen. Key advances in communications, transportation and information technology have accelerated this phenomenon. As a consequence, globalisation has varied effects on many aspects of society, including but not limited to the economy, politics, social media, culture and religion as well as demographics, public health and the environment, and will continue to do so in the future. These factors and their interaction may trigger new security challenges as they increase or lessen tensions between stakeholders.[13]

[8] Uncertainty can be defined as the situation where the current knowledge is such that the order or nature of things is unknown; the consequences, extent or magnitude of circumstances, conditions or events is unpredictable; and credible probabilities to possible outcomes cannot be assigned. Business Dictionary on 333Decision Making www.businessdictionary.com/definition/uncertainty.html
[9] A shock is a high impact event that results in a discontinuity or an abrupt alteration in the strategic context. The strategic shock can either be expected or unexpected; the important point is that it dislocates the strategic context from the trends that have preceded it. Historic examples include: the 2007/8 financial crisis, the 9/11 terrorist attack and the collapse of the Berlin Wall. UK MOD, Developments, Concepts and Doctrine Centre (DCDC) "Global Strategic Trends – Out to 2040," 4th Edition, 2010, 6.
[10] There is an ongoing academic debate that globalisation is not a new phenomenon and previously occurred in the 15th, 19th and 20th centuries. To avoid confusion, SFA deals with the current period of globalisation as defined in paragraph 6.
[11] T. H. Dixon, "The Upside of Down", 2006, 14.
[12] Charles O Lerche III, "The Conflict of Globalisation", International Journal of Peace Studies, George Mason University.
[13] Richard L. Kruger and Ellen L. Frost (eds). "The Global Century: Globalisation & National Security", Vol I & II. December 2001.

COMPLEXITY

7. Rapid change, uncertainty, and interconnectedness are combining to make the world more dynamic and complex.[14] As global systems increasingly become interdependent, it will be difficult to isolate an individual crisis or event and address it separately. No one solution will suffice as it is likely that any action taken to tackle a single problem will trigger cascading effects in other areas.

8. Multiple accelerating trends will interact and bring about a complex array of effects that will cause major changes in global politics, society and humanity, technology and innovation, world economics, and the environment. These changes will create a demanding future security environment containing an even broader range of threats and challenges.

The ongoing transition of some older established autocratic / theocratic regimes to democratic governments will be turbulent

[14] When describing "Complexity" as one of SFA's key future characteristics, the following definitions were considered:
(i) A system is complex when composed of many parts that interconnect in intricate ways.
(ii) A system presents dynamic complexity when cause and effect are subtle over time, e.g. dramatically different effects in the short-run and the long-run, dramatically different effects locally than in other parts of the system, and obvious interventions producing non-obvious consequences.
Peter Senge, "The Fifth Discipline: The Art and Practice of the Learning Organization: First Edition," Random House, 2010.

NATO Headquarters Supreme Allied Commander Transformation

This page intentionally blank

CHAPTER 2

POLITICAL THEME

1. In the next two decades, the global political landscape will continue to be transformed by significant geopolitical and economic power shifts, increasing globalisation and greater influence by non-state actors. An evolution to a polycentric[15] global power structure accompanied by a greater ability for individual contributions to political discourse will redefine the geopolitical environment.

2. Within a polycentric world with multiple political and economic power centres, the development of common perceptions of threat within the Alliance will be more difficult. As an example, the current refocus of the United States towards the Asia-Pacific region will likely have consequences for the Alliance's transatlantic relations, although this could very well prove to be a new area for co-operation and dialogue.[16] Given these circumstances, the challenge for NATO will be the maintenance of a relevant Alliance with the ability and will to react to a changing security environment.

SHIFT OF GLOBAL POWER

3. Potential rebalancing of power from the West to other regions could present political and economic challenges to NATO members. While many developed nations have been experiencing slower economic growth, developing nations with faster growth may translate their rising economic power into greater political and military influence. As a consequence, the ability of the international community to integrate rising powers and manage the associated changes peacefully will be decisive for the future. Otherwise, the potential for tension or conflict could be increased in new as well as traditional hotspots, or threaten assured access to the global commons,[17] compromising international relations and security.

4. The geographic shift in global power may be overshadowed by an even more fundamental change in the overall nature of power and how it is employed. The employment of 'soft power'[18] for nations to achieve their national aims is becoming more likely in a rapidly changing world involving networks and coalitions. Countries relying mostly on more traditional military, economic, and diplomatic elements may not be able to shape their desired outcomes by being solely reliant on 'hard power'. It will be crucial to strike a balance between elements of 'soft power' and 'hard power'.

---

[15] Polycentrism is the principle of the organisation of a region around several political, social or financial centres. European Union Institute for Security Studies (EU ISS), "Citizens in an Interconnected and Polycentric World – Global Trends 2030," 2010.

[16] "Given that North America and Europe share the same goals of open markets, open seas, and open political dialogue, there is every reason for Europe to support that re-adjustment – and even to be a part of it. A coordinated, transatlantic approach can help encourage China to remain a responsible stakeholder in the region and beyond while consolidating recent past change." Ambassador Alexander Vershbow (NATO Deputy Secretary General) remarks at the Munich Security Conference 21 January 2013.

[17] For the purposes of this document, the term 'global commons' is used in accordance with NATO's Multinational Experiment (MNE) 7 definition: "those areas that are not under any national jurisdiction or sovereignty and that are potentially accessible to any and all actors, be they states, non-state actors, or individuals."

[18] "Power is defined as the ability to influence the behaviour of others to get the outcomes desired. 'Soft power' rests on the ability to shape the preferences of others to attract and co-opt them whereas 'Hard power' is the coercion of others with threats or inducing them with payments." Joseph S Nye Jr, "Soft Power," 2004, 1.

NATO Headquarters Supreme Allied Commander Transformation

IMPLICATIONS

a. Rebalancing of global military power. There has been a movement of economic power to the East, in particular to China and India. This has been accompanied by an increase in defence investment in that region. The rising importance of the Asia-Pacific region has brought about a recent shift in the focus of the United States. Alongside this shift of focus, NATO's expanded global partnership activities and operations outside of the Alliance's traditional geographical area[19] could provoke unintended consequences if misinterpreted.[20]   This could lead to the formation of new regional alignments that potentially initiate direct competition to NATO's lead and influence as the foremost military alliance and challenge NATO's current strategic advantage. Alternatively, NATO could capitalise on such changes by establishing new partnerships and exploring opportunities for new forms of co-operation.

b. NATO's relevance challenged. NATO's role as a defence and security provider may come under scrutiny as the evolving global political landscape and shifting nature of power bring about changes in national political priorities. The potential decreasing relevance of NATO could be further exacerbated by the shifting focus of individual nations, redirection of capabilities away from the Euro-Atlantic region, and difficulty in justifying the maintenance and development of defence capabilities. As was successfully addressed at the end of the Cold War, NATO could again be challenged to transform itself in a changing world to maintain its relevance as a defence and security organisation to its members and the global community.

The ongoing transition of some older established autocratic/ theocratic regimes to more democratic forms of government will be turbulent

SHIFTING POLITICAL STRUCTURES

5. The transition of autocratic/theocratic regimes towards more democratic forms of government will continue. The Middle East and North African region has experienced political upheaval in recent years, dislodging pre-existing regimes in several countries. The ongoing transition of some older established autocratic/theocratic regimes to more democratic forms of government will be turbulent. Over the next decades, established regimes are likely to continue to face reform movements. While this may eventually lead to new participatory and more inclusive democratic structures, transitional nations will likely weather a period of social and political instability, and possibly political reversals. For example, the republics that emerged after the dissolution of the Soviet Union are in the process of democratisation and have experienced similar issues. Fledgling democracies will require more time to mature and stabilise. During this period they are at a greater risk of setbacks and civil strife.

---

[19] The North Atlantic Treaty 1949. Article 5 "To restore and maintain the security of the North Atlantic area…to restore and maintain international peace and security." Article 6 "On the territory of the parties in Europe or North America…the Mediterranean Sea or the North Atlantic area north of the Tropic of Cancer."
[20] "The concept of 'balancing' derives from the Balance of Power theory which assumes that other states engage in balancing against a potential hegemony." Jack S Levy, "What Do Great Powers Balance Against and When," 2004, 37.

IMPLICATION

a. Instability along NATO's borders. The presence of "immature democracies,"[21] on the borders of NATO, along with current autocratic/theocratic regimes that may potentially transition towards democracy at some time in the future, may present challenges to member Nations. These challenges could include co-operative security, issues of border security or peace support operations that may require a comprehensive approach in their resolution.

POLYCENTRIC WORLD

6. The world is becoming increasingly interconnected and polycentric. Emerging technologies, improved communications and access to modern transportation create newly empowered actors that may compete with traditional ones. The exponential rise of information technology enables dispersed individuals to act as an effective organised group within a network. This could empower and embolden organisations, advocacy groups, security providers, criminal syndicates, extremists, or individuals to attempt to shape the outcomes of political, social, economic, and environmental issues.

7. Concurrently, regional/multilateral partnerships and international organisations[22] are taking up an increasingly important role in defence and foreign policy. Regional organisations such as the European Union (EU) and the Association of South East Asian Nations (ASEAN) contribute to peace and stability by encouraging economic integration and the resolution of political disputes through multinational discourse in their respective regions. Similar improvements have continued in the African Union (AU). Within Europe, growing co-operation on foreign policy and defence issues could further influence the structure of NATO. Other regional organisations or like-minded states could also become essential partners for NATO in a polycentric world.

The exponential rise of information technology enables dispersed individuals to act as an effective organised group within a network

---

[21] Jaïr van der Lijn and Andrea Teftedarija. "Report 2012: Continuity and Uncertainty in a Changing World." The Hague, Netherlands Institute of International Relations - Clingendael Strategic Monitor 2012, 17.
[22] Examples include among others the European Union (EU), Union of South American Nations (UNASUR), African Union (AU), and Association of South East Asian Nations (ASEAN).

NATO Headquarters Supreme Allied Commander Transformation

8. In this environment, non-state actors are gaining in status and influence.[23] The rising influence of non-state actors, including those possibly supported by states, large multinational corporations and super-empowered individuals[24] could lead to a perception of the decline in the importance of the nation-state. The greater importance and capabilities of these actors must be considered within a comprehensive or integrated approach. This challenge to the state-centric model will increase the overall complexity of NATO actions. The increasing presence of Private Military and Security Companies (PMSCs) could have diverse effects, adding to this complexity as the state monopoly on the use of force is challenged.[25]

9. Although the strength of the Alliance has been its ability to bring together diverse security concerns and strategic cultures, national perceptions often differ based on geographic proximity to troubled areas, critical vulnerabilities in certain domains (such as space or cyber), and evolving national interests. While some nations perceive threat in a regional context, transnational crime, terrorism, cyber or other hybrid threats can reach beyond regions, affecting the national interests of multiple states.

IMPLICATIONS

a. Fragmentation of alliances and challenges to international law. An increasingly polycentric world could heighten the potential for the revision, or even fragmentation, of existing treaties or alliances as a growing number of actors become more assertive on the international stage. Existing international norms and law could also be challenged.

b. **Increased co-operation opportunities.** The future will see increased co-operation opportunities for NATO to work more closely with regional organisations (e.g. EU, UNASUR, AU, ASEAN) and international partners (e.g. UN, NGOs, IGOs, Partner Nations) to prevent crises, manage conflicts and stabilise post-conflict situations.[26]

c. Increased influence of non-state actors. NATO will have the opportunity to benefit from co-operating, working alongside, and shaping its relationship with non-state actors in the context of a comprehensive or integrated approach. However, some non-state actors may seek to take advantage of the progressively more interconnected global environment, and utilise emerging technological capabilities against NATO. The Alliance will continue to be challenged by organisations or non-state actors, such as terrorists or transnational criminals, that are not bound by international conventions, laws or treaties.

> **Among the societal shifts that human networks have influenced is greater transparency of organisations, the decentralisation of power from traditional institutions and the democratisation of established social structures**

[23] Robert O. Keohane, and Joseph S. Nye Jr."Power and Interdependence". 4th ed: Pearson. 2011
[24] Independent individuals with knowledge, access, resource and/or capability to influence national or international events or systems.
[25] As an example, private military companies employed in Iraq and Afghanistan have not always enhanced the local security environment, whereas recent efforts to use embarked security teams onboard shipping have contributed positively to the recent decrease in attempted piracy events off the Horn of Africa.
[26] NATO. Active Engagement, Modern Defence. Strategic Concept for the Defence and Security of the Members of NATO. Adopted by Heads of State and Government at the NATO Summit in Lisbon, 19-20 November 2010, 4-5.

d. Increased reliance on private actors for security. Private organisations may have an increased role not only in the political and economic landscapes but also in areas like security. PMSCs could increasingly be called upon to fill capability gaps and provide improved flexibility in challenging areas. However, profit-driven corporations operating outside NATO and international practices and procedures could lead to conflicting priorities, or even direct competition.

e. Multiple threat perceptions. Multiple threat perceptions amongst NATO members could adversely affect the ability of the Alliance to reach consensus. The changing political, economic and cultural landscapes could lead to increasingly divergent national interests. An absence of a shared threat perspective among Nations can complicate NATO defence planning and investment, since diverse and often financially-driven national priorities may directly impact the Alliance's overall ability to maintain, develop and use current and future capabilities. Furthermore, this could impact negatively on NATO's ability to perform strategic power projection as differing national perceptions delay consensus. However, this diversity of national perceptions could also represent an opportunity for the Alliance to develop more flexible options in dealing with emerging issues.

This page intentionally blank

CHAPTER 3

HUMAN THEME

1. The human theme is expected to experience sociological evolution which is driven by numerous significant trends that include: global population growth; ageing - differing age profiles within the West and developing countries; global inequality; migration; growing urbanisation and the fracturing of national identities. The global population is forecast to grow considerably over the next two decades. Significant demographic differences between developed and developing nations will continue. Many developed nations are facing population decline and ageing trends,[27] while most developing nations will continue to have younger populations. An increasing population of male adolescents in some developing countries is likely to have a profound effect on security, depending on their level of successful integration into the economy.

2. A growing movement away from traditional communities and institutions, a rise in single living, and the breakdown of the traditional family in developed nations will be perpetuated by technological, cultural and economic trends. Difficulties will continue in the integration of the growing number of immigrants in most developed nations. As Western societies become more fractured, individuals may turn towards their own collective or individual identity, accelerating the overall erosion of the idea of the nation state.

CHANGING DEMOGRAPHICS

3. Future demographics will be driven by diverse effects. The world's population is expected to reach more than 8 billion by 2030,[28] but this growth will be unbalanced with varying regional effects. The average age of most Western populations is forecast to increase from the early to the mid-40s by 2030.[29] Given higher birth and immigration rates, the United States will remain the youngest of the leading powers, while China's population will age more rapidly given its increased longevity and lower birth rates. Accordingly, China will join Japan, Europe and Russia as one of the most rapidly ageing societies. India is expected to overtake China as the most populous country, whereas Russia and Brazil are likely to follow divergent paths with expected strong growth in Brazil and population decline in Russia. By 2030, the African continent is anticipated to have the fastest growing population.

4. With lower prospects for local employment, populations in less developed countries will increasingly migrate to more economically advantaged areas.[30] This flow of labour in search of opportunity, if leveraged effectively, could mitigate the effects of ageing in some regions. However, divisive effects brought about by immigration policies in some cases could increase instability. In developing nations, an excess in the young adult male population - or youth bulge[31] - could translate into further challenges and opportunities.

> **Many developed nations are facing population decline and ageing trends, while most developing nations will continue to have younger populations**

[27] Currently prevalent in many Eurasian countries and, on current trends in several studies, is predicted to occur over the next two decades in North America.
[28] United Nations Department of Economic and Social Affairs, "World Population Prospects, the 2010 Revision", http://esa.un.org/unpd/wpp/Excel-Data/population.htm 28 June 2011.
[29] Marija Mamolo and Sergei Scherbov, "Population Projections for Forty-Four European Countries: The Ongoing Population Ageing". http://www.oeaw.ac.at/vid/download/edrp_2_09.pdf 2009.
[30] French Ministry of Defence, Delegation for Strategic Affairs. Strategic Horizons. 2012, 114.
[31] A "youth bulge" is defined as an excess in the young adult population (especially male), which predictably can lead to social unrest, war and terrorism.

IMPLICATIONS

a. Decreased human capital in Western nations. In the West, due to decreasing birth rates, working populations are expected to decline, resulting in a shrinking pool of available human and intellectual capital. At the same time, the remaining population will bear the burden of supporting the increased number of elderly. The economic impact of ageing will be increased welfare spending and further strain on existing healthcare systems at the expense of other discretionary spending, such as defence. Overall, the pool of available personnel for military services and the labour market will become smaller and even more competitive. This may have a significant impact on the ability of some NATO members to generate forces, with an associated impact on the Alliance's ability to undertake operations.

b. Youth bulge in developing nations. There will be a larger cohort of working age men in many developing nations. If this group can be fully employed in productive activities, the level of average income per capita will increase and the youth bulge becomes a demographic dividend. However, if this cohort cannot find employment and earn a satisfactory income, the youth bulge becomes a demographic problem, as a large mass of frustrated youth is likely to become a potential source of social and political instability.[32]   NATO could be asked to engage in cooperative security to ensure the stability of nations and regions where these changes are not maturing smoothly.

URBANISATION

5. Cities will contain 65% of the world's population by 2040, and 95% of urban population growth will occur within developing nations' mega-cities[33] (containing more than 10 million people). These urban centres will be situated generally in littoral areas, which provide easier access to trade and other advantages. Individuals will tend to migrate to areas offering broader employment and education opportunities, and possibly higher living standards. This will result in the urbanisation of roughly 75 million citizens every year. However, increased urbanisation is also accompanied by the growth of slums, which are expected to contain 1.5 - 2 billion people, or approximately 58% of the total urban population as early as 2020.[34]

[32]Justin Yifu Lin, http://blogs.worldbank.org/developmenttalk/youth-bulge-a-demographic-dividend-or-a-demographic-bomb-in-developing-countries 5 Jan 2012.
[33] French Ministry of Defence, Delegation for Strategic Affairs, "Strategic Horizons" 2012, 118.
[34] Ibid, 118.

IMPLICATION

a. Increased potential for NATO involvement in urban areas. Resource shortages, failed infrastructure, increased likelihood of communicable diseases and income disparities could result in dissatisfaction and civil unrest in urban areas. Consequently, NATO may be required increasingly to perform peace-support, stability and humanitarian assistance operations, or disaster relief in urban areas that will expose its forces to greater asymmetric threats.

HUMAN NETWORKS / TRANSPARENCY

6. Human networks are expanding at an exponential rate with many varying effects. Networks can be large or small, local or global, domestic or transnational, cohesive or diffuse, centrally directed or highly decentralised, purposeful or directionless. While they take many forms, networks are comprised of people, processes, places, and material. A human network is an alliance of socially connected individuals who are involved in activities to achieve some form of common social, political, monetary, religious, or personal goal. Although there can be many benefits and opportunities presented by modern human networks, transnational networks can also make malign use of the interconnected global environment to direct operations, raise money, obtain and train recruits, and freely exchange technological information.[35]

7. Increased human interconnectedness also brings a heightened threat with regard to the spread of disease. In regions with limited public health care, major epidemics could start and rapidly spread globally due to higher levels of urbanisation and increasing mass air travel. Consequently, the time available to track the source, identify the vector and initiate action is decreasing. The global capability to get the right treatment to the right place at the right time may not be adequate to meet the challenge.[36]   On the other hand, the interconnectedness provided by human networks may facilitate swift responses to such occurrences.

8. Among the societal shifts that human networks have influenced is greater transparency of organisations, the decentralisation of power from traditional institutions, and the democratisation of established social structures. Transparency is about the ability to access all the information a receiver wants or needs, not just information that a sender may be willing to share. Organisations will, by necessity, have to become more open and transparent, as more people gain access to a broader set of information and move to become involved in political discourse. Generally, greater transparency is seen as a global stability enabler that will benefit the majority of people.

---

[35] US Joint Forces Command, "Commander's Handbook for Attack the Network", Version 1.0, 20 May 2010.
[36] Global Pandemics - www.futureagenda.org.

9. Given current trends, it is very likely that the majority of the world's population will have better living conditions by 2030. However, the uneven distribution of income and wealth across the global population will remain a concern. Although some emerging social trends and technologies may improve conditions for the least privileged members of society, the disparity between the prosperous (with sufficient wealth to maintain a comfortable standard of living) and the impoverished will widen. The broader awareness of this disparity will likely increase friction within and between societies.

10. Society in the future will be increasingly immersed in a communication and opinion sphere in which influence exerted by traditional media and information channels (TV, radio and newspapers) is being replaced by a complex interaction between the users, and the producers of information in a great world-level network of blogs, websites, social and media outlets. New technologies will allow individual citizens to stop being mere passive users of information, and enable them to start interacting with the information, thus assuming a more active role in the communication of news, ideas and opinions.

IMPLICATIONS

a. Increasing complexity of human networks. Human networking, facilitated by evolving technology, is expanding inexorably at the global level. While human networks have created enormous benefits and allowed society to connect and evolve in new ways, growth has been generally ungoverned and chaotic. Human networking has already become a medium for transnational crime as well as unbounded intelligence gathering and sharing. As this trend is likely to become increasingly influential and complex in the future, a greater understanding of human networks will be required by members of the Alliance.

b. Heightened transparency creates social challenges. Today, individuals demand greater access to all relevant expertise and information, wherever it may reside. It is important to determine how best to respond to the increased demand for greater transparency. This may cause issues for individual Nations as they could experience internal challenges from previously unheard voices within their populations, who will have better access to government policy and decisions that affect their daily lives. Furthermore, a greater awareness of inequality, due to expanded transparency, may also lead to increased resentment, societal tension and civil unrest.

c. Increased popular influence on decision making. A more informed society may demand greater participation in national and international issues with possible effects on nations' relationships with NATO. With the growing recognition of the principles of human security such as "Responsibility to Protect,"[37] public opinions increasingly will exert a strong influence on all decisions to initiate, continue or terminate international military interventions. This will have implications on NATO's future operations and contingency planning.

d. Increased economic and security strain due to a potential pandemic. Mutations or new strains of certain viruses, or the detection of as-yet undiscovered pathogens, could precipitate a pandemic not seen since the influenza pandemic of 1918-19, which is estimated to have killed between 20 and 40 million people. A pandemic will increase instability in weaker states while wealthier, more stable states will be likely to focus resources and efforts to protect their own population. Ensuing tensions, competition for medical resources, treatment and vaccines, coupled with the possibility of uncontrolled migration, could produce instability along and within NATO's borders.

FRACTURED IDENTITIES

11. Several contributing factors may lead to a fracturing of national identity. In a more connected world, different cultures and groups gain a better understanding of each other, which may lessen internal strife. However, as a consequence of a number of factors (i.e. migration, globalisation, human networks and transparency), citizens may begin to identify themselves differently, and thus create heightened feelings of detachment from the whole or nation state. Individuals may rally around sub-national and supra-national groups, identifying themselves in terms of their city, ethnic nationality, religious or other association. Governments, corporations and non-state actors will find it increasingly difficult to identify a single public opinion on key issues. Affiliation with anti-government or extremist groups, as well as other challenges to national identity, will contribute to state instability and possible unrest.

12. The potential for social tension will be further accelerated by the growing disparity of wealth in developed nations. Internal inequalities may reach a point where the justification of such disparity could become unsustainable, with opposing views, factual or not, spreading quickly through human networks and undermining public support to expend finite resources on NATO operations.

---

[37] United Nations General Assembly, Sixty-third session: Agenda items 44 and 107. October 7, 2009. "Decides to continue its consideration of the responsibility to protect." http://responsibilitytoprotect.org/Resolution%20RtoP(3).pdf

IMPLICATIONS

a. **Increased instability due to the fracturing of national identity.** Future conflict is likely to involve differing perspectives over establishing and maintaining identity. The decline of national identity, coupled with the rise of individualism and inter-generational tension, may hinder societal harmony. This could increase the chances of internal strife both between the government and its citizens, as well as between citizens from different sub-national identity groups. Such internal discord may have a wider impact, and could generate conflicts across the global landscape. Consequently, as stability decreases, there will be a greater prospect of nations being called upon as part of an international stabilisation force.

b. Extreme ideologies lead to aggression. Radicalisation is expected to continue, driven by a range of complex factors such as gradual shifts in political beliefs, adoption of a particular ideology, individual or group grievances, economic/social inequalities, and the impact of the greater penetration of globalisation into traditional societies. This radicalisation, taken to the extreme, could lead to violent activism and aggression.

CHAPTER 4

TECHNOLOGY THEME

1. Technology and innovation are functions of demand, necessity and response to current or predicted problems and crises. The provision of technological solutions to address issues that affect all humanity will continue to facilitate change. The increasing diffusion and accessibility of technology has empowered nations, individuals and non-state actors at a level previously achieved only by a few developed nations. The exponential advances expected across the frontier of technology, facilitated by open source innovation, will expand the portfolio of capabilities available to these groups.

2. The control or governance of technological innovation will continue to be a serious challenge for states and institutions as the development of legal and policy structures cannot keep up with the rate of technological advance. In the future, a greater number of state and non-state actors are liable to obtain, or seek to obtain, access to restricted and sensitive information or technology, e.g. WMD/E. Greater access and the lack of regulatory mechanisms are likely to lead to increased global security issues and instability.

TECHNOLOGY ACCELERATES CHANGE

3. The accelerating cycles of exploration, discovery and exploitation of technologies, along with the innovative fusion of existing, emerging and new technologies will combine to bring about change rapidly in the future. These changes will be seen in diverse areas ranging from resource exploration to biotechnology and manufacturing. Advances in biotechnology will continue to extend life expectancy, improve health and cure illnesses, while extending these benefits to broader segments of the world. The transition to digital additive manufacturing (i.e. 3D printing) and fabrication could impact settlement patterns, labour, education, transportation, public health, the environment, and the conduct of war.[38]   Providing a foundation for all these advances, vast improvements in information and communications technology will progressively influence all aspects of economic, political and social interactions.

[38] David Rejeski. "The next industrial Revolution: How we will make things in the 21st century and why it matters." Wilson Centre. November 2012.

The increasing diffusion and accessibility of technology has empowered nations, individuals and non-state actors at a level previously achieved only by a few developed nations

NATO Headquarters Supreme Allied Commander Transformation

IMPLICATIONS

a. The divergent use of disruptive technologies, including countermeasures.[39] In the future, disruptive technologies could be used for positive purposes, such as to solve major global challenges like energy and natural resource shortages, or for negative ones to degrade the capabilities of the Alliance's political, military, economic, social, information and infrastructure systems. The proliferation of affordable conventional and unconventional capabilities will enhance potential adversaries' ability to challenge the Alliance, particularly through Anti-Access/Area Denial (A2AD) weapons. Technology could be used to facilitate the organisation of social disturbance or high-impact terrorist attacks. Effective horizon scanning to assess the emergence of possibly disruptive technologies will be required.

b. Technological change tests NATO's adaptability. Innovative use of existing, emerging and new technologies will influence the security environment in unexpected ways. Confronting and adapting to rapid technological change faster than possible future adversaries, including non-state actors or super-empowered individuals, will be difficult. The research efforts and procurement processes of Nations and NATO must be sufficiently responsive to retain technological leadership in this environment.

INCREASED ACCESS TO TECHNOLOGY

4. Commercial research and technology has begun to outpace that of governments in the development of new technologies. Many of the advances in goods, materials and technologies intended for civilian use (e.g. nuclear energy, biochemical medicine, or access to space and its associated technologies) will have potential applications in the development of weapon systems. This increases the possibility that non-state actors could gain access to advanced weapons or even WMD/E. The effectiveness of regulatory conventions intended to prevent the spread of potentially dangerous technologies will be reduced by increased access within the globalised marketplace. As world trade grows, norms regarding non-proliferation may become secondary to economic benefits. The threat of uncontrolled proliferation of weapon technology to non-state actors will increase as innovation, research and development, production, and distribution become more open and globalised.

IMPLICATIONS

a. The inability to prevent the spread of potentially dangerous technology. The growth of complex, transnational interactions and networks between a myriad of actors, including large multinational corporations, may increasingly overwhelm the capacity of individual states to control access to potentially dangerous technology. The maintenance of a heightened awareness of technological innovations and their potential dual-use capability by non-state actors or potential adversaries will remain a challenge for the Alliance.

---

[39] "Focusing on defence and security, a disruptive technology stands for a technological development which changes the conduct of conflict or the rules of engagement significantly within one or two generations and forces the planning process to adapt and to change the long term goals, strategies, concepts and plans." RTO Technical Report TR-SAS-062 Assessment of Possible Disruptive Technologies for Defence and Security, February 2010.

> In the future, disruptive technologies could be used for positive purposes, such as to solve major global challenges like energy and natural resource shortages, or for negative ones to degrade the capabilities of the Alliance's political, military, economic, social, information and infrastructure systems

b. The continued WMD/E proliferation in unstable global regions. Proliferation, outside of existing control mechanisms, including transfers of dual-use commodities, is leading to greater access to ballistic missile and WMD/E technologies within unstable regions. As a consequence, several new WMD/E capable nations could appear on NATO's borders. Moreover, non-state adversaries who seek to acquire nuclear, biological or chemical weapons for the express purpose of terrorism or threatening regional and international organisations or states will be more difficult to deter.

c. The decreased commitment of a growing number of states to global nuclear disarmament. The prospect of increased proliferation of WMD to multiple actors, and of rising nuclear arsenals may jeopardise the survival of the current international nuclear regime. Any further discrediting of this regime could have strong repercussions on NATO and compromise its efforts in promoting restraint and the marginalisation of WMD/E.[40]

CENTRALITY OF COMPUTER NETWORKS

5. A globally connected and networked world creates a universal availability of information. Technological innovation is rapidly delivering to the average citizen the benefit of a readily accessible vast collective knowledge and intellectual capital. However, with the significant advances in sensor networks and algorithms, there will be a growing capability for almost every aspect of a citizen's life to be monitored by the state or other entities such as corporations.

6. Highly interconnected networks are vulnerable to infiltration and cyber-attacks from multiple sources. Public and private information infrastructures have been subjected to cyber-attacks and espionage in recent years. Attribution of these attacks remains hard to establish, subsequently making it difficult to target the perpetrators and determine an appropriate response. Today, corporations cannot legally respond or retaliate to a denial of service attack conducted by an individual or a national entity even if it could be traced back definitively to its source. Moreover, given the high reliance on and interconnectivity of global networks, any major disruption would have significant political, social and economic consequences.

> **Given the high reliance on and interconnectivity of global networks, any major disruption would have significant political, social and economic consequences**

[40] "National decisions regarding arms control and disarmament may have an impact on the security of all Alliance members." NATO Strategic Concept 2010 paragraph 26.

NATO Headquarters Supreme Allied Commander Transformation

IMPLICATIONS

a. The increased potential for cyber-intrusion, espionage and attacks against Alliance networks or military systems. An increased number of cyber attacks are anticipated in the years ahead. This will be disruptive until defences catch up and deterrence concepts are developed. NATO's and Alliance members' cyber-defence policy, concepts and capabilities, including the development of a coherent response to any attacks (e.g. whether or not it is regarded as falling within the provisions of Article 5), will require persistent monitoring and revision as new threats emerge.

b. The increased importance of networks and electronic resources for strategic communications and influence. The increasing use of the internet represents a soft-power opportunity for the Alliance and Nations to promote NATO's narrative. The growth of online learning and the use of virtual reality over the next two decades are expected to provide further opportunities for training and education of NATO nations and Partners. In parallel, the Alliance must remain aware that potential adversaries will attempt to take advantage of social and other networks to both influence others and as a management tool (e.g. for recruiting, morale, technical education, mobilisation and co-ordination).

CHAPTER 5

ECONOMICS / RESOURCES THEME

1. Advances in communication and transportation technology, combined with free market ideology, have given people, goods, services, and capital unprecedented mobility. Increases in international trade, financial transfers and foreign direct investment have resulted in much greater international interconnectedness and interdependence globally across economies. This globalisation has the potential to raise the global standard of living, as it increases the ability of markets to match supply and demand in an efficient manner. Moreover, it brings together geographically detached consumers and suppliers, and improves the global flow of goods, capital, services and labour. Unfortunately, not all countries will benefit equally from this process.

2. Within this globalised environment, national economies will be increasingly affected by factors beyond their own control. An emerging crisis in one market can swiftly cascade into a worldwide economic crisis. This risk is particularly acute with regard to a highly-reactive, electronically-connected international financial and trade system. National economic policies will need to be flexible to meet these rapid changes.

3. Energy, food, water and other natural resources are essential to sustain all aspects of daily activity. By 2030, developing nations are expected to experience a substantial increase in resource demand, while resource usage in developed nations should remain relatively stable. This increase will be exacerbated by the expected growth in global population, the globalisation of energy demands and interconnected markets. Despite new advances in agricultural production and exploitation of gas and oil, the depletion of the earth's natural resources is expected to continue at an unsustainable rate. This will complicate the nexus of demands for energy, food and water. [41]

---

[41] "According to the World Bank, population growth should result in a 50% increase in global demand for food by 2030, with similar effects occurring on water supply demands." United Nations World Water Development Report 4, "Managing Water under Uncertainty and Risk" UNESCO-WWAP 2012.

NATO Headquarters Supreme Allied Commander Transformation

4. The latest international financial crisis, economic stagnation and growing levels of national debt have intensified the pressure on decision makers to reduce defence spending further. In the near to medium term, Allied defence investment will continue to be constrained. Even in the longer term, any global financial recovery may not translate into increases in defence spending as national priorities will lie in other areas driven by public opinion and demand. In contrast, studies show a different picture in other regions, particularly Asia. From 2000 to 2010, relative defence expenditures grew 252% in China, 70% in Russia, 53% in India, 28% in South Korea and 4% in Japan.[42]   This divergent trend in defence spending, if continued, may result in a future imbalance in defence capability that could threaten regional stability and the security interests of the Alliance.

> **The interconnected world creates greater opportunity for better management of global resources; it may also provide incentives for co-operation and multilateral approaches in addressing global issues**

GLOBALISATION OF FINANCIAL RESOURCES

5. The financial networks and communication systems that manage the world's critical resources are increasingly intertwined.   The interconnected world creates greater opportunity for better management of global resources; it may also provide incentives for co-operation and multilateral approaches in addressing global issues. However, vulnerability to exploitation by non-state actors, ranging from international criminal networks to cyber criminals and terrorists, will increase. Attackers could target banking and financial institutions or communication systems. Additionally, as nations become increasingly interdependent, a negative economic event in one country could well be compounded globally as it spreads quickly to other markets.

IMPLICATIONS

a. The vulnerability of the global financial network. The interconnected, yet not entirely regulated, nature of the world financial system, and its heavy dependence on advanced communications, makes it increasingly susceptible to attacks or manipulation by adversaries, including state and non-state actors such as hackers, criminals or terrorist organisations. These types of attack increase uncertainty among investors and reduce the general public's trust. This can exacerbate, by extension, attempts to combat these activities as large amounts of capital are moved, and lead to regional economic crises and possible collapse.

b. Any future global economic crisis affects Alliance cohesion. The increasing interconnected nature of national economic markets will heighten the risk of an economic crisis 'domino-effect' when a crisis in one region potentially expands rapidly to become a global event. Increased regional or multinational co-operation will be needed to prevent further escalation, and reduce the spread of financial stress. The challenge will be to develop a co-ordinated policy response, which does not strain the political cohesion further and undermine resolve of the Alliance as a whole.

---

[42] Klaus Olshausen. "High Tide – Low Tide – Defence Budgets: Increase in Asia, Decrease in Europe and America Reasons and Consequences." ISPSW Strategy Series: Focus on Defense and International Security (174) December 2011.

INCREASED RESOURCE SCARCITY

6. Nations need increasing amounts of energy and raw materials to sustain growth and maintain an advantage in the globalised economy. Limited natural resources, supply vulnerabilities, and the uneven distribution of energy and resources increase the potential for conflict between importers, exporters and transit countries, particularly in politically unstable regions. Any nation that holds considerable oil, natural gas reserves or deposits of rare earth elements and other strategic materials[43] might leverage its position both for political and economic purposes.

7. Novel exploration and exploitation technologies may allow the discovery of mineral and energy resources in previously inaccessible and possibly disputed regions. New technologies are expected to contribute to the opening up of unexploited energy reserves. For example, hydraulic fracturing or 'fracking' enables the recovery of natural gas and oil from dense shale formations which are located widely across the globe including in some Alliance nations. The emergence of this shale gas as a potential major energy resource may have serious strategic implications for geopolitics and the energy industry. Additionally, new renewable energy technology will meet some traditional energy demands as the technology improves, and its associated cost decreases. Movement of these resources and trade through such areas may become of strategic importance.

IMPLICATIONS

a. The increased potential for resource-driven crises. The competition for oil, gas, strategic materials, water, and arable land could create regional tension. Nations will seek to maintain access to dwindling resources in order to sustain national development levels for both economic and security purposes. Some nations will become 'resource scarce', while others will find themselves in a stronger position. These new imbalances between regions or nations may be a source of potential crisis. Continued co-operation and cohesion amongst Alliance nations addressing resource-scarcity (i.e. the water, energy, food nexus) will be critical.

b. The emergence of new areas of geopolitical competition for resources. Technological innovations will allow the exploitation of formerly inaccessible resources. Although settlements remain possible, the future exploitation of seabed resources may increase the number of disagreements in disputed areas. This may change the strategic importance of an area and affect the regional and global balance of power, with the associated consequences for global stability.

The increasing interconnected nature of national economic markets will heighten the risk of an economic crisis 'domino-effect' when a crisis in one region potentially expands rapidly to become a global event

---

[43] Strategic materials are defined as "Non-fuel materials, such as titanium, on which the production or sustainment of military equipment is dependent and the supply of which could be restricted by actions or events outside national control." National Defense University, The Industrial College of the Armed Forces, "Final Report on Strategic Materials Industry", Spring 2011.

NATO Headquarters Supreme Allied Commander Transformation

DECREASING DEFENCE EXPENDITURES

8. Governments faced with slow or non-existent growth, rising unemployment and increasing debt burdens will continue to have many competing priorities.   Continuing volatility in financial markets might further slow global as well as national economic activity. Defence spending has continued to decline across the Alliance due to reduced economic growth, and the increasing emphasis on social programmes. There is a risk that, even if economic cycles turn more positive, public opinion may prevent some nations from reinvesting in defence. This will have a marked negative impact on defence capabilities in the future. The consequences of current and anticipated near-term reductions in Science and Technology (S&T) investment will have implications on longer-term force capabilities. These deficits could be offset by new, less expensive, and yet-to-be-developed technologies.

IMPLICATIONS

a. The potential reduction of the Alliance's full spectrum capabilities. As a result of declining defence expenditures, individual nations may not adhere to previously planned, or undertake new defence spending, which will result in a subsequent degradation of the Alliance's full spectrum military capabilities. This could be exacerbated by unco-ordinated defence reductions, lack of investment in new capabilities, and delays in education and training within the Alliance, leading to an incoherent capability portfolio. In contrast, some non-Alliance nations are expected to continue to increase their defence expenditures in the future, with the aim of developing the full spectrum of capabilities.

b. The degradation of the defence industrial base for Alliance members. Defence requirements will increasingly be exposed to market forces. The defence industry may look beyond NATO for lucrative civilian and military markets, thus S&T may no longer be driven by Alliance requirements. As a consequence, NATO nations could lose their technological edge as investment and innovation moves to other non-Alliance markets.

CHAPTER 6

ENVIRONMENT THEME

1. The long-term warming of the planet is expected to continue at its current rate. Estimates report that by 2030, average temperatures will have risen by 2°C from pre-industrial levels.[44] The increase in average temperature can be attributed primarily to increased atmospheric greenhouse gases, particularly CO_2. Most recently, average atmospheric CO_2 content reached 400 parts per million,[45] a level unseen on the planet for 3 million years. Though there remains uncertainty about the rate and magnitude of the impact, it is certain that much of the coming changes will occur because CO_2 will stay in the atmosphere for thousands of years.[46] Although the exact consequences of this warming are unknown, climate changes are expected to have adverse, unstable and unpredictable effects on land, sea, and the atmosphere. Paradoxically, some regions will experience beneficial effects from this phenomenon.

2. Impacts on the environment from increasing temperatures will be profound. Increased sea water temperature and melting ice worldwide, especially from the polar ice-caps, will increase average global sea-levels. Nations will face the challenge of protecting growing mega-cities, most of which are near coastlines, from the impact of rising seas. Although warmer atmospheric conditions will increase precipitation in some areas, there will be less freshwater available in others.[47] Due to the overall temperature increases, severe weather events are likely to become even more extreme (e.g. hurricanes and other storms will intensify, while floods and droughts become more common).[48] These changes will reshape the environmental landscape, agriculture patterns and available land for human habitation.

3. Notwithstanding the longer term environmental effects of a changing climate, the threat of unforeseen catastrophic disasters is ever-present. These include natural events such as massive earthquakes or tsunamis (e.g. as experienced by Japan in 2011, which brought about the Fukushima nuclear plant meltdown), or man-made actions (e.g. the Chernobyl nuclear plant explosion). The resulting devastation will be greatly magnified in heavily populated areas or mega-cities, and will require significant international aid and assistance in the post-event recovery period.

[44] UK MOD DCDC, "Global Strategic Trends – Out to 2040" 2012, 21.
[45] Scientific American www.scientificamerican.com/article.cfm?id=prospects-for-direct-air-capture-of-carbon-dioxide
[46] University of Chicago http://forecast.uchicago.edu/Projects/archer.2009.ann_rev_tail.pdf 2009.
[47] "By 2025 1800 million people will be living in countries or regions with absolute water scarcity, and 2/3 of the world's population could be under stress conditions." United Nations Water Scarcity Fact Sheet www.unwater.org/downloads/water_scarcity.pdf 2013.
[48] Emmanuelle Bournay, "United Nations Environment Programme, Trends in Natural Disasters" www.grida.no 2012.

NATO Headquarters Supreme Allied Commander Transformation

ENVIRONMENTAL / CLIMATE CHANGE

4. Global environmental change and its impacts are becoming readily apparent and are projected to increase in the future. In some areas these changes could present benefits, such as less energy requirements for heating, longer growing seasons that allow increased agricultural production, and the opening of the Arctic for resource exploration and shipping traffic. However, these benefits are likely to be offset by negative effects elsewhere, including coastal inundation, desertification, deforestation and other ecological effects that will have a direct impact on the world's fresh water and food. Water stress is expected to be the most inevitable near-term impact of climate change.[49]

IMPLICATIONS

a. Increased humanitarian assistance and disaster relief operations due to extreme weather events. More frequent hurricanes, typhoons, flooding and droughts will cause significant environmental and infrastructure damage, and human suffering. These events create conditions of insecurity and instability that can lead to mass population movement, and an increased demand for humanitarian assistance and disaster relief operations which will strain Nations' diminishing economic and military resources.

b. Increased access to the Arctic region. Ocean warming and melting ice packs will potentially allow increased exploitation of natural resources in previously inaccessible regions. Seasonal ice may no longer restrict the use of Arctic maritime trade routes, significantly reducing transit time, notably between Europe and Asia. More activity in the Arctic will raise issues over environmental impact, search and rescue responsibilities, and resource competition. This will require increased public safety and security awareness by Alliance nations bordering this region, or other nations with interests in the region.

c. Increased potential conflict due to water scarcity. Water scarcity already affects almost every continent and more than 40% of the people in the world. By 2030, 47% of the world's population are forecast to be living in areas of high water stress.[50] Most population growth will occur in developing countries in regions already experiencing water scarcity. Competition to access and control water sources will increase the possibility of conflict and instability in those regions.

---

[49] United Nations World Water Development Report 4 "Managing Water under Uncertainty and Risk" UNESCO-WWAP 2012.
[50] United Nations Water Statistics www.unwater.org/statistics_res.html 2013.

NATURAL DISASTERS

5. The effects of natural disasters will become more devastating. Natural disasters (e.g. earthquakes, tsunamis, volcanic eruptions, meteor strikes) will occur with devastating impacts on humanity. Increased population and infrastructure in disaster prone areas will magnify the consequences of these natural disasters.

IMPLICATIONS

a. An increased requirement for international responses to catastrophes. Major natural disasters, which cause large-scale devastation, result in a serious loss of life and substantial destruction of infrastructure with severe consequences to the economy and security of affected nations. Although primarily a national responsibility, the international community would normally respond and NATO may be requested to provide assistance as part of a comprehensive or integrated approach.

This page intentionally blank

CONCLUSIONS

1. The Strategic Foresight Analysis (SFA) provides a construct for identifying and analysing defence and security implications that will impact the Alliance to 2030 and beyond. Through the sharing of national perspectives, it was essential in this analysis to achieve a common understanding of the future challenges, opportunities and security implications facing the Alliance. The SFA provides a foundation for an improved long-term perspective for the Alliance, which is essential to its success in the uncertain, complex, and rapidly evolving future security environment. Recognising that the future is neither predictable nor predetermined, a thoughtful examination of key themes, trends and implications, and their interactions will support the alignment of future national and collective capability development to ensure that the Alliance is ready, whatever the future may hold.

The SFA provides a foundation for an improved long-term perspective for the Alliance, which is essential to its success in the uncertain, complex, and rapidly evolving future security environment

2. Global power shifts will continue to have significant effects on political and security landscapes.

- In 2030, developing nations may exert increasing global influence. This shift in power will potentially cause instability.

- The increased relevance of newly developed regions may support the pursuit of new types of partnerships and associations to increase NATO's level of awareness of, and support to, the security institutions within those regions.

- In the longer term, NATO could be affected by crises further from Alliance territory. In these regions, non-state actors may play a larger role and Nations' interests might not always align.

3. Population growth, demographic shifts, inequality, migration and urbanisation combine to characterise the future.

- Longer life expectancies and low birth rates will result in the average age of most NATO nations' populations increasing. This increase will result in a declining number of people available for military service and a smaller labour pool. Conversely, in developing nations, an already present unemployed and disgruntled youth bulge could create instability.

- The growth in human networks and its associated transparency will bring new challenges and opportunities for NATO as the public gains access to broader knowledge and takes a more direct role in national decision making.

- Changes in the relationship of individuals to the state, and a redefinition of identity may present a challenge to NATO's ideals and values. Coupled with the diffusion of power, these changes could present governance and institutional challenges and create the potential for social and political disruption borne of disillusionment and disenfranchisement.

• Urbanisation, in conjunction with predicted population growth and demographic shifts, implies an increased likelihood that the Alliance may need to conduct future combat or security operations in condensed urban environments.

4. The future will continue to be shaped by accelerating technological development.

• Technological innovation, while having the potential to provide significant global benefits that address health, energy, food and many other challenges, creates a greater potential for unforeseen adverse consequences.

• Potential adversaries, empowered individuals, non-state actors and terrorists will have greater access to innovative S&T and will continue to attempt to obtain WMD/E information or material.

• There will be a continuing necessity for the Alliance to anticipate technological advances and maintain its technological edge, especially with regard to critical security capabilities.

• As our societies' dependence continues to increase, cyber security and defence will remain a challenge for NATO.

5. Continuing globalisation will directly influence the world's society and economy.

• Increasingly interconnected global markets, financial institutions and national economies will become even more interdependent thus increasing the risk of a cascading global crisis that could require more specialised civil and military responses.

• The discovery and exploitation of new strategic resources, inside or outside traditional Alliance regions, will have global consequences.

6. Environmental changes have an impact across many global issues including economics, demographics, technology, resources and international relations.

• Climate change will have positive effects in some regions through increased quantity of arable land for food production, while other areas will suffer negative impacts from extreme weather, melting ice-caps, rising seas, and drought.

• Other environmental threats like air and water pollution, deforestation, and the spread of disease may contribute to insecurity and instability.

• Natural and man-made disasters will continue to lead to the requirement for humanitarian assistance or disaster relief operations.

7. The SFA is an iterative process that will be updated regularly in order to provide NATO, National leaders and defence planners with a perspective of the challenges facing the Alliance in the coming decades. The analysis serves as a foundation for the development of an organising Framework for Future Alliance Operations (FFAO) based on NATO's core tasks, and a model of the future security environment derived from the SFA. The FFAO will cover a set of broad strategic insights, military implications and associated capability implications, through an assessment of mission types to inform a future Capability Hierarchy Framework. Together, the SFA and the FFAO will inform and support the NDPP, and may provide input into the development of NATO Nations' security and defence plans and strategies. This will be part of an enduring and continuous Alliance transformation that produces the right balance of forces and capabilities for the near, mid, and long term.

The SFA and the FFAO will inform and support the NDPP, and may provide input into the development of NATO Nations' security and defence plans and strategies

NATO Headquarters Supreme Allied Commander Transformation

This page intentionally blank

BIBLIOGRAPHY

Bournay Emmanuelle, *United Nations Environment Programme – Trends in Natural Disasters,*
  www.grida.no. 2012.

Dixon, T. H., *The Upside of Down.* 2006

European Union Institute for Security Studies (EU ISS), *Citizens in an Interconnected
  and Polycentric World – Global Trends* 2030. 2010.

French Ministry of Defence, Delegation for Strategic Affairs. *Strategic Horizons*. 2012

Keohane, Robert O. and Joseph S. Nye J, *Power and Interdependence*. 4th ed: Pearson. 2011.

Kruger, Richard L. and Ellen L. Frost, "*The Global Century", Globalisation & National Security*,
  Vol I & II. 2001.

Kurzweil, Ray and Chris Meyer, *Understanding the Accelerating Rate of Change*. 2003.

Lerche III, Charles O, "The Conflict of Globalisation", *International Journal of Peace Studies*,
  George Mason University.

Levy, Jack S, *What Do Great Powers Balance Against and When*. 2004.

Lijn, Jaïr van der and Andrea Teftedarija, *Continuity and Uncertainty in a Changing World.*
  The Hague, Netherlands Institute of International Relations - Clingendael Strategic Monitor 2012.

Lin, Justin Yifu, http://blogs.worldbank.org/developmenttalk/youth-bulge-a-demographic
  -dividend-or-a-demographic-bomb-in-developing-countries 5 Jan 2012.

Mamolo, Marija and Sergei Scherbov, *Population Projections for Forty-Four European Countries:
  The Ongoing Population Ageing* http://www.oeaw.ac.at/vid/download/edrp_2_09.pdf. 2009.

NATO Research and Technology Organisation, *RTO Technical Report TR-SAS-062
  Assessment of Possible Disruptive Technologies for Defence and Security.* 2010.

NATO, *Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organisation.
  Brussels, NATO Public Diplomacy Division*, 2010.

NATO, *The North Atlantic Tr*eaty 1949. Washington DC, 1949.

Nye Jr, Joseph S. *Soft Power*, 2004.

Olshausen, Klaus, "High Tide – Low Tide – Defence Budgets: Increase in Asia, Decrease in Europe
  and America Reasons and Consequences." ISPSW Strategy Series:
  Focus on Defense and International Security (174). 2011.

Rejeski, David, *The Next Industrial Revolution: How we will make things in the 21st century
and why it matters.* Wilson Centre. 2012.

Senge, Peter. The Fifth Discipline: *The Art and Practice of the Learning Organization:
First Edition. Random House.* 2010.

UK Development, Concepts and Doctrine Centre (DCDC), *Global Strategic Trends – Out to 2040,*
4th Edition, 2010.

United Nations, *Water Scarcity Fact Sheet* www.unwater.org/downloads/water_scarcity.pdf. 2013.

United Nations, *Water Statistics*, www.unwater.org/statistics_res.html. 2013.

United Nations, Department of Economic and Social Affairs, *World Population Prospects,
the 2010 Revision.* http://esa.un.org/unpd/wpp/Excel-Data/population.htm. 2011.

United Nations, World Water Development Report 4, *Managing Water under Uncertainty and Risk.* 2012.

US Joint Doctrine Support Division, *Commander's Handbook for Attack the Network, Version 1.0,*
Joint Warfighting Center. 2010.

US National Defense University, The Industrial College of the Armed Forces.
Final Report on Strategic Materials Industry. 2011.

APPENDIX A

LIST OF SFA SOURCE LITERATURE

Affordable Defense Capabilities for Future NATO Missions. US National Defense University (2010)

Alliance Reborn: An Atlantic Compact for the 21st Century. US The Atlantic Council (2009)

Capstone Concept CC-001Military Implications of the Future Operational Environment,
   Italian Defence General Staff (2012)

Climate Change and Security. International Institute for Strategic Studies (2011)

Ecological and Environmental Science & Technology in China: A Roadmap to 2050.
   Chinese Academy of Sciences (2010)

Environmental Change - Strategic Foresight - Impacts on Military Power. Dr Chad M. Briggs,
   Air University USAF (2010)

Future Character of Conflict - Strategic Trends Programme. UK MOD Development,
   Concepts and Doctrine Centre (DCDC) (2010)

Future Joint Force Operating Concept 2030. Australian Government, Department of Defence (2011)

Future Land Operating Concept. UK MOD – DCDC (2012)

Future Security Environment. Royal United Services Institute (RUSI)(2008)

Future Security Environment 2025. Defence Research and Development Canada (2003)

Global Context Study - Final Report. European Union Institute for Security Studies (2006)

Global Europe 2030-2050, Inventory of Forward Looking Studies with a focus beyond 2030,
   European Commission Expert Group (Bibliography Review) (2012)

Global Governance 2025: at a Critical Juncture. European Union, Institute for Security Studies (2010)

Global Strategic Trends - Out to 2040. UK MOD – DCDC (2010)

Global Strategic Trends Programme. UK MOD – DCDC (2006)

Global Trends 2030: Alternative Worlds. US National Intelligence Council (2012)

Global Trends 2030 – Citizens in an Interconnected and Polycentric world. European Union,
   Institute for Security Studies (2012)

High Mountain Glaciers and Climate Change. United Nations Environment Programme (UNEP) (2010)

Implications of a Changing NATO. US Strategic Studies Institute (2010)

India Vision 2020. Dr S. P. Gupta, Government of India Planning Commission (2002)

Mapping the Global Future 2020. National Intelligence Council (2004)

Migration and Climate Change: How will Climate Shifts Affect Migration Trends?
  UK Development Research Center on Migration, Globalisation and Poverty, Sep 2008, Number 12 (2008)

Multiple Futures Project, Navigating Towards 2030. NATO HQ SACT (2009)

NATO Command Structure – Considerations for the Future. W Bruce Weinrod and Charles L Barry,
  US National Defense University (2010)

NATO in the Arctic: Challenges and Opportunities. Luke Coffey, The Heritage Foundation (2012)

NATO 2020: Assured Security; Dynamic Engagement. NATO Public Diplomacy Division (2010)

Peak Oil. German MOD Transformation Centre (2010)

Projecting Power: Canada's Air Force 2035. Canadian Forces Aerospace Warfare Centre (2009)

Quenching the Dragon's Thirst, China Environment Forum, Woodrow Wilson International Centre for Scholars
  (2010)

Signals & Signposts: Shell Energy Scenarios to 2050. Shell International (2011)

Strategic Assessment of the Security Environment, 2008-2030. American, British, Canadian,
  Australian and New Zealand Armies Program (ABCA)(2009)

Strategic Global Outlook 2030. Alexander A. Dynkin, Institute of World Economy and International Relations,
  Russia Academy of Sciences (2011)

Strategic Trends 2012, Key Developments in Global Affairs. Switzerland, Centre for Security Studies (2012)

The Future of NATO. US Council on Foreign Relations (2011)

The Future Security Environment 2008-2030. CA MOD Chief of Force Development (2009)

The International and Strategic Evolutions Faced by France. French Government (2012)

The Radicalization of Diasporas and Terrorism. RAND Corporation (2007)

The Shared Future: A Report of the Aspen Institute Commission on Arctic Climate Change.
  The Aspen Institute (2011)

The Spectre of a Multipolar Europe. European Council on Foreign Relations (ECFR) (2010)

The World Order in 2050. Carnegie Endowment for International Peace (2010)

The 2050 Roadmap for Nuclear: Making a Global Difference. Organisation for Economic Cooperation and Development (OECD) (2010)

White Paper on Defence and National Security. French Government (2013)

21 Drivers for the 21st Century. Jothi Jayadevan, Outsights UK (2008)

2012 State of the Future, Executive Summary. The Millennium Project (2012)

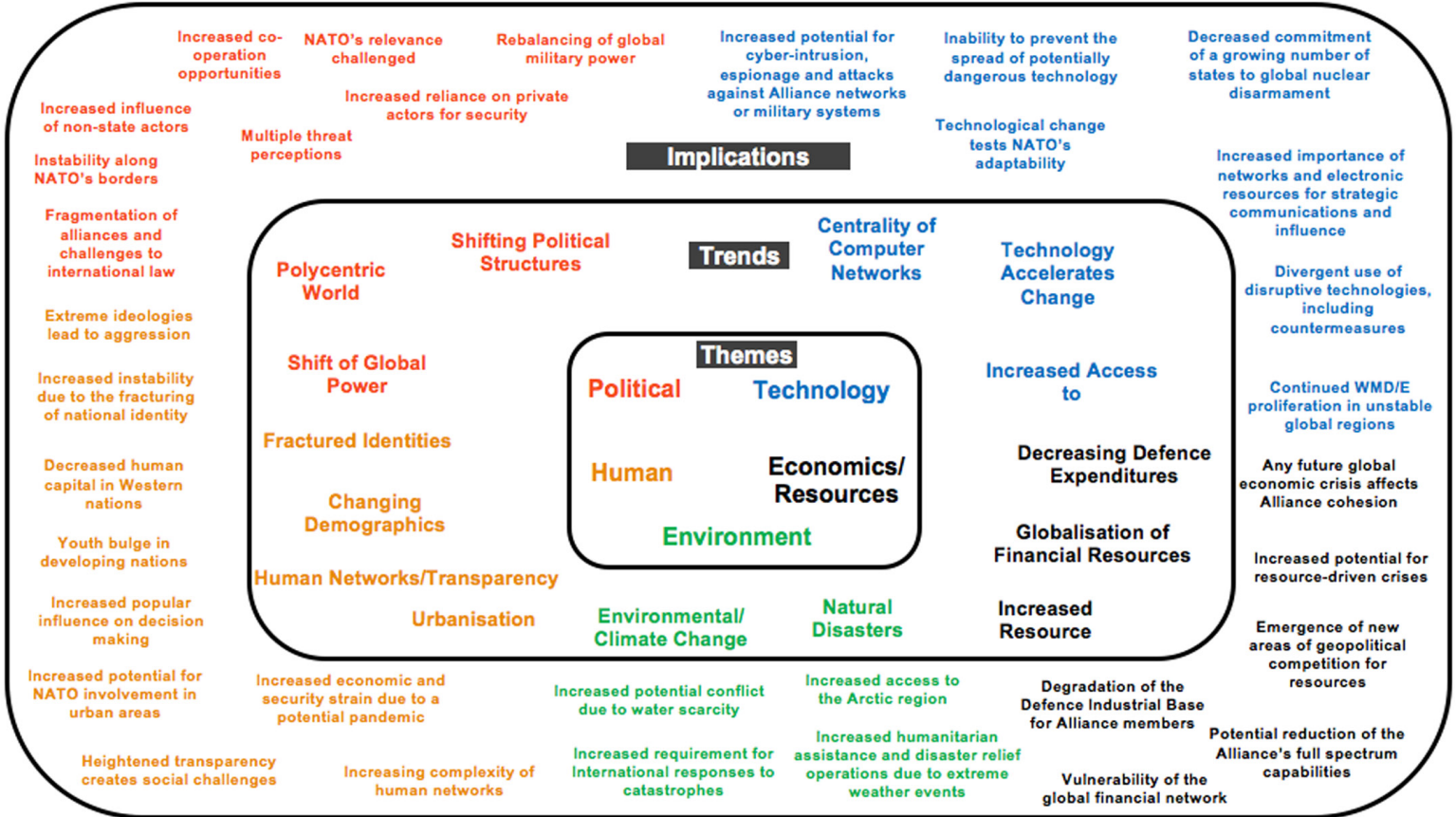2013 The Outlook for Energy: A View to 2040. ExxonMobil (2012)

APPENDIX B

SUMMARY OF 5 THEMES, 15 TRENDS, AND 34 IMPLICATIONS FOR NATO

THEME	TREND	IMPLICATION
POLITICAL	**1.** Shift of Global Power. Rebalance of power from the west to other regions will present political and economic challenges to NATO members.	**a.** Rebalancing of global military power. **b.** NATO's relevance challenged.
	2. Shifting Political Structures. The transition of autocratic / theocratic regimes towards democracy will continue.	**a.** Instability along NATO's borders.
	3. Polycentric World. The world is becoming increasingly interconnected and polycentric.	**a.** Fragmentation of alliances and challenges to international law. **b.** Increased co-operation opportunities. **c.** Increased influence of non-state actors. **d.** Increased reliance on private actors for security. **e.** Multiple threat perceptions.
	4. Changing Demographics. Future demographics will be driven by diverse effects.	**a.** Decreased human capital in Western nations. **b.** Youth bulge in developing nations.
HUMAN	**5.** Urbanisation. Cities will contain 65% of the world's population by 2040, and 95% of this urban population growth will occur within developing nations' mega-cities.	**a.** Increased potential for NATO involvement in urban areas.
	6. Human Networks / Transparency. Human networks are expanding at an exponential rate with many varying effects.	**a.** Greater need to understand human networks. **b.** Heightened transparency creates social challenges. **c.** Increased popular influence on decision making. **d.** Increased economic and security strain due to a potential pandemic.
	7. Fractured Identities. Several contributing factors may lead to a fracturing of national identity.	**a.** Increased instability due to the fracturing of national identity. **b.** Extreme ideologies lead to aggression.
TECHNOLOGY	**8.** Technology Accelerates Change. The accelerating cycles of exploration, discovery and exploitation of technologies along with the innovative fusion of existing, emerging and new technologies will combine to bring about change rapidly in the future.	**a.** Divergent use of disruptive technologies, including countermeasures. **b.** Technological change tests NATO's adaptability.
	9. Increased Access to Technology. Commercial research and technology has begun to outpace that of governments in the development of new technologies.	**a.** Inability to prevent the spread of potentially dangerous technology. **b.** Continued WMD/E proliferation in unstable global regions. **c.** Decreased commitment of a growing number of states to global nuclear disarmament.
	10. Centrality of Computer Networks. A globally connected and networked world creates a universal availability of information.	**a.** Increased potential for cyber-intrusion, espionage and attacks against Alliance networks or military systems. **b.** Increased importance of electronic tools and resources for strategic communications and influence.
ECONOMICS RESOURCES	**11.** Globalisation of Financial Resources. The financial networks and communication systems that manage the world's critical resources are increasingly intertwined.	**a.** Vulnerability of the global financial network. **b.** Any future global economic crisis affects Alliance cohesion.
	12. Increased Resource Scarcity. Nations need increasing amounts of energy and raw materials to sustain growth and maintain an advantage in the globalised economy.	**a.** Increased potential for resource-driven crises. **b.** Emergence of new areas of geopolitical competition for resources.
	13. Decreasing Defence Expenditures. Governments faced with slow or non-existent growth, rising unemployment and increasing debt burdens will continue to have many competing priorities.	**a.** Potential reduction of the Alliance's full spectrum capabilities. **b.** Degradation of the Defence Industrial Base for Alliance members.
ENVIRONMENT	**14.** Environmental / Climate Change. Global environmental change and its impacts are becoming readily apparent and are projected to increase in the future	**a.** Increased humanitarian assistance and disaster relief operations due to extreme weather events. **b.** Increased access to the Arctic region. **c.** Increased potential conflict due to water scarcity.
	15. Natural Disasters. The effects of natural disasters will become more devastating.	**a.** The increased requirement for international responses to catastrophes.

NATO STRATEGIC FORESIGHT ANALYSIS

Increased co-operation opportunities

NATO's relevance challenged

Rebalancing of global military power

Increased potential for cyber-intrusion, espionage and attacks against Alliance networks or military systems

Inability to prevent the spread of potentially dangerous technology

Decreased commitment of a growing number of states to global nuclear disarmament

Increased influence of non-state actors

Increased reliance on private actors for security

Instability along NATO's borders

Multiple threat perceptions

Implications

Technological change tests NATO's adaptability

Increased importance of networks and electronic resources for strategic communications and influence

Fragmentation of alliances and challenges to international law

Shifting Political Structures

Trends

Centrality of Computer Networks

Technology Accelerates Change

Divergent use of disruptive technologies, including countermeasures

Polycentric World

Extreme ideologies lead to aggression

Shift of Global Power

Themes

Increased instability due to the fracturing of national identity

Political

Technology

Increased Access to

Continued WMD/E proliferation in unstable global regions

Fractured Identities

Human

Economics/ Resources

Decreasing Defence Expenditures

Any future global economic crisis affects Alliance cohesion

Decreased human capital in Western nations

Changing Demographics

Environment

Globalisation of Financial Resources

Youth bulge in developing nations

Human Networks/Transparency

Increased popular influence on decision making

Urbanisation

Environmental/ Climate Change

Natural Disasters

Increased Resource

Increased potential for resource-driven crises

Emergence of new areas of geopolitical competition for resources

Increased potential for NATO involvement in urban areas

Increased economic and security strain due to a potential pandemic

Increased potential conflict due to water scarcity

Increased access to the Arctic region

Degradation of the Defence Industrial Base for Alliance members

Heightened transparency creates social challenges

Increasing complexity of human networks

Increased requirement for International responses to catastrophes

Increased humanitarian assistance and disaster relief operations due to extreme weather events

Potential reduction of the Alliance's full spectrum capabilities

Vulnerability of the global financial network

NATO Headquarters Supreme Allied Commander Transformation

SOURCES AND ACKNOWLEDGEMENTS

The Strategic Foresight Analysis is based on a review of many national, think tank, international organisations and industry future studies. Sources also comprised studies from non-NATO countries, including China and India, and South Asian partners such as Australia. The SFA is a synthesis of all these findings, which represent a common understanding of the future. In order to avoid bias or a purely western standpoint, the SFA was introduced to Partner Nations at the Strategic Military Partners Conference for their review and contribution. Additionally, conferences on both sides of the Atlantic – Brussels, Budapest, Washington DC and Copenhagen – as well as interactions with national future organisations, provided a comprehensive view of the themes, trends, and defence and security implications.

The extensive assistance and advice received in developing this first edition of the SFA is greatly appreciated. SACT acknowledges the contributions provided by Nations, Partners, think tanks, academia, and representatives from industry.

STRATEGIC FORESIGHT ANALYSIS TEAM CONTACT DETAILS

Address:

Strategic Analysis Branch

HQ SACT Strategic Plans and Policy

7857 Blandy Road Suite 100, Norfolk Virginia USA 23551-2490

E-mail:

sfa@act.nato.int and strategic-foresight@act.nato.int

http://sa.collab.act.nato.int/SitePages/Strategic%20Foresight%20Analysis.aspx

(NATO only)

www.act.nato.int/mainpages/futures-work

(Public)

46

This page intentionally blank

NATO Headquarters Supreme Allied Commander Transformation