FUTURE SECURITY ENVIRONMENT

(FSE)

First Edition

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INTRODUCTION

ALLIANCE – FROM COLD WAR TO COMPREHENSIVE APPROACH

1.   The North Atlantic Treaty Organisation (NATO) was created through the signing of the Washington Treaty in 1949, which paved the way for the Alliance's continuous adaptation to the constantly changing dynamic of international security.

2.   NATO underwent a series of reforms and reorganisations during the first forty years of its existence, designed to adapt it to the occasional opportunities that presented themselves to move beyond Cold War constraints in order to place the security of member countries on a more positive and stable foundation. In the relatively short period since the end of the Cold War, the Alliance has undergone a process of much more fundamental transformation, adapting to changes in the security environment of a scope and intensity that few could have foreseen in earlier years.

3.   The Alliance's Strategic Concept describes NATO's enduring purpose, nature and its fundamental security tasks. It is the authoritative statement of the Alliance's objectives, provides the highest level of guidance of the political and military means to be used in achieving them and remains the basis for the implementation of Alliance policy as a whole.

4.   However, changing risks, emerging threats and threat perceptions have resulted in a continuous process of adaptation of this strategy to ensure that the political framework, military structures and military capabilities needed to deal with modern security challenges are all in place.

5.   The Alliance is committed to a broad approach to security, which recognises the importance of political, economic, social and environmental factors in addition to the indispensable defence dimension.[1]

6.   Today's challenges require a comprehensive approach by the international community involving a wide spectrum of civil and military instruments, while fully respecting mandates and autonomy of decisions of all actors, and provides precedents for this approach.[2]

7.   Both operational experience and transformational efforts demonstrate that security and development are and will be more interwoven than ever before. Success in the future security environment won't be achieved by "military victory" alone, it has to be created through communication, coordination and cooperation with all relevant actors at all levels within a global framework – providing security and stability wherever the sources of threat and instability appear.

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[1] NATO HQ, PR/NAC-S(99)65, *The Alliance's Strategic Concept*, 24 April 1999
[2] NATO HQ, PR(2006)150, *Riga Summit Declaration*, 29 November 2006

8.   In February 2006, the Secretary General issued the Comprehensive Political Guidance (CPG), wherein a framework and political direction was agreed for NATO's continuing transformation. The CPG was endorsed in Riga by Heads of State and Government of the member countries of the North Atlantic Alliance.[3] This set, for the next 10 to 15 years, the priorities for all Alliance capability issues, planning disciplines and intelligence. Subsequently, Secretary General de Hoop Scheffer stated that: "NATO's 1999 Strategic Concept described the evolving security environment in terms that remain valid. This environment continues to change; it is and will be *complex* and *global*, and subject to *unforeseeable developments*. International security developments have an increasing impact on the lives of the citizens of Allied and other countries. *Terrorism*[4], increasingly global in scope and lethal in results, and the spread of *weapons of mass destruction* (WMD)[5] are likely to be the principal threats to the Alliance over the next 10 to 15 years. Instability due to failed or failing states, regional crises and conflicts, and their causes and effects; the growing availability of sophisticated conventional weaponry; the misuse of emerging technologies; and the disruption of the flow of vital resources are likely to be the main risks or challenges for the Alliance in that period. All of these factors can be inter-related or combined, most dangerously in the case of terrorists armed with WMD".[6]

9.   Since 1989 NATO has undergone great change. A successful though relatively static Cold War Alliance is, in the changed conditions of the global security environment, evolving into an ever-more dynamic organisation. Although any kind of large-scale military aggression against a NATO Member State is at present quite unlikely, so-called new threats have acquired a correspondingly greater role. And responding effectively to these threats requires even more flexibility and cooperation than ever before.[7]

10.   These significant changes are resulting from new directions set at the Washington, Prague, Istanbul and Riga summits as well as the influence of other geo-strategic circumstances. New members have joined the Alliance and others have aspirations. The changed command structure, the new mission types and transformation have empowered the Alliance in new and unique ways.

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[3] NATO HQ, PR(2006)150, *Riga Summit Declaration*, 29 November 2006.

[4] Terrorism, the unlawful use or threatened use of force or violence against individuals or property in an attempt to coerce or intimidate governments or societies to achieve political, religious or ideological objectives. Allied Administrative Publications 6 (AAP-6) - NATO Glossary of Terms and Definitions.

[5] WMD: Weapons that are capable of a higher order of destruction and of being used in such a manner at to destroy people, infrastructure or other resources on larger scale. Allied Administrative Publications 6 (AAP-6) - NATO Glossary of Terms and Definitions. For the purpose of this document the term WMD also include chemical, biological and radiological weapons and substances designed to incapacitate and contaminate large numbers of people and infrastructure.

[6] Secretary General, SG(2005) 0918, *Comprehensive Political Guidance (CPG)*, 07 Feb 2006, Part I – The Strategic Context.

[7] Address by Foreign Minister Rein Lang at the celebrating of the first anniversary of Estonia's NATO accession, 04 April 2005.

11.   NATO will continue to contribute to effective conflict prevention and to engage in crisis management, including through non-Article 5 crisis response operations (CRO). The Alliance has undertaken a range of operations of these types since the end of the cold war. Experience has proved the necessity of being able to execute stabilisation operations and of being able to provide military support to reconstruction efforts.[8]

12.   Collective Defence will remain the core purpose of the Alliance. The character of such potential Article 5 challenges is continuing to evolve.[9] The Alliance must "address the new challenges and threats from wherever they may come",[10] and respond to emerging crises in a future strategic context characterised by complexity and multidimensionality.[11]

13.   Peace, security and development are more interconnected than ever.[12] In response, the Alliance must possess a broad set of capabilities that will support Alliance ambitions to project stability, support humanitarian efforts, dissuade adversaries, deter aggression and, if necessary, defeat an adversary across the full range of military operations and missions. In addition, the Alliance must be capable of working in concert with non-NATO actors and organisations in countering the proliferation of weapons and asymmetric threats. The Alliance must adopt a more holistic and inclusive approach to security, to allow a coherent and comprehensive application of the various instruments of power of the Alliance and to improve its practical cooperation within member nations partners, international organisations and non-governmental organisations.[13]

14.   NATO has established several mechanisms for developing political means to work with possible rising powers, coalitions and future alliances, whilst developing military power appropriate to the new security situation. These mechanisms include Partnership for Peace (PfP), Mediterranean Dialogue (MD), Istanbul Cooperation Initiative (ICI), Contact Countries and the special relationship with Russia and Ukraine. These types of political groups will continue to transform the Alliance to meet the future challenges.

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[8] SG, *Comprehensive Political Guidance* (CPG), Part 2 – Implications for the Alliance.
[9] CPG, paragraph 5.
[10] Istanbul Summit Communiqué, NATO Press Release (2004) 096, 28 June 2004 and CPG paragraph 7.
[11] Allied Command Transformation (ACT), *Concepts For Allied Future Joint Operations (CAFJO)*, 20 February 2006. Refer to CAFJO Annex B, Glossary of Terms and Definitions; page B-5 to B-6 for definition of "multidimensional".
[12] CPG, paragraph 3.
[13] CAFJO, paragraph 7.

BACKGROUND

15.   ACT produced this draft paper to inform NATO Transformation.[14] The paper's horizon is 2025, which is beyond the timescale of NATO Agreed Intelligence (NAI)[15]. This paper should help provide a useful bridge between the two. The primary consumers are likely to be NATO Defence Planners, Capabilities Development processes and Policy/Strategy orientated discussions. Other customers are constantly emerging and have already helped shape the content to meet their requirement. These, along with national inputs have formed the bedrock on which to develop this paper.

16.   It is accepted that the military no longer operates in its own environment and increasingly shares the same space with diverse entities. Being aware of these entities represents sound judgement and supports capabilities along with an effect based approach to operations (EBAO) in the 21st century.

AIM

17.   The aim of this paper is to describe the many emerging and established trends, which if considered, could assist NATO's ability to address the future security environment in an increasingly inter-dependent world.

SCOPE

18.   This paper makes no pretence to predict the future with certainty (an impossibility), but rather seeks to provide an informed estimate of the future security environment. The paper will only identify trends, and where possible, their drivers, leaving defence planners and others to formulate assumptions and propose solutions for NATO. The sources used include a number of national papers on similar subjects[16], along with open-source research conducted at HQ SACT. Readers are bound to have varying views of the future security environment, to some degree, but they are encouraged to see the trends as food for thought, and as a basis for some general conclusions rather than as judgements or absolute predictions. Though some trends, such as global trade and development of alternative energy and fuel sources, if used astutely, could create a force for stability and prosperity, but this paper concentrates on inherent dangers, risks or threats. Being a security organisation, NATO must focus on those trends that could lead to an unstable environment or become a risk to the security of Alliance members or their partners. It is not the intention of this paper to just describe a negative future, but to highlight those aspects that could threaten stability, in order to develop possible courses of actions to address

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[14] ACT, *Directive 80-7 Managing Transformation*, appendix 1 to annex A – Analysis of Strategic Environment, 3 June 2005, the MCM-0099-2005, *Intelligence Transformation Advice to NATO*, 30 June 2005 and IMSM-0387-2006, tasking for the military implementation of the CPG 2006 - 2007, 2 Oct. 2006.
[15] NAI currently covers a 10-year timeframe and is updated annually.
[16] Sources are listed at the end of the paper, in the bibliography.

these challenges. The nature of a paper like this is therefore mostly negative. Combinations of trends often show synergy and, where obvious, these have been highlighted. Trends alone are no guarantor of the future and should be considered along with their drivers. Extrapolation is likely not possible as it is flawed to assume things will change in the future at a pace they have in the past, technology being just one good example.

SOURCES

19. This document has been drafted by taking in to account key NATO publications and by analysing nation's and other credible organisation's work and is therefore in large part a distillation. The most comprehensive of these, and thus most relevant are UN – *A more secure world: Our shared responsibility*, UK – *Strategic trends – 1st Edition*, US NIC – *Global trends 2015* and *Global Trends 2020,* CA – *Future security environment 2025,* US JFCOM – *The joint operational environment-Into the future* and EU/ISS – *Long Term Vision*. In addition defence white papers from nations were also studied.

METHOD

20. ACT Intelligence sub-division canvassed for and then analysed a number of papers submitted by nations and relevant organisations on similar subjects. Based on this analysis, feedback from nations, and discussions with relevant academic institutions and relevant organisations, ACT was able to amalgamate trends. An advisory board, consisting of academics and subject matter experts (SMEs), was used to maintain objectivity in the work and to monitor the progress of the FSE paper. ACT also benefited from academic and SME support in the drafting process (see acknowledgements).

Future Security Environment – Main Drivers and Trends

21. Predicting the future is an impossible and fanciful nonsense. That said, it would also be irresponsible not to look at current trends and their drivers and then logically ask the "So what" or "What next" questions. Nearly all NATO nations, major international organisations, institutions and industries have adopted this approach. Before this amalgamation can be done, trends need to be identified, and co-related with their drivers where at all possible. This objective work needs to be completed first, before subjective analysis can be done. This paper attempts to do the former. It is not the intent of this paper to be prescriptive, but merely to act as a foundation document for processes that should inevitably follow.

Hypothesis

22.   The most important strategic trend seen today is *Globalisation*[17] with *Information Revolution* as its associated driver. The current pace of discovery, total accessibility and connectivity show no sign of slowing. Societies and Cultures are inter-connecting at a pace hitherto not seen. Sometimes by design, often by discovery, but also sometimes against their will. The outcomes can have both positive benefits (opportunities) and also negative prospects (threats, risks, challenges). The results manifest themselves in many ways, but can often be best captured through trends analysis. The impacts of the information revolution in the main domains of this globalised world are profoundly affecting social, cultural, political, economic, and technological concepts. These trends interact and most often impact the physical environment where they spawn consequences. These consequences can be treated as risks, opportunities, challenges or concerns. The analysis of these trends will determine for NATO, which is which.

Concepts and definitions

23.   The following represents the concepts and definitions used in this paper:

- *Information revolution*:[18] a term that refers not only to computer and telecommunications technology, but also to the role of information itself.
- *Paradigm*:[19] The defined ground which is not changing or which is changing at a low speed. Cultural beliefs, concepts, habits, languages, - that constitute the way of living of any population. Globalisation can be considered as the new paradigm, in which "open societies" have evolved.
- *Domain*:[20] Into each paradigm, society has several components that are constantly evolving and changing, and in which each change is an event.
- *Trends*: The evolution of repetitive events represents a *trend.* Consequently, trends show how the components (domains) are changing.
- *Driver*: designates the cause of an event that results in a specific trend into a component.
- *Challenge*:[21] to arouse or stimulate especially by presenting with difficulties.

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[17] Globalisation, the act or process of globalising**:** the state of being globalised; *especially***:** the development of an increasingly integrated global economy marked especially by free trade, free flow of capital, and the tapping of cheaper foreign labour markets, Miriam-Webster OnLine, retrieved 14 July 2006.

[18] Blais, Pamela, "How the Information Revolution Is Shaping Our Communities", *Planning Commissioners Journal,* Issue 24, fall 1996, page 16. [http://www.plannersweb.com/articles/bla118.html]

[19] A philosophical and theoretical framework of a scientific school or discipline within which theories, laws, and generalizations and the experiments performed in support of them are formulated; *broadly*: a philosophical or theoretical framework of any kind, Merriam-Webster on line dictionary. [http://www.m-w.com/cgi-bin/dictionary]

[20] A sphere of knowledge, influence, or activity (the *domain* of art), Merriam-Webster online dictionary. [http://www.m-w.com/cgi-bin/dictionary]

[21] Merriam-Webster on line dictionary, [http://www.m-w.com/cgi-bin/dictionary].

- *Threat:*[22] a state's/coalition's perception that it is in some degree of danger based on the assessed capabilities, intentions and actions of another state/coalition or group.
- *Potential threat:*[23], a threat is characterised as potential by the existence of a threatening capability but the absence of current hostile intent, or conversely of a hostile intent and a developing threatening capability.
- *Risk:*[24] the hazards to which a state's/coalition's interests or strategies are assessed to be exposed. These risks, which are risks to stability and security, do not necessarily originate in, or in the vicinity of, the state or the coalition.
- *Concern:*[25] an issue of interest to the Alliance that may have future implications on global/regional security and stability.

STRUCTURE

24.   This paper has six sections. The structure of the executive summary is mainly based on MC 161 - NATO Strategic Intelligence Estimate (NSIE)[26] as this structure is already recognised by nations. There is a deliberate crossover between the FSE and MC 161; however, this paper is entirely based on *open sources*. Section I addresses the strategic overview and is the *Executive Summary;* Section II describes the *Geopolitical Challenges;* Section III looks at *Global Security Risks;* Section IV describes *Global Security Concerns;* Section V focuses on *Future Challenges and Opportunities;* and Section VI considers *Regional Assessments.*

USE

25.   The FSE paper is *not* an Intelligence document. It is intended that the paper be used openly, as an input to aid ACT conceptual thinking, strategic policy development and capability development work, and as a foundation document for NATO Defence Planning. The primary target group for this paper is the Defence Planners, but also other entities also may find the paper useful for their analysis. It should be regarded as forming part of the *assumptions process* in subsequent transformation work. Since this paper *only* illustrates trends, the necessary assumptions and assessments for the future of NATO must still be identified through the NATO processes that contribute to the development of NATO's future capabilities.

26.   Of course, this paper is based on and limited to "information as is". As has been demonstrated during the last decade, unforeseen and drastic shocks in the environment could lead to dramatic changes. Such changes could affect one or more of the trends we are describing and the path we have tried to predict.

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[22] Annex G to MC 166/2006, *NATO Intelligence Warning System (NIWS)*, (NU), July 07 2006.
[23] Annex G to MC 166/2006, *NIWS*.
[24] Ibid.
[25] Ibid.
[26] MC-161A, NATO Strategic Intelligence Estimate (NS).

SECTION I: STRATEGIC OVERVIEW – EXECUTIVE SUMMARY

"We need to integrate any NATO military response into a wider overall framework that will include political, as well as perhaps financial and judicial measures"

Jaap de Hoop Scheffer - 2 February 2005

Key Findings

- *Terrorism and the spread of WMD are likely to be the principal threats to the Alliance over the period.*
- *A growing range of actors may acquire or seek to develop capabilities to conduct both physical attacks and Computer Network Attacks (CNA).*
- *Criminal organisations and networks will expand the scale and scope of their activities; piracy will also grow as a challenge to NATO.*
- *China, India and Russia will become major players in the future security environment.*
- *North Korea, Iran and Syria will continue to be countries of major concern for NATO.*
- *Energy security will continue to be concern for NATO.*

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27.   The FSE undoubtedly holds many *threats* that can be potentially diminished or countered in many ways. Military power will still be applicable to many situations, but other concerted measures could be examined in order to weaken other components of potential aggression against NATO. This observation is consistent with the Comprehensive Approach and the current thinking of the Effects Based Approach to Operations (EBAO) proposed within elements of NATO and recently highlighted in the Comprehensive Political Guidance (CPG). In addressing these *threats*, it seems that improved conditions for poorer peoples of the world could also be a result, in which case NATO could be seen very much as a force for good both within its own community and outside. The resultant potential *threats* to NATO security from the many trends described within this paper cover the spectrum of *dangers* from criminality, terrorism, subversion, and insurrection to interstate-conflict. Key factors driving risks or threats for NATO will be antagonistic leaders, disorder, and availability of weaponry, finance and NATO *vulnerabilities.* As stated in the Riga Summit Declaration[27], the major challenges are seen as "the sometimes interrelated threats such as terrorism, increasingly global in scale and lethal in results, and the proliferation of WMD and their means of delivery, as well as challenges from instability due to failing states."

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[27] NATO HQ, PR(2006)150, *Riga Summit Declaration*, 29 November 2006, paragraph 2.

EXECUTIVE SUMMARY -– ASSESSMENTS AND OVERALL CONCERNS

Terrorism and proliferation

28.   Terrorism and the proliferation of WMD / CBRN weapons are likely to be the principal threats to the Alliance over the period. Instability due to failed or failing states, regional crises and conflicts, are their causes and effects; the growing availability of increasingly sophisticated conventional weaponry; the dual use character of emerging technologies; and the disruption of the flow of vital resources are likely to be the main risks or challenges for the Alliance over the period. National military forces are likely to have an increased role in engaging terrorism, both domestically, depending on national law and abroad, in fighting terrorists and terrorist organisations and prevent assistance to them.

29.   The most worrisome risk may be the search by terrorist groups and problem states to obtain WMD / Weapons of Mass Effect (WME). Likewise, developments in Chemical Warfare (CW) and Biological Warfare (BW) agents and the proliferation of related expertise and technologies may pose a substantial and growing *threat*, particularly from terrorists.

Computer Network Operations (CNO) and Information Operations (INFO OPS)

30.   A growing range of actors, state and non-state including terrorists, may acquire or seek to develop capabilities to conduct both physical attacks and Computer Network Attacks (CNA) against nodes of the world's information infrastructure. It will be increasingly important to focus on Computer Network Defence (CND). This is becoming especially important, as NATO infrastructure, both military and non-military, is particularly vulnerable.

Physical Environment

31.   Past and current greenhouse gas emissions have already ensured that there will be some degree of climate change during the twenty-first century. The effects will differ from one region to another and could include an increasing risk of flooding as well as stronger and more catastrophic natural disasters. Though global food safety is unlikely to be threatened, some regions may experience food shortages and hunger brought about by these effects.

32.   The overall growth in demand for all forms of fuel will mirror the growth in the power sector. Total coal demand will nearly double, and both oil and gas demand will triple. Expanding domestic production capacity will require substantial investments, while increasing dependence on imported forms of energy will increase vulnerability to fluctuations in global energy prices.

33.   Over the period, six countries will account for half of the projected population increase: India, China, Pakistan, Nigeria, Bangladesh and Indonesia. Migration flows have shifted in recent years with the changing poles of attraction

for labour migration. Meanwhile, the Middle East and North Africa (MENA) countries and other important energy producers will become regions where stability and security will be of even greater concern. Energy security will continue to be concern for NATO.

Criminal Issues

34.   Criminal organisations and networks based on all continents will expand the scale and scope of their activities. Piracy will grow as a challenge to NATO nations and operations. NATO interagency coordination and partnering agreements with other international institutions will be increasingly important to counter this trend.

China, India and Russia

35.   China, India and Russia will become major players in the future security environment. However, they will face many obstacles and challenges on their way. China's rapid rise as a regional political and economic power, with global aspirations, is an important element of today's strategic environment - one that has significant implications for the region and the world. It is generally agreed that the probable emergence of China and India as new major global players over the period will transform the global landscape. While at present, the economies of both China and India are considerably smaller than that of the United States (US), some estimates conclude that China is likely to overtake and India will equal the US economy in size by the middle of this century. Technology, organisation, information, education and productivity will play a critically decisive role in governing the future course of development. Russia will remain a major global player in the near future for two main reasons: its abundant natural resources will assume greater importance to the world's major developed economies, and its military research and development will continually earn it a top place as one of the top producers and suppliers of hardware around the world.

Other nations

36.   North Korea, Iran, Iraq and Syria will continue to be countries of major concern for NATO and for their respective geographic regions. Despite ongoing diplomatic efforts, the confrontation on the Peninsula will likely not be resolved during the next few years, nor will any agreements alter substantially the military threat potential of North Korea. North Korea currently poses one of the most serious nuclear threats on the globe. North Korea's intentions are unclear and will continue to be so under the current regime. Not only is there the risk of nuclear exchange in the region, North Korea is, at the moment, also an active exporter of nuclear technology and associated delivery systems.

37.   Depending on the regime in power and their perception of future threats to Iranian security, the development and utilisation of Iranian forces might is likely to continue, with the continued of power projection and air defence capabilities and

the pursuit of enhanced WME capabilities. Given Syria's history of cooperation with North Korea in the acquisition and enhancement of theatre ballistic missiles (TBM), it should de assumed that the range, reliability, payload and accuracy of Syria's SCUD D missiles will increase over the period such that they will threaten directly - certainly Turkey and Cyprus, and perhaps Greece, the southern Balkans and Italy. This might as well be the case with Iranian TBM.

38.   Addressing the risks created by weak and failing states requires not only international cooperation in counter terrorism and non-proliferation, but also a broad and systematic international effort to help those states overcome the challenges that have brought about their failure. Intrastate conflicts are likely to remain prevalent and perhaps increase in frequency as globalisation increases cultural conflict, penalises ineffective governance, and increases the ease with which irredentist[28] groups can operate. The will and capability for non-state actors to achieve strategic effect and to act internationally will continue to increase, particularly through international terrorism. Nuclear proliferation poses the most serious challenge in the Middle East, particularly as Israel is unlikely to remain passive should either Iran or Syria become poised to possess nuclear weapons.

Economics

39.   Spanning the social, political, economic interaction domains, the communication revolution has become a driving force in shaping and sparking trends that will persist in the future security environment. Since the economical development is cyclical, a protracted economic downturn is a significant risk in the future, resulting in the disintegration of the globalised economy and the rise of economic isolationism and protectionism. Furthermore, the socio-economic disenchantment of the disadvantaged could renew pressures upon national governments to disengage or retract from the global economy.

40.   In the last ten years, the concept of global governance that has increasingly prevailed in international political discourse has emphasised the significance of network structures involving state and private sector actors within international politics. This trend is likely to continue over the period.

Information Technology

41.   The pace, scope, discovery and proliferation of information technology shows no sign of slowing and will impact every domain and aspect of society. Continuous organisational change will be required to leverage the opportunities this presents. This will be a substantial challenge for NATO. Large structured institutions will struggle to keep pace unless a culture of change is endemic throughout the organisation. Long-term procurement strategies, inflexible

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[28] Irredentism, nationalist agitation in other countries, based on historical, ethnic, geographical reasons, for the incorporation of territories under foreign rule, Columbia Encyclopaedia, retrieved 15 February 2007. [http://www.bartleby.com/65/ir/irredent.html]

financing methodologies and protracted decision making all act as obstacles or disadvantages in keeping pace with the 21st century.

SECTION II: GEOPOLITICAL CHALLENGES

*"My interest is in the future because I am going to spend the
rest of my life there"*

Charles Kettering 1876 -1958

Key Findings

- ***Rising Powers: China and India.***
- ***China's emergence as a new superpower will define global economy and security in the 21st Century.***
- ***Growing population, robust military establishment and country's increasing high technology are shaping India as one of the rising political, economic and military powers.***
- ***Russia's re-emergence will be highlighted by its control of energy resources.***
- ***Democratic People's Republic of Korea (DPRK), Iran and Syria will continue to be countries of WMD proliferation concern.***
- ***Globalisation will continue speeding-up, increasingly affecting socio-cultural, economic and political life.***

SUMMARY

42.   China, India and Russia will remain major players in the future security environment. However, they will face many obstacles and challenges on their way. China's rapid rise as a regional political and economic power, with global aspirations, is an important element of today's strategic environment – one that has significant implications for the region and the world. It is generally agreed that the probable emergence of China and India as new major global players over the period, will transform the global landscape. While at present, the economies of both China and India are considerably smaller than that of the US, some estimates conclude that China is likely to overtake and India equal the US economy in size by the middle of this century. The global balance of power is inevitably shifting in China's favour. Over the period the US will still retain its position at the "front of the field" but its lead will have been dramatically reduced as China catches up and threatens to overtake. There will be a re-centring of the globe in the Far East. A powerful set of catalytic forces is accelerating the speed of social change throughout the world. They include a rapid rise in levels of education, high rates of technological innovation and application, ever faster and cheaper communication that dissolves physical and social barriers both within countries and internationally, greater availability and easier access to information, and the further opening up of global markets. These trends are representative of a relative shift in the engines that drive development from manufacturing to the services sector and from capital resources to human and knowledge resources. Technology, organisation, information, education and

productive skills will, therefore, play a critically decisive role in governing the future course of development.

43.　Nearly all the sources used in this paper highlight China and India as rising powers and have similar views on the trend. It is clear that these countries will be key players in the future security environment and, thus, rightly lead off the geopolitical challenges presented in this paper. China, India, and Russia are undergoing far-reaching transitions aimed at creating the foundations for regional and even global power in the 21st century. They have achieved successes in reforms while experiencing serious internal problems and external challenges that began as these states moved toward market democracy.

44.　The rapid growth of China's economy, coupled with its military expansion, has propelled China's emergence as a regional power with an increasingly global foreign policy. Some reports indicates that China's economy will be the second largest of the world's economy at the end of the period, just behind US in Purchasing Power Parity (PPP) per capita. Securing adequate supplies of resources and materials has become a major driver of Chinese foreign policy and this has been evidenced strongly in its 2006 acquisitions and creative partnering. China will bring its people out of poverty by embracing economic globalisation and improving relations with the rest of the world.

45.　Politically, India is the world's largest democracy and although its politics are often driven by nationalistic demands, in general, it aspires to similar democratic goals and principles as western consolidated democracies. On the other hand, while India has clearly evolved, the legacy of a stifling bureaucracy still remains. India still has large numbers, particularly in rural areas, which have not enjoyed major benefits from economic growth.

46.　The tensions between the Russian Federation and Ukraine at the start of the year 2006, generated a renewed analytical interest in Russia's re-emerging position as a superpower, driven chiefly by its actual, or potential, domination of a larger proportion of global supplies of energy. Although Russia is not yet considered as a resurgent power in the conventional sense of the phrase, it still possesses some attributes of a superpower and could fully regain superpower status in the future.

47.　While these social and political factors may limit the extent to which Russia could be a major global player, Moscow is likely to be an important partner both for the established powers, the US and Europe, and for the rising powers of China and India. The key economic challenge facing Russia during the period will be whether it can move beyond resource extraction and make the necessary structural changes in order to diversify the economy, take advantage of Russia's human capital and become more integrated into the world economy.

Cooperation with other world regions, such as Europe and Asia, could allow Russia to take advantage of natural strengths it has in certain areas of science and technology and help its economic profile to grow beyond natural resources and arms sales.

48.	A reunification of The Korean Peninsula would be a formative event in Asian politics and would have profound influence over subsequent political alignments, not least because of North Korea's substantial nuclear and missile capability which would likely have been further developed in the years prior to reunification. Whichever group wins, and most indicators point to the reformists due to the growth of opposition against the current regime, the other is unlikely to back down without a bitter fight.

49.	Syria arguably presents the best microcosm of the cocktail of risks that might challenge NATO in the future. In particular, because Syria has a nuclear and chemical program, although without a declared uranium enrichment element. Significantly, Syria has not signed the Code of Conduct related to missile technology and has, thus, not yet engaged in international efforts to prevent missile proliferation. The SCUD D can carry chemical or biological warheads currently, but with advances in nuclear weapons technology, would be able to carry an effective nuclear warhead by the end of the period. The future of Iraq is difficult to predict. North Korea, Iran and Syria will continue to be countries of WMD proliferation concern.

50.	Globalisation shows only signs of continuing, or even speeding up, in the coming years as long communication and interaction becomes more and more feasible at lower costs and with greater efficiency. Westernisation through the mass media due to globalisation may increase tensions from anti-western movements, as in countries like Pakistan or other Islamic constituents.

51.	China and India, especially, are likely to continue their economic rise, shifting the centre of the world economy to Asia. Using such technologies as the Internet, communication satellites and telephones, there is an increase in the number of standards applied globally; e.g. copyright laws and patents and the push by many for an international criminal court and international justice movements.

RISING POWERS

52.	Nearly all the sources used in this paper highlight China and India as rising powers and have similar views on the trend. There are differing opinions on Russia. It is clear that these countries will be key players in the future security environment and, thus, rightly lead off the geopolitical challenges presented in this paper. The future military implications for these states are discussed later, whilst the regional trends are discussed in section VI. While the notion of emerging powers presupposes a number of characteristics shared by the states in question, the criteria used to define a superpower differ among sources. However characteristics such as cultural and sociological regional preponderancy, demography, geographical and physical factors, including the

existence of raw materials within the country, and political and military supremacy and the potential to leverage these, are generally associated with superpowers. It is unlikely that any will emerge in the near term as new superpowers.

53.   China, India, and Russia are undergoing far-reaching transitions aimed at creating the foundations for regional and even global power in the 21st century. When this decade of transition began, these states were headed toward market democracy. Today, their destinations are less certain. Yet, their great size, geographical location, and historical tradition ensure them an influential role in key regions - East Asia, South Asia, and Central and Eastern Europe. Their success or failure will significantly affect these regions.[29]

54.   The outcome of their transitions is, of course, difficult to predict. All three seek expanded regional and global roles; and possess impressive economic potential. They have achieved successes in reforms while experiencing serious internal problems and external challenges that began as these states moved toward market democracy. Each will focus in their own way on sustaining internal political and economic momentum, improving military capabilities and preventing internal instability. Each will increasingly attempt to influence its geographic region, while addressing traditional or emerging rivals. In the next decade, the futures of China, India, and Russia will depend on how they manage internal and external challenges.[30]

China

55.   The rapid growth of the *People's Republic of China's* (PRC's) economy, coupled with its military expansion, has propelled China's emergence as a regional power with an increasingly global foreign policy. However, there is much uncertainty surrounding China's future and the path it will take.[31]

56.   China's rapid development has attracted worldwide attention in recent years. The implications of various aspects of China's rise, from its expanding economic influence and military might to its growing demand for energy supplies, are being heatedly debated in the international community as well as within China. Correctly understanding China's achievements and its path toward greater development is thus crucial.[32]

57.   China's leaders face some important choices as its power and influence grow. These choices span a range of issues including challenges to China's economic transition and political reform, rising nationalism, internal unrest, proliferation of dangerous technologies, adoption of international norms, and

[29] Institute for National Strategic Studies, National Defense University, *Strategic Assessment 1999: Priorities for a turbulent world*, Fort Lesley J. McNair, Washington, DC, page 205.
[30] Institute for National Strategic Studies, *Strategic Assessment 1999…,* page 205.
[31] US Secretary of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2006*, December 2005, retrieved 1 August 2006, page 7.
[32] Bijian, Zheng, "China's 'Peaceful Rise' to Great-Power Status", *Foreign Affairs*, September/October 2005, retrieved 1 August 2006.

China's expanding military power.[33] Since starting to open up and reform its economy in 1978, China has averaged 9.4 % annual gross domestic product (GDP)[34] growth, one of the highest growth rates in the world. In 1978, it accounted for less than one percent of the world economy, and its total foreign trade was worth $20.6 billion. Today, it accounts for four percent of the world economy and has foreign trade worth $851 billion - the third-largest national total in the world. China has also attracted hundreds of billions of dollars of foreign investment and more than a trillion dollars of domestic non-public investment. China is set to reap the biggest gains from globalisation in East Asia to 2020. Beijing aims to maintain its current growth trajectory and quadruple its GDP by 2020 and could become the world's largest economy.[35]

58.   One should not, however, lose sight of the other side of the coin. Economic growth alone does not provide a full picture of a country's development. China has a population of 1.3 billion. Any small difficulty in its economic or social development, spread over this vast group, could become a huge problem. And China's population has not yet peaked. It is not projected to begin to decline in 2030 after its population will have reached 1.5 billion. Moreover, China's economy is still just one-seventh the size of that of the US and one-third the size of Japan's. In per capita terms, China remains a low-income developing country, ranked roughly 100th in the world. Its impact on the world economy is still limited but clearly growing.[36] Some reports indicates that China's economy will be the second largest of the world's economy at the end of the period, just behind US in Purchasing Power Parity (PPP) per capita.

59.   The formidable development challenges still facing China stem from the constraints it faces in pulling its population out of poverty. The scarcity of natural resources available to support such a huge population - especially energy, raw materials and water - is increasingly an obstacle, especially since the inefficiency of use and the low rate of the recycling of those materials. China's per capita water resources are one-fourth of the world average, and its per capita area of cultivatable farmland is 40 percent of the world average. China's oil, natural gas, copper, and aluminium resources in per capita terms amount to 8.3 %, 4.1 %, 25.5 %, and 9.7 % of the respective world averages.[37]

60.   China's dependence on imported energy and raw materials continues to grow. In 2004 China maintained its position as the world's second largest consumer and third largest importer of oil. Securing adequate supplies of resources and materials has become a major driver of Chinese foreign policy and

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[33] US Secretary of Defense, *Annual Report to Congress: Military Power China …*, page 1.
[34] Throughout the document different economic measuring tool have been used, Gross domestic product (GNP), Gross National Income (GNI), Gross Domestic Product (GDP) and Purchasing Power Parity (PPP) per capita. Relative comparison should be made only within each paragraph or section and not across the whole paper.
[35] National Intelligence Council (NIC), *Global trends 2020 - East Asia*, Discussion paper for the NIC 2020 project, December 2003, page 2.
[36] NIC, *Global trends 2020 - East Asia*, page 2.
[37] Zheng, Bijian, " China's "Peaceful Rise" to Great-Power Status".

this has been evidenced strongly in its 2006 acquisitions and creative partnering. Beijing has pursued stronger relations with Angola, Central Asia, Indonesia, states in the Middle East (including Iran), Russia, Sudan, Venezuela and Zimbabwe to secure long-term resource supply agreements. Some of these countries are also recipients of Chinese military technology, likely used to facilitate access. China has also strengthened ties to countries that are located astride key maritime transit routes (e.g., the Straits of Malacca). Chinese strategists have discussed the vulnerability of China's access to international waterways. Evidence suggests that China is investing in maritime surface and sub-surface weapons systems that could serve as the basis for a force projection capability to secure vital sea lines of communication and/or key geo-strategic terrain.[38] Water and fishing disputes are already common and these may intensify, particularly during supply disruptions.[39]

61.   Technologically, China continues a systematic effort to obtain dual-use technologies through trade, commercial transactions, and joint ventures, particularly in the areas of software and integrated circuits industries that are vital for information-based, network-centric warfare. Increasing high-technology foreign investment and joint ventures in China evidences this trend. The concentration of export licenses destined for China is in the areas of computer, electronics, semiconductor, telecommunications and information security technology.[40] Chinese access to advanced telecommunications capabilities is forecasted to continue its steep growth.[41]

62.   Urbanisation will concentrate the population pressures on economic prosperity, infrastructure and the environment in China and most of Southeast Asia out to 2020. In China, economic incentives, water shortages and environmental damage will drive people into the southern cities at a rate that will see near-equality of China's rural and urban populations in 2020.[42]

63.   Politically, China will struggle to maintain an authoritarian political system as the economy expands and a generation of the Chinese elite becomes increasingly familiar with democratic concepts and expectations.[43] The Chinese Communist Party continues to give priority to economic reform over political liberalisation. However, internal pressures for political liberalisation persist. An internal political crisis could lead China to turn inward, or alternatively could prompt a more assertive foreign policy to build domestic support.[44] Domestic protests, mainly directed at local policies and officials, have increased and, in some cases, become violent in recent years. The protests reflect popular dissatisfaction with official behaviour related to property rights, forced relocations, labour rights, pensions, and corruption. They pose increased challenges to

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[38] US Secretary of Defense, *Annual Report to Congress: Military Power China …*, page 1.
[39] NIC, *Global trends 2020 - East Asia*, page 3.
[40] Ibid, page 2.
[41] Bijian, Zheng, "China's 'Peaceful Rise' to Great-Power Status".
[42] NIC, *Global trends 2020 - East Asia*, page 2.
[43] Ibid, page 5.
[44] US Secretary of Defense, *Annual Report to Congress: Military Power China …*, page 8.

China's internal security forces.[45] China's controlled management of their strategic transition strategy is indicative of their serious intent to reform on their terms and timelines. The lessons from other collapsed former soviet countries have clearly been learned.

64.   Chinese leaders recognise the potential negative impact that global and transnational threats could have on China's economic development and domestic stability. These threats include: HIV/AIDS; the H5N1 avian influenza virus; international crime and narcotics trafficking; international terrorism; and the proliferation of WMD. The Chinese government's success or failure in addressing these mounting non-traditional security challenges will help determine its own, as well as China's, future.[46] The Pearl River Basin in southern China, which combines high population density and close contact between humans and animals will continue to be an incubator of dangerous zoonotic[47] diseases. Some states will be more able to handle Severe Acute Respiratory Syndrome (SARS) type outbreaks than others.[48]

65.   On global security roles, the Chinese government is still adapting to its role as an emerging power by taking on greater regional and international responsibilities. Positive steps include increasing participation in regional and global forums and in peace operations, humanitarian assistance and disaster relief. China has hosted the Six-Party Talks aimed at eliminating North Korea's nuclear programs and has worked peacefully to address long-standing territorial disputes with Russia, Vietnam, India, and Central Asian countries. On the other hand, China continues to dispute sovereignty claims in the South and East China Seas and still asserts authority over Taiwan, and threatens military force. Chinese companies continue to play a negative role in the proliferation of advanced military capabilities, and continue to supply countries such as Iran with critical military technologies. Beijing has not yet joined the Proliferation Security Initiative. China has not fully leveraged its close ties with Pyongyang to stem North Korean nuclear ambitions, and continues to maintain or strengthen political, economic, and military ties with Iran, Sudan, Burma, Zimbabwe, Cuba, and Venezuela, undercutting international efforts to influence those states.[49]

66.   Despite widespread fears about China's growing economic clout and political stature, Beijing remains committed to a "peaceful rise". China will bring its people out of poverty by embracing economic globalisation and improving relations with the rest of the world. As it emerges as a great power, China knows that its continued development depends on world peace - a peace that its development will in turn reinforce.[50] The dichotomy will continue as China tests different foreign and domestic policies.

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[45] Ibid, page 1.
[46] US Secretary of Defense, *Annual Report to Congress: Military Power China …*, page 8.
[47] The result of a virus crossing from animals to humans.
[48] US Secretary of Defense, Annual Report to Congress: *Military Power China* …., page 3.
[49] Ibid, pages 8-9.
[50] Bijian, Zheng, "China's 'Peaceful Rise' to Great-Power Status".

India

67.   The population of the *Republic of India* reached 1.1 billion in 2005.[51] In spite of declining fertility rates, falling infant mortality and increased life expectancy will spur an increase of, at least, 300 million people. This will result in a total Indian population of 1.3 – 1.4 billion in 2020. India is expected to become the world's most populated country by 2050.[52] The population over 60 years of age will double from 60 to 120 million people (i.e., around 3.5 % per annum) during the period. This may require the adoption of special social measures to support this vulnerable group, which will include a high percentage of illiterates who are especially susceptible to both malnutrition and health-related problems. Unequal rates of population and economic growth are likely to further aggravate regional disparities within the country.[53]

68.   Well before 2020, India will have the capacity to produce more than sufficient quantities of food to provide a healthy diet to its entire population and will become a major food exporter. Production of surplus food will not, however, ensure the eradication of under-nutrition. In spite of enormous progress in food production, nearly half the country's population still suffers from chronic under-nutrition and malnutrition.[54] Internal distribution mechanisms will require improvement to alleviate this position.

69.   India's urban population is expected to rise from 28 % to 40 % of the total population by 2020, placing increasing strain on the country's urban infrastructure. Future growth is likely to concentrate in and around 60 to 70 large cities, having a population of 1 million or more.[55]

70.   Economically, Indian Gross National Income (GNI) attained $674 billion in 2004. The growth rate increased in 2003 and 2004. The 9 % growth rate reached in 2003 fuelled the optimistic visions about the future. However, since 1999, the average growth rate is about 6 %. Though economic growth has been impressive, it has been mostly offset by population growth. As result, the GNI per capita remains low ($620, ranking India number 159 out of 208 countries). Using the purchasing power parity (PPP)[56] method, the GNI per capita reaches $3,100, ranking India number 145 out of 208 countries in 2004.[57]

[51] United Nations (UN), Department of Economic and Social Affairs / Population Division*, The 2004 Revision of World Population Prospects*, 2004, Chapter I, table 1.2, page 7*.* [http://www.un.org/esa/population/publications/WPP2004/WPP2004_Vol3_Final/Chapter1.pdf]
[52] UN, *The* 2004 Revision *of* World Population Prospects.
[53] Government of India, Planning Commission, *Report of the Committee on India Vision 2020,* New Delhi, December 2002 (Chairman Dr. S. P. Gupta), page 3.
[54] Government of India, *Report India Vision 2020*, page 3.
[55] Ibid, page 8.
[56] Purchasing power parity (PPP) per capita, the value of all final goods and services produced within a nation in a given year divided by the average population for the same year.
[57] Freeworld Academy, Futures studies, "Future of India and south Asia", 2005 revision, retrieved

71.   If achieved, compounding effect of attaining the targeted annual GDP growth rate of 8.5 to 9 % over the next 20 years would be to quadruple of the real per capita income and almost eliminate the population of Indians living below the poverty line. This would increase India's standing from around 11th today to 4th from the top in 2020 among 207 countries, given in the World Development Report in terms of GDP. Further, in terms of GDP per capita, measured in PPP per capita, India's rank would rise from the present 153 to 100. This would mean that India could move from a low-income country to an upper middle-income country.[58]

72.   In recent years, India's growth rate has lagged China's by about 20 %. Nevertheless, some experts believe that India might overtake China as the fastest growing economy in the world. India has several factors working for it; its working-age population will continue to increase well into the 2020s. It has well-entrenched democratic institutions possesses working capital markets and has world-class firms in some important high-tech sectors. All of which China has yet to achieve.[59]

73.   India's well-educated, young population has embraced state-of-the-art computer and information technologies, making their country one of the most important high-tech hubs in the world. Its information technology and computer companies in Bangalore have been named as the world's second Silicon Valley. These companies and their founders benefited from the high-tech and Internet boom in the US in the late 1990s and contributed to off shoring. While its high technology sector earned India its much-needed currency, this success is mostly limited, as the remainder of the country lags far behind. Nearly a third of India's population still lives below the national poverty line.[60] Furthermore, this trend may be temporary as other under-developed nations emerge attracting outsourcing revenue from India.

74.   Politically, India is the world's largest democracy and although its politics are often driven by nationalistic demands, in general, it aspires to similar democratic goals and principles as western consolidated democracies.[61] However the democratic rule could be undermined by corruption, India is one of the most corrupt nations in the world.[62] Democratic rule could also be undermined by religious violence.[63]

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2 August 2006. [http://www.freeworldacademy.com/globalleader/Inindia.htm]
[58] Government of India, *Report India Vision 2020*, page 2.
[59] NIC, *2020*, page 53.
[60] Power and Interest News Report (PINR), *India: A Rising Power*, 18 august 2004, retrieved 2 August 2006. (Report drafted by Yevgeny Bendersky).
[61] PINR, *India: A Rising Power*.
[62] Vittal, Nagarajan, "Corruption and the State - India, Technology, and Transparency", *Harvard International Review*, Vol. 23 Issue 3 - Fall 2001.
[http://hir.harvard.edu/articles/925/]
[63] Muslim share of population has risen from 10 % in 1951 to 15 % in 2001. As a result, some Indian leaders are calling on Hindus to abstain from birth control for preventing India to be islamised.

75.   On the other hand, while India has clearly evolved, the legacy of a stifling bureaucracy still remains. The country is not yet fully attractive for foreign investment and faces strong political challenges as it continues down the path of economic reform. India is also faced with the burden of having a large proportion of its population in desperate poverty. In addition, some observers see communal tensions just below the surface, citing the overall decline of secularism, growth of regional and caste-based political parties, e.g. Kashmir and Gujarat as evidence of a worsening trend. India still has large numbers, particularly in rural areas, which have not enjoyed major benefits from economic growth. It also faces a potentially serious HIV/AIDS epidemic that could seriously affect economic prospects if not brought under control. According to recent UN data, India has overtaken South Africa as the country with the largest number of HIV-infected people.[64]

76.   At present, India is far from being one of the Eurasian superpowers, but all signs point to its coming emergence as such. The sheer numbers of its growing population that now stands at more than a billion, the expanding middle class, robust military establishment and the country's increasing sophistication in high-technology are shaping India as one of the rising political, economic and military powers.[65] But, very significant challenges need to be addressed that will require national determination and resourcefulness:[66]

- A targeted approach to bring millions of families above the poverty line.
- Generation of nearly ten million of new jobs per annum, especially for those in the lower income groups.
- Eradication of illiteracy.
- Concerted efforts to raise primary and secondary enrolment rates and minimize dropouts.
- Improved public health to reduce infant mortality and child malnutrition.
- Massive investment in power generation, telecommunications and other physical and social infrastructure.
- Accelerated acquisition of technology capabilities to raise productivity in agriculture, industry and services.
- Becoming a more important player in the world economy in terms of both trade and investments.

77.   An essential requirement for envisioning India's future in the new century is to recognise that the parameters which determine national development have changed in recent years and will change further in future. This will open up greater possibilities than ever before.

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[64] NIC, *2020*, page 53.
[65] PINR, *India: A Rising Power*.
[66] Government of India, *Report India Vision 2020*, page 20.

Russia

78.   The tensions between the *Russian Federation* and Ukraine at the start of the year 2006, generated a renewed analytical interest in Russia's re-emerging position as a superpower, driven chiefly by its actual, or potential, domination of a larger proportion of global supplies of energy.[67] Although Russia is not yet considered as a resurgent power in the conventional sense of the phrase, it still possesses some attributes of a superpower and could fully regain superpower status in the future. This will particularly be true if it exploits the power generated by its larger energy recourses.

79.   Geographically, Russia is the largest country in the world and possesses a variety of strategic raw materials. It possesses the entirety of Europe's land-based oil reserves and also has substantial reserves of natural gas. Russia is a major supplier of both oil and gas to other European nations. The country stretches over 11 time zones and has the potential to be a more influential power in Eastern European, Middle Eastern, Central Asian and East Asian affairs.

80.   Russia faces a severe demographic crisis resulting from low birth rates, poor medical care, and a potentially explosive AIDS situation. If current rates continue, Russia will lose approximately one million people a year through 2020, leaving it with a population of around 130 million people.[68] The decline in population in Russia and the corresponding population increase in Central Asia could have significant economic consequences. Related to this, and critical for countries of Western Eurasia (Russia, Ukraine, Belarus), is the issue of brain drain.[69] A key question in the future is whether these countries will be able to reverse trends from the past fifteen years and retain well-trained workers, or even convince emigrants to return "home". As Europe's population declines, this challenge might grow more acute.

81.   To the south, Russia borders an unstable region in the Caucasus and Central Asia. Extremism, terrorism, and endemic conflict this region creates are likely to continue spilling over into Russia. While these social and political factors may limit the extent to which Russia could be a major global player, Moscow is likely to be an important partner both for the established powers, the US and Europe, and for the rising powers of China and India.[70]

82.   As far as Russian federalism is concerned, it appears likely that Russia will continue to have weak regions and a strong central state. It is a strong possibility that Russia will have fewer federal units than its current 89 regions, 22 of which are associated with titulary recognised ethnic nationalities. Ethnic unrest could result from changes in federalism if such changes are instituted without consideration of local interests. Areas that are particularly susceptible

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[67] Daiwa Institute of Research, *The re-emerging Russian superpower*, 20 Jan 2006, by Vlad Sobell, retrieved 3 August 2006.
[68] National Intelligence Council (NIC), *Global trends 2020 - Russia*, Workshop Summary for the NIC 2020 project, 25 April 2004, page 5.
[69] Ibid, page 5.
[70] Ibid, page 10.

include the northern Caucasus, Tatarstan and Yakutia. Unrest in the northern Caucasus, including the difficulties in Chechnya, Dagestan and Ingushetia, may prove insoluble and could persist in one form or another through 2020.[71]

83.   The key economic challenge facing Russia during the period will be whether it can move beyond resource extraction and make the necessary structural changes in order to diversify the economy, take advantage of Russia's human capital and become more integrated into the world economy. The failure to diversify the economy could well lead to the petro-state phenomenon of underdevelopment, huge income inequality, capital flight, and social tensions. In this context, economic development and growth through 2020 are integrally interlinked with effective governance structures. This refers not so much to liberal democracy but to an efficient bureaucracy, predictable and evenly enforced rules and regulations, the rule of law and other factors, such as tax policies, that could stabilise the business climate in the country and allow for an alternative to resource-dependent economic growth. Reforms in these areas could encourage foreign direct investment outside of the energy sector and allow Russia to take greater advantage of its proximity to Europe and Asia. Reform of state structures, rather than state-directed economic strategies, is likely to lead to economic diversification, long-term growth and higher standards of living. Cooperation with other world regions, such as Europe and Asia, could allow Russia to take advantage of natural strengths it has in certain areas of science and technology and help its economic profile to grow beyond natural resources and arms sales.[72]

84.   Russia will preserve its position as a developer of systems technologies in areas such as rocket and space technology, nuclear energy, military aviation, computer programming and some information technology (IT) areas. It is unlikely that Russia would become a major producer outside of the military sphere, but its strength in certain areas could place it in a position to cooperate with Europe in competition with the US.[73]

85.   Russia's growth, and growth within the entire former Soviet space, will be regionally uneven and will reflect different levels of resources and investment. For other resource-rich countries in Eurasia, particularly in Kazakhstan, Turkmenistan and Azerbaijan, there is less optimism about the potential for significant economic diversification over the next 15 years. Kazakhstan has the best prospects in this regard and may prove the exception. The countries will continue to rely on resource extraction and suffer the economic and social impacts of skewed wealth distribution and severe economic inequality. All countries of Central Asia are likely to be challenged by the twin pressures of growing population on the one hand and a lack of arable land and water resources on the other.[74]

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[71] NIC, *Global Trends 2020 - Russia*, page 6.
[72] Ibid, page 2-3.
[73] Ibid, page 7.
[74] NIC, *Global Trends 2020 - Russia*, page 3.

86.   For countries with more limited supplies of natural resources such as Ukraine, Georgia, Kyrgyzstan, Tajikistan and Uzbekistan, the challenge will be to develop effective production and service industries. While the countries might benefit from the need to be entrepreneurial, such development is very challenging and would require a significant modification of governance structures, leading to more efficiency and greater predictability. Changes are more likely to be inspired by exogenous[75] sources, such as the potential for (even limited) membership in the European Union (EU). A full membership in the EU is highly unlikely by 2020, but that lesser forms of association under the rubric of flexible geometry are possible within the time frame covered. Resource-poor countries could also benefit greatly from the spill over effect of a dynamic and growing Russian economy, and could cooperate with Russia on development of transportation corridors for energy supplies.[76]

87.   The economic and demographic challenges could also be negatively impacted by environmental degradation, which has been accelerated by the current high rates of "dirty" resource extraction. Were Russia to integrate more into the world economy and enter into international regimes, such as the World Trade Organization (WTO)[77] and the Kyoto protocols, it would face pressure to address underlying environmental issues which could dampen growth initially, but which might avoid worse difficulties in the future.[78] Russian foreign policy can be expected to utilise extensive alliance building, covering as many "bases" as possible without damaging its international credibility.[79]

88.   Russia will remain a major global player in the near future for two main reasons: its abundant natural resources will assume greater importance to the world's major developed economies, and its military research and development will continually earn it a top place as one of the top producers and suppliers of hardware around the world. Its economic strength is still under question -- even if major improvements take place in the Russian economy, it will still be a fraction of China's and even a smaller fraction of the North American and European economies for the next several decades. Its stabilised economy, while still capable of attracting much needed foreign investment, will be behind major growth in Europe, China and India.[80] Russia's course in determining her future strategic partners and her choices on alliance or collation partners will be central to her development both socially, economically and militarily.

89.   It would be difficult for Russia to rise once again as a global superpower in the absence of an ideology capable of polarizing the international

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[75] Exogenous, caused by factors or an agent from outside the organism or system, Miriam-Webster OnLine, retrieved 15 February 2007.
[76] NIC, *Global Trends 2020 - Russia*, page 4.
[77] World Trade Organization (WTO), *Annual Report 2006 - WTO accession negotiations*, 15 December 2006, page 19. Russia is still in accession negotiations with WTO. [http://www.wto.org/english/res_e/booksp_e/anrep_e/anrep06_e.pdf]
[78] NIC, *Global Trends 2020 - Russia*, page 4.
[79] PINR, *Russia's Future Foreign Policy.*
[80] Ibid.

community into two camps, thus aiding alliances and constructing independent economic and political spheres of influence. The world in the coming decades will still be dominated by the US, but will undergo a transformation, as more countries will assume greater economic and political clout[81]. Nonetheless, Russia can be expected to continue its policy of "superpower on the cheap" - that is, building credible alliances to share the costs of global influence, instead of paying these costs themselves, as the Soviet Union did in the Cold War. This approach can potentially allow it to increase its global influence and status without extensively damaging its domestic and international standing.[82]

COUNTRIES OF CONCERN

90.   North Korea, Iran, Syria and Iraq [83] continue to be countries of *main* concern, not only for NATO, but also for nations bordering countries. Therefore, these four countries will be highlighted as important factors under geopolitical challenges. The general military development of these states will be discussed in the section covering the military domain, while regional trends are discussed in section VI.

North Korea

91.   *The Democratic People's Republic of Korea* (DPRK) will continue to be a potential flashpoint. North Korea's intentions are still unclear and it may continue to practice brinkmanship in dealing with the US and South Korea. Despite ongoing diplomatic efforts, the confrontation on the Peninsula will not likely be resolved during the next few years, nor will any agreements alter substantially the military threat potential of North Korea. While continuing provocations are possible, major conflict is unlikely, but cannot be ruled out.[84]

92.   The Korean Peninsula could be a reunited entity by the end of the period, although a substantial improvement in bi-lateral relations will have to have had occurred if the transition were to be a peaceful and successful one. This would be a formative event in Asian politics and would have profound influence over subsequent political alignments, not least because of North Korea's substantial nuclear and missile capability which would likely have been further developed in the years prior to reunification.[85]

93.   The future of Korea lies at the heart of the future for East Asia. Currently, North Korea poses one of the most serious nuclear threats on the globe. Not only is there the risk of nuclear exchange in the region, North Korea is also an

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[81] PINR, *Russia's Future Foreign Policy.*
[82] Ibid*.*
[83] The countries are not listed with any prioritisation.
[84] Canadian Defence Staff, Directorate of Defence Analysis *Military Assessment 2000*, 2003, (Prepared by Dr. Scot Robertson), page 9.
[85] Allied Command Transformation (ACT), Long Term Requirement Study (LTRS), *The World in 2025 – A Global and Regional Review*, report from NATO Consultation, Command and Control Agency (NC3A), September 2005, page 28.

active exporter of nuclear technology and associated delivery systems.[86] The safety, standards, activities and professionalism of their nuclear program are all unclear.

Iran

94.   The *Islamic Republic of Iran* is also likely to be of considerable regional significance due to its strategic location at the mouth of the Straits of Hormuz and its growing military strength. Against a backdrop of poverty and economic decline, the power struggle between reformists and hard line Islamists is likely to intensify. Whichever group wins, and most indicators point to the reformists due to the growth of opposition against the current regime, the other is unlikely to back down without a bitter fight. At the end of the period, Iran is likely to have gone one of three ways: it could be politically deadlocked between reformists and hardliners and the status quo; it could remain a strong theocratic state, with a foreign policy agenda geared towards the defence of territorial integrity and sovereignty and an emphasis on improving military capability; or it could be under reformist control, more accountable and open to global dialogue with increasingly transparent and non-confrontational policies, perhaps having endured a violent revolution to overturn the theocracy. The development and utilisation of the Iranian military will depend on who controls power and their perception of security threats, but will likely include the continued improvement of power projection and air defence capabilities and the pursuit of enhanced WME capabilities. Already Iran has developed an indigenous industrial base for the production of a variety of ballistic missiles and seems intent on using this to acquire a long-range capability allowing it potentially to strike targets in Israel, Saudi Arabia and Turkey, and eventually targets further afield, including Western Europe. Whether or not Iran will continue to be a state-sponsor of terrorism remains to be seen.[87]

95.   The 2005 election of a new president of Iran could be interpreted as reinforcing the validity of the risks outlined above. Indeed the nuclear issue was described as "part of a macro policy" and the new President himself stated: *"With this election, the Islamic Republic of Iran is more capable of confronting challenges and the Europeans have to take that into consideration"*. In short, he was issuing an early challenge to the West for the years to come.[88] Subsequent events throughout 2006 establish the trend in rhetoric and action and a clear decision watershed by the international community and Iraq will have to occur within the next year.

Syria

96.   The *Syrian Arab Republic* arguably presents the best microcosm of the cocktail of risks that might challenge NATO in the future. In particular, because

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[86] ACT, LTRS, *The World in 2025 – A Global and Regional Review*, page 29.
[87] Ibid, pages 32-33.
[88] Ibid, page 33.

Syria has a nuclear and chemical program, although without a declared uranium enrichment element. Also Syria has limited stocks of Biological Weapons (BW). Their SCUD D missiles, acquired from North Korea, having a range of 650 km, already threaten Southern Turkey and Cyprus. Significantly, Syria has not signed the Code of Conduct related to missile technology and has, thus, not yet engaged in international efforts to prevent missile proliferation. Syria has also been accused of state-sponsored terrorism and, thus, seeks the technology to conduct both symmetric and asymmetric attack.[89]

97.   Given Syria's history of cooperation with North Korea in the acquisition and enhancement of the SCUD, it is safe to assume that this relationship will continue and the range, reliability, payload and accuracy of Syria's SCUD D missiles will increase over the period such that they may threaten directly - certainly Turkey and the island of Cyprus, and perhaps Greece, the southern Balkans and Italy. The SCUD D can carry chemical or biological warheads currently, but with advances in nuclear weapons technology, would be able to carry an effective nuclear warhead by the end of the period.[90]

98.   Any country with even the most basic chemical industry already has the technology and equipment to produce a variety of chemical agents. Given its history of seeking to counter Israeli forces with its own WME, it is safe to assume that Syria will continue to maintain and develop its chemical munitions.[91]

99.   There is a well-trodden nuclear path from research reactors through nuclear power generation to nuclear weapons. Syria has the first, certainly aspires to the second and probably the third. By themselves, research reactors represent only a minor radiological hazard and as such are a minor threat. The amount of enriched uranium involved (typically less than 1 kg) falls far short of the quantity required to develop nuclear weapons. Two factors conspire to make Syria's nuclear aspirations a potential threat to NATO. The first is its history of trading with those on the margins of international law and so the prospect of it obtaining fissile material from one of the less scrupulous members of the international community is high. Secondly there exists within Syria considerable phosphate deposits and there is a significant chance that, by the end of the period, the technology for extraction of uranium from phosphate will have developed sufficiently for, first, use in nuclear power reactors and then, second, or the development of nuclear weapons.

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[89] ACT, LTRS, *The World in 2025 – A Global and Regional Review*, pages 33-34.
[90] Ibid, pages 34.
[91] Ibid, page 34.

Iraq

100.   The future of Iraq is difficult to predict. In the resent Iraq Study Group (ISG) report[92], the co-chairs state that: "there is no magic formula to solve the problems of Iraq. However, there are actions that can be taken to improve the situation and protect American interests". Further the report states that: "The challenges in Iraq are complex and violence is increasing in scope and lethality. A Sunni Arab insurgency, Shiite militias and death squads, Al Qaeda, and widespread criminality feed it. Sectarian conflict is the principal challenge to stability. The Iraqi people have a democratically elected government, yet it is not adequately advancing national reconciliation, providing basic security, or delivering essential services. Pessimism is pervasive[93]". The report makes recommendations in several areas. They include improvements to the Iraqi criminal justice system, the Iraqi oil sector, the US reconstruction efforts in Iraq, the US budget process, the training of US government personnel, and US intelligence - capabilities.[94]

101.   If the political situation deteriorates in Iraq to the extent of civil war, the oil infrastructure would undoubtedly be targeted. It is believed, that this would have little effect on the rest of the world. The international market has been very flexible in the face of the Iraq crisis and even if Iraqi oil were to go semi-permanently off-line, the world would readjust fairly easily. In short, oil security is well assured at a global level but there will always be a massive economic impact on the producers when there are big swings in oil prices. The challenge for the Middle East will be to try to ensure that major shocks are avoided.[95] In addition, central to Middle Eastern security concerns will be: the middle- and long-term status of Iraq and the possibility of continuing US deployment in the country; the possibility of low-level conflict overspill from the South Caucasus and Central Asia including Afghanistan; or the potential for ethnic unrest, for example among restive Kurdish populations in Turkey or Iraq.[96]

Countries of concern and WMD proliferation

102.   The spectre of *WMD* still haunts the world, and may become a greater concern. Despite the high entry cost, WMD are proliferating. This is perhaps particularly so with respect to chemical and BW, which in some cases are difficult to monitor in that they often employ dual use technologies. Nuclear

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[92] The Iraq Study Group Report (ISG), (Baker-Hamilton Commission), *The way forward – A new approach*, December 2006, Vintage Books, Random House, Inc. (Co-chairs, James A. Baker, III Lee H. Hamilton and members: Lawrence S. Eagleburger, Vernon E. Jordan, Jr., Edwin Meese III, Sandra Day O'Connor, Leon E. Panetta, William J. Perry, Charles S. Robb, Alan K. Simpson). ISBN: 0-307-38656-2, page ix.
[http://www.usip.org/isg/iraq_study_group_report/report/1206/iraq_study_group_report.pdf]
[93] The Iraq Study Group Report, *The way forward – A new approach*, page 6.
[94] The Iraq Study Group Report, *The way forward – A new approach*, page 8.
[95] ACT, LTRS, *The Long Term Requirement Study – Base-line Paper*, page 18.
[96] Allied Command Transformation (ACT), Long Term Requirement Study (LTRS), *The World in 2025 – A Global and Regional Review*, report from NATO Consultation, Command and Control Agency (NC3A), September 2005, page 33.

programmes, such as those of India, Pakistan, Iran and North Korea indicate that in spite of the expense and difficulty associated with developing and fielding such weapons, some nations still deem them worth pursuing.[97] As stated earlier, North Korea currently poses one of the most serious nuclear threats on the globe and North Korea's intentions are unclear[98] and will continue to be so under the current regime.

103.   Nuclear proliferation poses the most serious challenge in the Middle East, particularly as Israel is unlikely to remain passive should either Iran or Syria become poised to possess nuclear weapons. The increased range, accuracy and risk of ballistic missiles in the Middle East poses a direct challenge to NATO and it is one that reinforces the importance of strategic deterrence almost on the Cold War model.[99] Iran, Syria and Israel are all known already to possess chemical weapons or at least the means to produce them and all are known to be following a BW agenda.[100]

GLOBALISATION AND INCREASING INTERDEPENDENCE

Globalisation

104.   Globalisation, in short, can be thought of as the widening, intensifying, speeding up, and growing impact of worldwide interconnectedness.[101] In more detail, globalisation can be conceived as a process (or set of processes), which embodies a transformation in the *spatial* organisation of social relations and transactions, expressed in transcontinental or interregional flows and networks of activity, interaction and power.[102] Globalisation shows only signs of continuing, or even speeding up, in the coming years as long communication and interaction becomes more and more feasible at lower costs and with greater efficiency.

105.   The ability to communicate, both directly and indirectly through media, music, movies, values, is becoming cheaper and easier, and has been shown to have an impact on societies. As a result of globalisation, ideas, economic systems, and cultures are shared and interact easily. Spanning over domains of social, political and economic interaction, the communication revolution that leverages globalisation has become a driving force in shaping and sparking trends that will persist in the future security environment. From the ability for people to now organise internationally on the basis of ideas (as in the case of democratic and freedom movements in areas such as China and Nepal, or extremist and terrorist movements), to the ability for the success of a harvest in

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[97] Canadian Defence Staff, Directorate of Defence Analysis *Military Assessment 2000*, 2003, (Prepared by Dr. Scot Robertson), pages 14-15.

[98] Canadian Defence Staff, *Military Assessment 2000*, page 9.

[99] ACT, LTRS, *The World in 2025 – A Global and Regional Review*, pages 46.

[100] Ibid, pages 33.

[101] Held, David and McGrew, Anthony, "Globalization", *The Global Transformations*, retrieved 18 July 2006. [http://www.polity.co.uk/global/globocp.htm]

[102] Held, D. and McGrew, A., Goldblatt, D. and Perraton, J., *Global Transformations: Politics,Economics and Culture*, Polity Press, Cambridge, 1999.

one country to determine the cost of that or other commodities globally; globalisation has created a system of independence and communication that on some terms, mainly economic, is a system of inter-sensitivity. Westernisation through the mass media due to globalisation may increase tensions from anti-western movements, as in countries like Pakistan or other Islamic constituents. This may pose a threat to NATO forces operating in such countries or a challenge if anti-western tension spreads to Alliance nations.

106.   Some trends and effects will likely continue over the period. Greater openness will enhance competition and increase the pressure to adapt economic and social systems. Countries and regions, which fail to do so, risk falling into decline and/or becoming increasingly marginalized. The trends are:

Economic:

- Economic globalisation will continue and deepen. In spite of recurrent protectionist tendencies, cross-border trade is expected to grow worldwide, leading to increasing interaction between national economic systems and integration of markets.
- The dominant triad – the US, the EU and Japan – will probably remain leaders in many high-value markets, but continue to offshore labour-intensive production and business services.
- Some of the target countries for these offshore activities will become new economic powerhouses. China and India, especially, are likely to continue their economic rise, shifting the centre of the world economy to Asia. However, in both countries, economic success will increasingly depend on or be linked to domestic reforms and energy supply.
- Emerging economies in Asia are expected to post the highest economic growth rates and come close to Western GDP levels. However, in terms of GDP per capita, they will remain a considerable distance behind the standards of OECD countries. Distribution of wealth will thus remain highly unequal.[103]
- Creation of further international agreements leading to organisations similar to the World Trade Organization (WTO) and Organization of the Petroleum Exporting Countries (OPEC).
- Increased role of international organisations such as WTO, World Intellectual Property Organization (WIPO), International Monetary Fund (IMF) that deal with international transactions.
- Development of global financial systems.
- Increased use of business economic practices like outsourcing by multinational corporations.

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[103] European Union (EU), Institute for Security Studies (ISS), *The New Global Puzzle - What world for the EU in 2025?,* ISS 2006, page 31-32. [http://www.iss-eu.org/books/NGP.pdf]

Socio-Cultural:

- Greater international cultural exchange.
- Spreading of multiculturalism, and better individual access to cultural diversity, for example through the export of Hollywood and Bollywood movies. A possible impact might be the imported culture supplanting or seemingly corrupting the local culture, bringing about a concomitant reduction in diversity through hybridisation or even assimilation.
- Greater international travel and tourism.
- Greater immigration, including illegal immigration.
- Spread of non-local foods (often adapted to local taste and potentially lamented as a corruption by others).
- Worldwide Fads and Pop Culture.
- Increasing integration of foreign words in other languages as a tool of common use.
- Formation or development of a set of universal values.

107.   Along with these, there have also been trends in the development of a global telecommunications infrastructure and in greater transnational data flow. Using such technologies as the Internet, communication satellites and telephones, there is an increase in the number of standards applied globally; e.g. copyright laws and patents and the push by many for an international criminal court and international justice movements. It is often argued that even terrorism has undergone globalisation, with attacks in foreign countries that have no direct relation with the organisation's home country.

108.   The increase rapidity of globalisation and the potential of its trends and effects have spawned many anti-globalisation movements. It is most likely that this will continue in proportion to how connected communities become in all domains.

109.   In an integrated, ICT intensive globalised economy, shocks, risks, and threats have the potential to damage or disrupt not only national economies, but also international economic systems. A protracted economic downturn is a significant risk in the future, resulting in the disintegration of the globalised economy and the rise of economic isolationism and protectionism. Furthermore, the socio-economic disenchantment of the disadvantaged could renew pressures upon national governments to disengage or retract from the global economy.

SECTION III: GLOBAL SECURITY RISKS

"I am quite confident that in the foreseeable future armed conflict will not take the form of huge land armies facing each other across extended battle lines, as they did in World War I and World War II or, for that matter, as they would have if NATO had faced the Warsaw Pact on the field of battle."

General H. Norman Schwarzkopf

Key Findings

- *The main weapon for enemies will be asymmetric warfare including terrorism.*
- *The most immediate threats to security in 21st century will come from weak, failing and rogue states, safe heaven for terrorist and criminal organisations.*
- *Terrorism will continue to be a major risk to global security.*
- *The impact of technological advances will provide to terrorists with new capabilities; more decentralized organization and more lethal acts.*
- *Continuing diffusion of existing technology and knowledge will allow proliferation of WMD and their means of delivery.*
- *Trans-national criminal organizations will become increasingly adept at exploiting disorder expanding the scope of its activities from drugs trafficking to services to terrorists.*
- *Growing range of actors, including terrorist, will be able to achieve offensive INFO OPS and computer network capabilities.*

SUMMARY

110.   Terrorism, increasingly global in scope and lethal in results, and the spread of WMD are likely to be the principal threats to the Alliance over the period. Instability due to failed or failing states, regional crises and conflicts, and their causes and effects; the growing availability of sophisticated conventional weaponry; the misuse of emerging technologies; and the disruption of the flow of vital resources are likely to be the main risks or challenges for the Alliance in that period.

111.   The most worrisome risk is the search by terrorist groups to obtain WMD/WME. Likewise, developments in CW and BW agents and the proliferation of related expertise and technologies will pose a substantial *threat*, particularly from terrorists.

112.   A growing range of actors, including terrorists, may acquire and develop capabilities to conduct both physical attacks and CNA against nodes of the world's information infrastructure. It will be increasingly important to focus on

CND; not only for Alliance military forces, but also NATO nations are probably more vulnerable than the armed forces.

113.   Criminal organisations and networks based on all continents will expand the scale and scope of their activities and piracy will continue to challenge NATO nations and operations. NATO interagency coordination will be increasingly important to counter this trend but is not at present keeping pace with it.

114.   Meeting the risks created by weak and failing states requires not only international cooperation in counter terrorism and non-proliferation, but a broad and systematic international effort to help these states move from the category of the failing to the category of the succeeding. Moreover, state failure can no longer be seen as a localised or regional issue to be managed simply on an ad hoc, case-by-case basis. A more coherent and effective international response, which utilises all of the tools at our disposal, ranging from aid and humanitarian assistance to support for institution building could well be the course to take.

115.   Failed states have international implications. A bloody dictatorship poses a challenge to humanitarian law, and hence to universal values. This may lead to an external intervention – e.g. Cambodia, Rwanda, Kosovo and Iraq. But the flow of refugees will trouble and disturb the neighbours of a state, which raises more directly a question of regional security. More generally, the existence of spaces beyond the reach of state authority, in which gangs operate unrestrainedly – as in the case of Sierra Leone where they compete to control the diamond trade – fuels international criminality, the child-soldier phenomenon and terrorism, if not indeed the proliferation of WMD, which raises a more general problem of international security.

116.   The Arc of Crises[104] has expanded considerably over the period. The arc might expand or widen over the period, if the right conditions are met. Most of the conditions are outside the military sphere and can only be suppressed or weakened by inter agency cooperation or by international organisations.

RELIGION

117.   The main global religions are the monotheist religions of Judaism, Christianity and Islam, the Eastern traditions of pantheist Hinduism and the more philosophical traditions of Buddhism, Taoism, Shinto and Confucianism. Religion's role is undergoing considerable change as a consequence of both continued secularisation in the West, and cultural globalisation, making clearer the secular nature of Western culture to the rest of the world.

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[104] During the cold war, the "Arc of Crisis" was normally defined as an area stretching from the Indian subcontinent in the east to the Horn of Africa in the west and that the Middle East constitutes its central core. Today, the arc must be expanded considerably, for more details see paragraph 157.

118.   The largest global religions are Christianity (2 billion adherents), Islam (1 billion) and Hinduism (0.7 billion) and in the developed world 0.9 billion people are estimated already to be atheists or non-believers. Estimates suggest that the proportion of non-believers worldwide has increased from 0.2 % to 16 % over the last 100 years. Atheism is likely to grow, the role of religion will narrow in the lives of those people who remain believers, as materialism becomes more pervasive and traditional values fade. In the period, it is assessed that the proportion of the world's population that is Islamic will have increased from 12 % (in 1950) to 24 %, whilst the other religions will remain fairly static.[105]

119.   This influence of globalisation upon the raising Islamic population may well lead to further instances of religious extremist terrorism with its proponents seeking to restore Islamist cultural and political traditions by attacking Western culture. This is likely to bring about further attacks directly against Western targets both in the West and in Islamist states.[106]

THE RETURN OF RELIGION - RADICALISM

120.   The new wave of religious activism is driven by serious believers of many faiths - Protestants, Catholics, Jews, Muslims, Hindus and others - all of whom are adamantly opposed to many of the values commonly accepted by modern secular society. Though their specific beliefs differ, they share the ultimate goal of restructuring society on the basis of scriptural belief and practice.[107]

121.   Far from damping religion's impact, modernisation has spawned a new generation of savvy and technologically adept religious movements, including Evangelical Protestantism in America, "Hindutva" in India, Salafist and Wahhabi Islam in the Middle East, Pentecostalism in Africa and Latin America, and Opus Dei and the charismatic movement in the Catholic Church. Many of these have been assigned sinister labels and been unfairly portrayed. The most dynamic religiosity today is not so much "old-time religion" as it is radical, modern and conservative. Today's religious upsurge is less a return of religious orthodoxy than an explosion of "neo-orthodoxies."[108]

Radicalism

122.   Radicalism[109] may refer to extremism, both far left and far right. Radicalism is not a new phenomenon. It has probably turned more violent in the last decade, and this trend will likely continue. The "CNN effect" allows rapid and

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[105] JDCC, *Strategic Trends* …., page 2-20 and 2-21.
[106] Ibid, page 3-15.
[107] Winnail, Douglas S., "The Return of Religion", *Tomorrows World*, Nov. – Dec. 2005, Volume 7, Issue 6, retrieved 28 June 2006. [http://www.tomorrowsworld.org/cgi-bin/tw/tw-mag.cgi?category=Magazine39&item=1130832347]
[108] Shah, Timothy Samuel and Toft, Monica Duffy, "Why God is Winning", *Foreign Policy*, July/August 2006, retrieved 25 July 2006, page 2.
[109] Radicalism, the political orientation of those who favour revolutionary change in government and society.

world wide reporting, showing violent pictures of radical protesters from G8 and WTO summits, Nazi gatherings, Greenpeace actions, Christian radicals protesting against abortion or Islamic radicals protesting on the Gaza Strip, Afghanistan and in Beirut. Some of these radical groups have a *huge* number of sympathizers who are now virtually connected. New dynamics on the Internet such as YouTube.com can give unfettered and unedited access to anybody and allow videos on any subject to be posted for consumption by a global audience. NATOs Comprehensive Political Guidance states that: *"Terrorism, increasingly global in scope and lethal in results, and the spread of weapons of mass destruction are likely to be the principal threats to the Alliance over the next 10 to 15 years"*.[110] Most of the terrorism we have seen so far has had its roots in Islamic radical groups.[111, 112] However, terrorism acts against NATO from other radical groups are possible over the period. The key factors that spawned international terrorism show no sign of abating over the period, on the contrary, the trend is on the increase. Experts assess that the majority of international terrorist groups will continue to identify themselves with *political* Islam/*radical* Islam to gain so called "Muslim support" for their actions.[113] Terrorist groups linked with racist militias, religious fundamentalists, ethno nationalists and other minorities will also be present and their incidence cannot be ruled out.

Political Islam

123.   The phenomenon known as political Islam is rooted in a contemporary religious resurgence in private and public life.[114] Political Islam is also known by many labels: "Islamism," "militant Islam," "Islamic resurgence" "fundamentalism," and so on. Although some scholars may assign different shades of meaning to these terms, they are used more or less interchangeably in academic literature and the press. More common is the term "Islamic fundamentalism".[115] According to Prof. Tibi, the distinguishing mark of political Islam is its goal: namely, the *"islamization of the political order, which is tantamount to toppling existing regimes, with the implication of de-Westernisation"*.[116] The intention is to replace those regimes with the "Islamic State," run under Sharia.[117] Finally, it is important to recognise the difference between Islam, *the religion*, and Islamism, the *religious-political ideology*. Although jihadism may not be Islamic, it is based on the ideology of Islam, which has emerged from the politicisation of Islam.[118]

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[110] CPG, Part I – The Strategic Context.
[111] Shah and Toft, "Why God is Winning", page 2.
[112] NIC, *Mapping the global future,* page 93.
[113] Ibid, page 93.
[114] Esposito, John L, "Political Islam and the West", *Joint Forces Quarterly*, Spring 2000, pages 49-55, retrieved 17 July 2006, page 50.
[115] Esposito, "Political Islam and the West", page 49.
[116] Tibi, Bassam, *The Challenge of Fundamentalism: Political Islam and the New World Disorder,* Berkeley: University of California Press, 1998, page 138.
[117] Tibi, *The Challenge of Fundamentalism …,* page 27.
[118] Tibi, Bassam, "Jihadism's root in political Islam", *International Herald Tribune*, August 30, 2005.

Global Salafi

124.   Global Salafi[119] Jihad[120] is an intentional strategy to rally masses of relatively uneducated Muslims to accept an apparently simple message: target Israel, the US and others as "the far enemy".[121] The global Salafi jihad was consolidated by bin Laden and his associates in February 1998, when the World Islamic Front was formed and a fatwa was issued declaring a jihad against Jews and crusaders that urged followers "to kill the Americans and their allies — civilian and military — [this] is an individual duty for every Muslim who can do it in any country in which it is possible to do it." The spread of perverted Islamic ideology will have important consequences for the stability of Islamic countries and problem states.

TERRORISM

125.   If most future conflicts fall mostly along the cultural or political fault lines, given NATO's military and economic power, the main weapon of war for enemies will be asymmetric warfare including terrorism. Classic motivations for terrorism will endure in the information age. The change will be the methods used by terrorists who avail themselves of newly expanded opportunities to achieve their goals, disrupting or persuading their enemies. Terrorism will continue to appeal to its perpetrators being the strategy of the weak; it appeals to those groups or organisations that cannot match the power might of their opponents[122]. At the same time, it is an economically sensible and risk managed strategy, from their perspective, that delivers the best effects.

126.   Pressure from the global counter terrorism effort, together with the impact of advances in information technology, will cause the terrorist threat to become increasingly decentralised, evolving into an eclectic array of groups, cells, and individuals. While taking advantage of sanctuaries around the world to train, terrorists will not need a stationary headquarters to plan and carry out operations. Training materials, targeting guidance, weapons know-how, and fund-raising will increasingly become virtual.[123] Changes in organisation, doctrine, strategy, and technology, are linked to the emergence of a "new tactics of terrorism". Terrorists will continue moving from hierarchical toward flatter decentralised organisational designs. These are likely to consist of small, dispersed groups who communicate, coordinate, and conduct their campaigns in an inter-netted

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[119] The term "Salafi" refers to adherents of Salafism, a movement with origins in the 19th century whose goal is the restoration of the pure Islam of the first generation of Muslims (the salaf al-saliheen).

[120] Jihad: a holy war waged on behalf of Islam as a religious duty; also a crusade for a principle or belief. Merriam-Webster Online Dictionary, retrieved 25 July 2006.

[121] Sageman, Marc, M.D., Ph.D, "Global Salafi Jihad & Global Islam", September 7, 2005. University of California, Institute of Governmental Studies and Sageman, Marc, M.D., Ph.D, "Understanding Terror Networks", University of Pennsylvania Press, 2004.

[122] RAND Corporation, *Countering the new terrorism*, 1999, Chapter 3 - Networks, Netwar and Information-Age terrorism, page 68.

[123] NIC, *Mapping the global future,* Project 2020, page 15.

manner, without a precise central command.[124] Terrorists will likely gain new capabilities for lethal acts, but where terrorists find that "information operations" may be as useful as traditional operations for achieving their goals; systemic *disruption* may become as much an objective as target *destruction.*[125]

127.   Most terrorist attacks will continue to employ primarily conventional weapons. The increasing use of suicide tactics is also a worrisome trend. Terrorists will be able to quickly adapt their operational concepts - i.e., the scope, operational design, or support arrangements for attacks to the greatest advantage. One such concept that is likely to continue is the use of the tactic of a large number of simultaneous attacks, possibly in widely separated locations. While vehicle-borne Improvised Explosive Devices (IEDs) will remain popular as asymmetric weapons, terrorists are likely to move up the technology ladder to employ advanced explosives and even UAVs.[126] As an example, in the most recent conflict in Southern Lebanon, Hezbollah has reportedly used UAVs[127] and encroached Israeli airspace several times. This type of rapid technology procurement and quick adaptation for use is likely to continue.

128.   The most worrisome trend has been an intensified efforts by some terrorist groups to obtain WMD and CBRN weapons. The greatest concern is that these groups might acquire biological, chemical and radiological agents or less likely, a nuclear device, either of which could cause mass casualties. The use of radiological dispersal devices could be effective in creating panic, because of the public's *misconception* of the capacity of such attacks to kill large numbers of people. With advances in the design of simplified nuclear weapons, terrorists will continue to seek to acquire fissile material in order to construct a nuclear weapon. Given the possibility that terrorists could acquire nuclear weapons, the use of such weapons by extremists over the period cannot be ruled out. More likely is that terrorists will try to acquire and develop the capabilities to conduct Computer Network Operations (CNO) to cause physical damage to computer systems and to disrupt critical information networks.[128] This is discussed in detail later.[129]

PROLIFERATION

129.   Despite arms control and counter-proliferation efforts, the continuing diffusion of existing technology and knowledge will allow the proliferation of WMD including those Weapons of Mass Effect (WME)[130] and their means of delivery. In the absence of workable counter-proliferation arrangements, some states will

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[124] RAND, *Countering the new terrorism,* Chapter 3 - Networks, Netwar and Information-Age terrorism, page 51.
[125] Ibid, page 41.
[126] NIC, *Mapping the global future,* page 101.
[127] The UAV is called *Mirsad* by Hezbollah and it is an Iranian-built *Mgher-4.*
[128] NIC, *Mapping the global future*, page 16.
[129] CNO is discussed in detail in paragraph 143.
[130] WME: Weapons of Mass *Effects* are often used to include weapons, such as chemical and biological types, that may cause mass casualties without destruction of human life. US DoD.

continue to seek these capabilities in order to protect themselves from regional threats, increase their global and regional influence and/or deter intervention from the West or other emerging global powers.[131]

Weapons of Mass Destruction (WMD)

130.   A number of countries are likely to continue their nuclear, chemical, and BW programs. Countries without nuclear weapons, especially in the Middle East and Northeast Asia, may decide to seek them as it becomes clear that their neighbours and regional rivals are doing so. The assistance of proliferators (state and non-state actors, including private entrepreneurs) may reduce the time required for countries to develop nuclear weapons.[132] Likewise, developments in Chemical Weapons (CW) and BW agents and the proliferation of related expertise and technologies will pose a substantial threat, particularly from terrorists. Major advances in the biological sciences and information technology probably will accelerate the pace of BW agent development increasing the potential for agents that are more difficult to detect or to defend against.[133]

Weapons of Mass Effect (WME)

131.   Non-lethal WME will also logically be developed and potentially employed. These could include electromagnetic pulse (EMP) weapons or catastrophic computer viruses causing widespread damage to deployed forces and/or domestic economies without significant loss of life. Their employment will cause a significant dilemma about what, if any, military response is appropriate and potentially undermine in the public's eye, the relevance or effectiveness of security forces to protect the public. Delayed lethality effects such as those caused by radiological weapons or carcinogenic chemicals, where the short term threat or impact would have a psychologically massive effect, could cause similar dilemmas.[134]

132.   WME are likely to be acquired by armed non-state actors. This will be increasingly possible without state sponsorship. Given their higher propensity to extremism, the possibility of deniability and paucity of conventional response options, as well as the difficulty in deterring them, WME are likely to present a key threat to the security of states from the near term onwards.[135]

Future Nuclear Environment

133.   The trend in civil nuclear energy development is established and likely to rapidly accelerate as public tolerance and confidence returns matched by public apprehension of natural resource access and supply. Legitimate development of a civil nuclear industry is likely to see an upswing. One result could be that

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[131] JDCC, *Strategic Trends – 1st Ed*, ….. paragraph 7-15.
[132] NIC, *Mapping the global future,...*, page 100.
[133] Ibid, page 100.
[134] JDCC, *Strategic Trends – 1st Ed*, …. paragraph 7-21.
[135] Ibid, paragraph 7-22.

NATO will find itself operating almost permanently in a "nuclear environment" where consequence management, safety of reactors or security of energy/supply lines have dominance. The consequences on defence planning could be profound.

Delivery systems

134.   Security will remain at *risk* from increasingly advanced and lethal ballistic, cruise missiles, and UAVs. States almost certainly will continue to increase the range, reliability and accuracy of the missile systems in their inventories. Over the period several countries of concern probably will have acquired Land-Attack Cruise Missiles (LACMs) capable of *threatening* NATO countries. As NATO expands geographically, the proximity of the potential *threat* increases. Both North Korea and Iran probably will have an Intercontinental Ballistic Missile (ICBM) capability well before 2025 and will be working on improvements to enhance such capabilities. Several other countries are likely to develop space launch vehicles (SLVs) by the end of the period to put domestic satellites in orbit and to enhance national prestige. An SLV is a key stepping-stone toward an ICBM as it could be used as a booster in an ICBM development program.[136]

Small arms

135.   A pressing threat is the increasing global availability of small and light arms. An estimated 1,249 firms in 92 countries are involved in contributing to the production of small arms.[137] These weapons are the cheap, readily available, and have been shown to be the most damaging to security. These weapons are characterised by long life, durability, high portability, easy maintenance, and ease of concealment. Small arms are a prime market, legal and illicit, and are commonly the weapons of choice for security risk groups. Though there is efforts and controls in place that attempt to curb this market, it is likely to continue as a serious concern in the future. There is no evidence that the global trade in weaponry, legal or illegal, will diminish. The nature of advances may make more very powerful weapons available to small, unsophisticated groups.

CRIMINAL ISSUES OF CONCERN

Criminal organisations and networks

136.   Organised crime is already a major security threat, with 4,000 organisations comprising tens of thousands of members and an even bigger grey zone of (IT, scientific and financial) "professionals" and facilitators in Europe alone.[138] Over the period, trans-national criminal organisations will become increasingly adept at exploiting disorder and the global diffusion of sophisticated information, finance and transportation networks. Criminal organisations and

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[136] NIC, *Mapping the global future*….., page 101.
[137] Global Issues, *Small Arms-they cause 90% of civilian casualties,* Jan. 2006, retrieved 15 June 2006, [http://www.globalissues.org/Geopolitics/ArmsTrade/SmallArms.asp]
[138] EU / ISS, *Long Term Vision (Stand One)….*, page 40.

networks, based on all continents, will expand the scale and scope of their activities. They will form loose, and opportunistic alliances with one another, including with smaller criminal entrepreneurs and with insurgent movements for specific operations. They will corrupt leaders of unstable, economically fragile or failing states, insinuate themselves into troubled banks and businesses and co-operate with insurgent political movements to control substantial geographic areas. Their enormous income will come from trafficking in narcotics, women and children; piracy; smuggling; illegal immigrants; toxic materials; arms; military technologies; and other contraband; financial fraud; and racketeering; and services to terrorists.[139]

137.   In terms of their *modus operandi*, organised criminals are likely to organise more international networks and may consolidate their operations, displacing more locally organised groups. Their methods will evolve to counter many governments' attempts to restrain them, and will exploit both lethargy in implementing control measures and the holes that form internationally between different state regulatory systems. Organised crime networks will overlap frequently with terrorist networks and likely bring about "temporary marriages of convenience". They will extend existing links, form new flexible alliances with other criminal groups and corrupt governments, while providing key links in the supply chains for both terrorists and some rogue states. They will do this primarily for economic rather than ideological reasons.[140] In this environment, military effectiveness is negligible unless connected to other instruments of power in building a coherent approach. Successful local geographic initiatives around the globe could act as the catalyst for new dynamic relationships to be formed to counter this.

138.   Maritime piracy specifically focussed at the merchant marine is a rising concern for maritime forces, and is trend set to continue and quicken; examples abound off the Horn of Africa and in Asian waters as well as elsewhere. Piracy will continue to be a threat to NATO vessels, until sufficient and effective counter measures have been developed.

Illegal Immigration and human trafficking[141]

139.   The trafficking of people is likely to increase due to the continued economic disparity, and potentially increased efforts by states to curtail immigration.[142] During the period, globalisation, demographic imbalances between developed and developing countries and interstate and civil conflicts will fuel increasing international migration, much of it illegal. Climate change could potentially case mass migration as well. Illegal migration - facilitated increasingly by alien-smuggling syndicates and corrupt government officials - will grow dramatically, matching or exceeding other forms of migration into many countries

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[139] NIC, *Global trends 2015 - A dialog about future with nongovernment experts*, page 41.
[140] JDCC, *Strategic Trends …*, paragraph 6-88.
[141] National Foreign Intelligence Board, Central Intelligence Agency (CIA), *National Intelligence Estimate - Growing global migration and its implications for the US*, 2001.
[142] EU / ISS, *Long Term Vision (Stand One)….*, page 40.

in Europe and in the more developed countries of Asia, Africa, and Latin America. Transnational terrorist, narcotic trafficking, and organised crime groups will seek to blend into and recruit among co-ethnic immigrant communities and exploit gaps in migration control efforts to ply their trades, as this represents sensible opportunism on their part.

140. Trafficking in women and children for purposes of labour and sexual exploitation is also increasing dramatically. Alien smuggling will have a corrosive effect on the political institutions of many countries as many of their law enforcement officials are overcome by the sheer scale, or even succumb to bribery and contribute to a public perception that their governments are losing their capacity to control their countries' borders and ensure public order. Sudden or large-scale migration flows into countries, would most likely strengthen extremist political parties and could increase anti-immigrant violence. Other migration flowing will directly or indirectly challenge military forces, border defences, and law enforcement capabilities.

141. As illegal migration increases, there will be increased demands on border control and other law enforcement agencies. Physical or administrative barriers could be perceived as racist and become a rallying point for public discontent. Increased migration and variances in transit patterns will further exacerbate the threat from the spread of infectious diseases.

142. Changing patterns of migration may introduce some types of organised crime into countries that have not previously experienced it. Ethnic-based organised crime groups typically prey on members of their own diasporas and use them to gain footholds in new regions.[143]

COMPUTER NETWORK OPERATIONS (CNO)[144] AND INFORMATION OPERATIONS (INFO OPS)[145]

143. The spectacular propagation of information technology – and other technologies as well – and the concentration of populations in vast urban areas have increased the vulnerability of societies. These factors have created an ever-increasing number of opportunities for threats. Computer Network Attacks (CNA)[146] could neutralise decision-making centres; actions could be taken

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[143] NIC, *Mapping the Global Future*, …. page 96.
[144] Computer Network Operations (CNO): Actions to attack, exploit and defend computers, computer networks and other information systems, and the software and data resident on them - AJP 3-10 INFO OPS.
[145] Information operations (INFO OPS): "… coordinated actions to influence decision-making of adversaries …by affecting their information, information-based processes and systems while exploiting and protecting one's own" - MC 422/1.
[146] Computer Network Attack (CNA): Actions to disrupt, deny, degrade or destroy information resident in computers and computer networks or the computers and networks themselves - AJP 3-10 INFO OPS.

against distribution and communication networks; or even more direct actions can be taken to influence public opinion via the new technologies.[147]

Reliance on Computer Networks and Computer Network Operations (CNO)

144.　Increasing reliance on computer networks makes networks very attractive targets. As in the Israel-Palestine and the India-Pakistan conflict over Kashmir, various political groups were seen engaging in CNA by hacking each other's Web sites. Nevertheless, we do not know how quickly or effectively such adversaries as terrorists or disaffected states will develop the craft to use CNA tools and technology or, in fact, whether CNA will ever evolve into a decisive combat arm. But it may, in which case this will be a potential NATO vulnerability, particularly as NATO pursues NATO Network Enabled Capabilities (NNEC). Groups can easily contract with commercial interests to be successful.

145.　Greater reliance on technology across society will make us more vulnerable to electronic attacks. With more critical infrastructures and systems interconnected, these risks could multiply via "cascading effects".[148] It will be increasingly important to focus on computer network defence (CND)[149], not only for NATO military forces, but also for civilian and government organisations. Over the next years, a growing range of actors, including terrorists, may acquire and develop capabilities to conduct both physical and CNA against nodes of the world's information infrastructure, including the Internet, telecommunications networks, and computer systems that control critical industrial processes such as electricity grids, refineries, and flood control mechanisms. A key feature of CNA is that it can be virtually untraceable, or routed through so many friendly and potentially hostile countries that it would be impossible to say with any certainty where the attack originated. This deniability enables CNA to be used at any stage in the cycle of tension and conflict. The ability to respond to such attacks (CND) will require critical technology to close the gap between attacker and defender. A key feature of the battlefield of the future will be the information on computer systems themselves, which may be far more valuable and more vulnerable than physical systems. New technologies, both realised and on the horizon, provide capabilities for accessing data, either through wireless intercept, intrusion into Internet-connected systems or through direct access by insiders.[150]

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[147] French Chief of Armed Forces Staff (Chef d'Etat-Major des Armées - CEMA) and French Armament Procurement Agency (Délégation génerale pour l'armement – DGA), *The 30 Year Prospective Plan*, June 2005, page 5.
[148] European Union (EU), Institute for Security Studies (ISS), *The New Global Puzzle. What world for the EU in 2025?,* 2006, page 96. [http://www.iss-eu.org/books/NGP.pdf].
[149] Computer Network Defence (CND): Actions to protect against disruption, denial, degradation or destruction of information resident in computers and computer networks or the computers and networks themselves - AJP 3-10 INFO OPS.
[150] NIC, *Mapping the Global Future*, 2020 Project, December 2004, page 97.

Information operations (INFO OPS)

146.   In addition to enabling networked forms of organisation, information technology (IT) can also improve intelligence collection and analysis, and offensive information operations (INFO OPS). The acquisition by state or non-state actors (NSAs) of an offensive INFO OPS capability could represent a significant *threat* as the world becomes more dependent on information and communications flows. Information-age technology can help terrorists conduct three broad types of offensive INFO OPS. Firstly, it can aid them in their perception management and propaganda activities, at which they are already very adept. Next, such technology can be used to attack virtual targets for disruptive purposes. Finally, IT can be used to cause physical destruction.[151]

147.   Adversaries may seek to attack military capabilities through electronic warfare (EW), psychological operations (PSYOPS), denial and deception, and the use of new technologies such as Directed Energy Weapons (DEW) or electromagnetic pulse (EMP) weapons. The primary purpose would be to deny information superiority, to prevent weapons from working, and to undermine countries domestic support for NATO actions. Adversaries also are likely to use CNA to complicate force projection by seeking to disrupt military networks during deployment operations – at the very time they are most vulnerable. Many countries have programs to develop such technologies; but few have the foresight or capability to fully integrate these various tools into a comprehensive attack. They could, however, develop such capabilities over the next decade and beyond.[152] Computer Network Exploitation (CNE)[153] and the use of Open Source Intelligence (OSINT) both present new opportunities to both NATO and potential enemies to leverage an information advantage.

148.   One of the traditional weaknesses of democratic countries and alliances in the face of an agile and unscrupulous adversary is the ability of an adversary to conduct a coherent Information Strategy against NATO/individual NATO countries, well ahead of and during any physical activity. In doing so, and without the discipline of sticking to the truth, the adversary sets the agenda and shapes the battle space in the cognitive domain. NATO's strategic centre of gravity (COG) is usually the cohesion of the Alliance and the adversary can undermine this well in advance and continually thereafter. None of this is new, but it is perhaps more applicable than ever, as the news media is increasingly able to broadcast worldwide and in near real time. The likelihood of NATO finding itself in a hostile Info Environment will most likely increase markedly in the future.

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[151] RAND Corporation, *The Networking of Terror in the Information age*, 1999, (Zannini, Michelle and Sean J.A Edwards) page 41.
[http://www.rand.org/pubs/monograph_reports/MR1382/MR1382.ch2.pdf]
[152] NIC, *Mapping the Global Future*, 2020 Project, page .
[153] Computer Network Exploitation (CNE): Actions to gain access to, and exploit, the information hosted on information systems, and to make use of the system itself - AJP 3-10 INFO OPS.

NATION STATE FAILURE

Increased numbers of states and factions

149.   In 1914, the days of large European empires, there were 59 states. In 1950 there were 89. By 1995 there were 192, many of them tiny. Today 58 states have populations of less than 2.5 million and 35 have less than 500,000. This fragmentation no doubt has benefits, but it creates some unviable economies and a complicated political map. Moreover declining state sovereignty and weaker government has left a vacuum into which have grown factions within countries and trans-national actors, increasing the complexity of international relations. Weak states, and even seemingly strong nation-states in the developing world, fail with increasing frequency. The decade plus since the end of the cold war has witnessed a cascading plethora of state failure and thus a trend, mostly in Africa but also in Asia. In addition, more and more states are at risk, exhibiting acute signs of weakness and/or the likelihood of outright failure.[154]

Declining states - weak, failing and rogue nations

150.   The most immediate threats to the interests and security of globalising nations in the 21st Century do not come from each other or from rising powers. They come from declining states, weak, failing, and rogue nations that have become havens for terrorists and drug lords, seekers of WMD, incubators of disease, nurturers of religious extremists, and demographic time bombs of growing numbers of unemployed youth.[155]

151.   Weak States include an array of nation-states that may be inherently weak because of geographical, physical or fundamental economic constraints; or are situationally weak because of internal antagonisms, greed or despotism. Weak states typically harbour ethnic, religious, linguistic or other tensions that may at some near point be transformed into all -out conflict between contending antagonisms.[156]

152.   Failed States progressively forfeit their role as the preferred national suppliers of political goods to upstart warlords and other non-state actors. A failed state is a hollow polity that is no longer willing or able to perform the fundamental tasks of a nation-state in the modern world.[157] Failed states are insecure. They cannot project power much beyond the capital city, or control their national peripheries. Crime rates rise. Unable to establish an atmosphere of security throughout the nation, the faltering state's failure becomes obvious

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[154] Rotberg, Robert I., *Nation-state failure: A recurring phenomenon?*, 6 November 2003. [http://www.dni.gov/nic/PDF_GIF_2020_Support/2003_11_06_papers/panel2_nov6.pdf]

[155] Garrett, Banning N. & Sherman, Dennis M., "Non-Globalized States Pose a Threat." *YaleGlobal On line*, 7 July 2003, Yale Center for the Study of Globalization. [www.yaleglobal.yale.edu/display.article?id=2032]

[156] Rotberg, Robert I., *Nation-state failure: A recurring phenomenon?*, …page 2.

[157] Ibid, page 3.

even before, or as, rebel groups and other contenders arm themselves, threaten the residents of central cities, and overwhelm demoralized government contingents, as in Liberia, Nepal, Sierra Leone, Congo, and Cote d'Ivoire.[158] In short failed states represent an opportunity to many potential adversaries and opportunists. The result is not just an internal upheaval, but external repercussions- intervention from neighbouring states, massive flow of refugees and contagious instability- with the result that international peace and security are, in turn, threatened.[159]

153.   Collapsed States are rare and extreme versions of a failed state. They exhibit a vacuum of authority. Political goods are obtained through private or ad hoc means. Security is the rule of the strong. Sub-state actors take over, and parts of the collapsed state exist and function, if in an unrecognised and disordered manner. Collapsed states can only return to being failed, and then perhaps to being weak, if sufficient security is restored to rebuild the institutions and strengthen the legitimacy of the resuscitated state.[160] (e.g. Somalia) Rogue states are those whose policies represent an overt threat to its surrounding area because it violates international treaties or humanitarian law, exerts a police dictatorship or even sets about equipping itself with WMD.[161]

Spillover[162]

154.   The relationship between state weakness and spillover is not linear: it varies by threat. Proponents of a wider view of security point out that unconventional threat may contribute to violence through harmful spillover, including by destabilising states and regions.[163] These include not only malevolent, purposive threats like transnational terrorism but also "threats without a threatener" - malignant forces that emerge from the natural world (like global pandemics) or as by-products of human activity (like pollution).[164]

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[158] Rotberg, Robert I., *Nation-state failure: A recurring phenomenon?*, page 4.

[159] Serge, Sur, On "Failed states", *Commentaire,* 12 Jan 2005, Chris Turner, Institut Francais du Royaume Uni. [http://www.diplomatie.gouv.fr/fr/IMG/pdf/0502-SUR-GB.pdf]

[160] Rotberg. Robert I., *Nation-state failure...*, page 4.

[161] Sur ,Serge, On "Failed states".

[162] Spillover: a consequence or attendant side effect, in this paper we discuss spillover between states.

[163] Center for Global development (CGD), *Weak states and global threats: assessing evidence of "spillovers"*, Working paper number 73, 03 January 2006, (by Stewart Patrick), page 11. [http://www.cgdev.org/content/publications/detail/5539]

[164] Treverton, Gregory F., *Understanding the Links between Security and Development: Probing the Connections*, May 2005, RAND and Bergen, Peter & Garrett, Laurie, *Report of the Working Group in State Security and Transnational Threats*, Princeton Project on U.S. National Security, September 2005, cited in Center for Global development (CGD), *Weak states and global threats: assessing evidence of "spillovers"*, Working paper number 73, 03 January 2006, (by Stewart Patrick), page 13.

155.   One hypothesis is that those particular transnational threats - and the manifestations of those threats - are likely to correlate with specific shortcomings in state capacity. Weak states suffer from one or more of four functional gaps: in their ability to provide physical security, legitimate political institutions, effective economic management, and basic social welfare. It seems reasonable to assume that the sort of transnational threats a weak state generates will depend on the nature of its capacity gaps. Thus, one might expect low social welfare investments, particularly in health, to be closely correlated with infectious disease patterns. Assessing these relationships will require breaking down state capacity into component parts and comparing lists of weak states with relevant indicators.[165]

156.   There is the presumption of a connection between weak and failing states, on the one hand, and a variety of transnational threats, on the other. Indeed, it has become conventional wisdom that poorly performing states generate multiple cross-border spillover, including terrorism, weapons proliferation, organised crime, regional instability, global pandemics, and energy insecurity. What is striking is how little empirical evidence underpins such sweeping assertions. A closer look suggests that the connection between state weakness and global threats is less clear and more variable than typically assumed. Both the type and extent of spillover depend in part on whether the weakness in question is a function of state capacity, will to act, or a combination of the two. Moreover, a preliminary review suggests that some trans-border threats are more likely to emerge not from the weakest states but from stronger states (rogue states) that possess narrower but critical gaps in capacity and will.[166] The challenge is to identify which threats are most likely to arise from which countries.

ARC OF CRISIS AND TERRORIST BLACK HOLES

157.   Most of the risk discussed in the paragraphs above is linked to geography, the "Arc of Crisis". During the Cold War, the "Arc of Crisis" was normally defined as an area stretching from the Indian subcontinent in the east to the Horn of Africa in the west and that the Middle East constitutes its central core.[167] A recent comprehensive study[168] on "Terrorist Black Holes"[169] states that, today, the arc must be expanded considerably as noted in the figure below.

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[165] CGD, *Weak states and global threats …*, pages 28-29.

[166] CGD, *Weak states and global threats …*, page 1.

[167] Lenczowski, George, "The Arc of Crisis: Its Central Sector", *Foreign Affairs*, spring 1979, retrieved 28 July 2006.

[168] Clingendael Centre for Strategic Studies (CCSS), *Terrorist Black Holes – A study into terrorist sanctuaries and governmental weakness*, November 2005, ISBN 90-5986-179-5. (By Korteweg, Rem and Ehrhardt, David)

[169] CCSS defines Black Hole as: a geographic entity where, due to the absent or ineffective exercise of state governance, criminal or terrorist elements can deploy activities in support of, or otherwise directly relating to criminal or terrorist acts including the act itself. CCSS, *Terrorist Black Holes ….*, page 25.
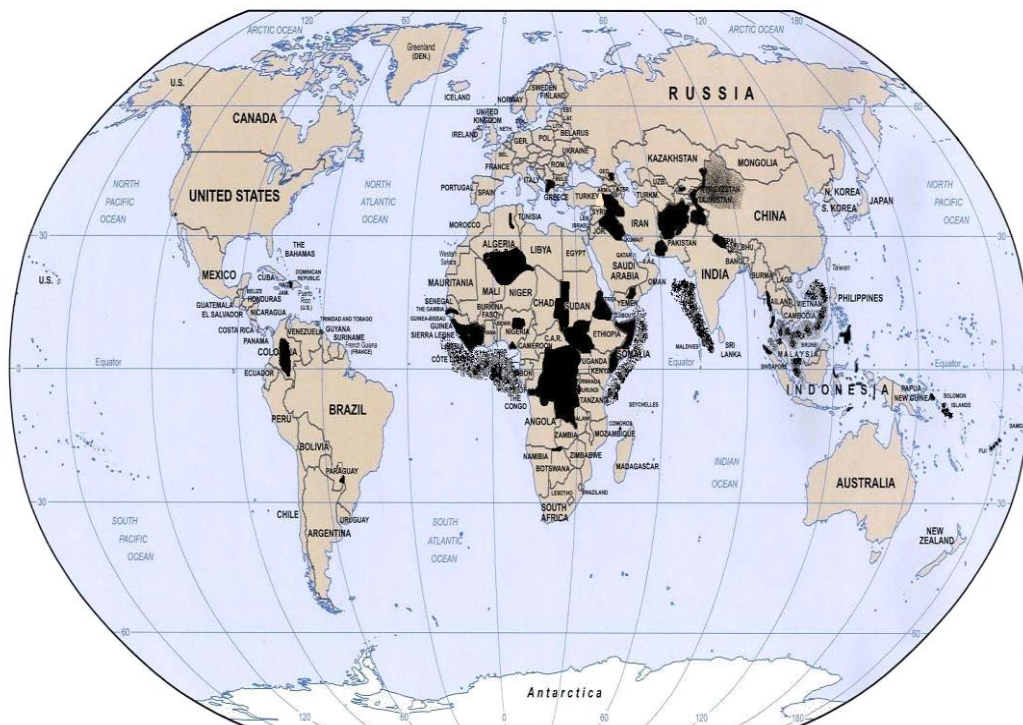
CCSS - Selected Black Holes in the World

158.   The study found 41 terrorist black holes across the globe during the period 2000 to 2005.[170] Some of the conclusions from the study state that there are five categories of factors[171] that contribute to the lack of government control in an area and creation of a "black hole":

- Societal tension
- Legacy from civil conflict
- Geography
- Corruption and policy failure
- External interference

159.   The study identifies six factors[172] that constitute a comparative advantage for that area to be inhabited by terrorists or armed non-state actors:

- Religion and ethnicity
- Legacy from civil conflict
- Geography
- Economic opportunities
- Economic underdevelopment

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[170] CCSS, *Terrorist Black Holes – A study into terrorist sanctuaries and governmental weakness*, page 4.
[171] CCSS, *Terrorist Black Holes ….*, page 4.
[172] CCSS, *Terrorist Black Holes ….*, page 4.

- Regional stimuli

160.   The study shows that the characteristics that render an area a potential black hole have to have been in place for a substantial period of time, likely more than five years. These factors and considerations, when used with others could help facilitate the early identification of areas at risk of becoming black holes.[173] Comparing the definition of the Arc of Crisis from the cold war era with the current study by CCSS, shows that the arc have been expanded considerably over the period. The conditions for creating a terrorist black hole, as described above, will be discussed in detail later. However, it is safe to assume that the arc will likely widen.

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[173] CCSS, *Terrorist Black Holes ….*, page 4.

SECTION IV: GLOBAL SECURITY CONCERNS

"Change is the law of life. And those who look only to the past
or the present are certain to miss the future."

John F. Kennedy, 25 June 1963.

Key Findings

- *Climate change will have profound effects on the future global environment. Global warming threatens water and food production on vast areas of the world.*
- *New epidemics are likely to spread faster since linked to grater connectivity through global air travel.*
- *Energy will be a key driver of future global economy and energy security will become an essential issue and the driver in transformation from oil to new sustainable forms of energy.*
- *Immigration pressures could increase the risk of social disturbances.*

SUMMARY

161.   Climate change will have powerful effects on the future global environment. Pollution and greenhouse emissions will have a negative effect particularly in the Third World and developing nations, and some to accelerating the global warming process could attribute this. Past and current emissions have already ensured that there will be some degree of climate change during the twenty-first century, with different incidence from one region to another, increasing the risk of flooding, stronger, and catastrophic natural disasters. More significant changes are expected beyond 2030.

162.   Society will face new risks and pressures. Global food safety is unlikely to be threatened, but some regions may experience food shortages and hunger. As fish resources grow increasingly scarce, conflicts over allocation and sharing are likely to become more frequent.

163.   People and ecosystems will need to adapt to any future climate regime. This could also result in altered behaviour and the development of infectious diseases leading to new epidemics. Worldwide mobility will expand the risk of spreading new pandemics. New medical advances and biotechnology may mitigate some effects.

164.   Although fossil fuels will remain as the dominant source of energy during at least the next two decades, their influence on global warming will lead to new policies (e.g. Kyoto Protocol) and the development of new sources of energy. Meanwhile, MENA (Middle East and North Africa) countries and other important

energy producers will become regions where stability and security will be of even greater concern. The risk of terrorist attacks and sabotage against energy infrastructure and transportation corridors will be high due to the quick transmission and impact on the world's economy and on NATO countries.

165. By 2030 the world will be 8 billion people and half of this population will account for six countries: China, India, Pakistan, Nigeria, Bangladesh and Indonesia. While developed countries will face aging population, developing and under-developed countries will show the opposite trend, with high rates of fertility, unemployment and poverty that will fuel mass migration. Immigration pressures in receiving countries could increase the risk of social disturbances. Internal displacement (IDP's), mainly related to ethnical conflicts and human rights violations will continue to be a huge challenge, especially in Africa.

166. NATO nations' militaries will have to increasingly compete for the portion of the population that are of employable age and fit to bear arms whilst other nations will see the reverse trend. The implications for NATO might be soldiers of poor quality (i.e. technical skills, motivation, physical and mental stamina, etc.) Nations that experience the opposite trend (for instance China and Iran) could benefit from this trend.

167. To face these challenges, the developed world will have technological solutions and the wealth to implement them. More of NATO nations' wealth is likely to be directed at national well being, at protection from the effects, and less at external assistance. Leaving the poorer countries to tackle the effects with inadequate measures could widen any differences yet further and faster. Maintaining supplies of water, food, energy, raw materials and goods, from strategic necessity, could conceivably be the catalyst to armed conflict.

ENVIRONMENTAL AND PHYSICAL TRENDS

Climate Change

168. Climate change is a constant natural phenomenon with significant variations occurring over geological time. The period since the last ice age has been climatically favourable for human activity and has seen the emergence of human civilisation.[174] There is an increasingly bi-polar debate emerging concerning the reasons behind these apparent changes but it is not the intention of this paper to advocate for either side, rather to investigate the trends.

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[174] JDCC, *Strategic Trends – 1st Ed.*, paragraph 1-5.

Whatever the cause, there is persuasive evidence that global temperatures are rising at an unusually high rate, at least since human records have been kept, and that there is a link between temperature rise and physical effects.[175]

169.   Irrespective of the causes, with current trends, higher latitudes will warm more quickly than lower ones, land areas will warm more quickly than oceans, and polar sea ice will decrease more in the Artic than in the Antarctic. Global mean precipitation and runoff is expected to increase about 1.5 to 3 % by 2030. Increases are forecast to be greater in the higher latitudes and the equatorial region with potentially serious decreases in the middle latitudes. Parts of Central America, South Asia, northern and southern Africa and Europe may suffer appreciable decreases in available water sources. There is likely to be an increase in the frequency and intensity of relatively localised extreme events including those associated with "El Niño", notably droughts, floods, tropical cyclones and hailstorms.[176]

170.   The impact of global warming could be influenced by the degree to which greenhouse gas emissions are limited globally. Stabilising atmospheric concentrations of greenhouse gases will require a major effort. Continued greenhouse gas emissions at or above current rates could cause further warming and induce many changes in the global climate system during the 21st century.[177] Based on current trends, the growth in emissions of carbon dioxide and other greenhouse gases is expected to result in the equivalent of a doubling of pre-industrial CO^2 concentration in the atmosphere by the end of the century. In the absence of any breakthrough in commercially viable non-carbon based energy sources, per capita emission will increase in both the developed and developing world through increased prosperity and industrialisation respectively. There will be an extra 3 billion people emitting by 2030. Developed countries are exploring a wide range of policies and measures. Specific measures are being used for most of the major economic sector (the largest source of emissions for many countries) including switching to low- or non-carbon fuels, reforming market regulations to spur competition, and removing subsidies on coal.[178] Notwithstanding populist pressure, regulatory action is likely to be difficult to

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[175] According to the estimations of the Intergovernmental Panel on Climate Change (IPCC), the increase in the global mean temperature by 2100 could range from 2,5 - 5,0°C or higher, particularly in the polar areas of the globe and tropics. Some uncertainties arise regarding how warming, in connection with growing evaporation and condensation of water, will affect cloud formations and what this impact will be on the climatic system.

[176] United Nations (UN), Food and Agricultural Organization (FAO), *World and Agriculture: Towards 2015/2030. An FAO perspective,* 2003, Introduction and overview, page 27.

[177] Intergovernmental Panel on Climate Change (IPCC), *Climate change 2007: The Physical Science Basis,* Summary for policymakers, 2007, retrieved 6 February 2007. [http://www.ipcc.ch/SPM2feb07.pdf]

[178] Ibid.

achieve as the Kyoto Protocol[179] has recently demonstrated in its failed attempt to agree a 5 % reduction of global emissions by 2010.[180]

171.   The magnitude of climatic events appears to be increasing, while the period between major events decreases. When linked to global media awareness grows the perception that radical climate change is happening. At first glance, warming seems to be moderate. However, a prompt rise in temperature could be disastrous. Moreover, such warming will cause the thawing of mountain glaciers and polar ice and the thermal expansion of the world's oceans.

172.   The SE Asia Tsunami, the 2006 US Hurricane season and the Kashmiri earthquake have been used by some as examples of increasing severity and frequency. NATO rightly responded to these catastrophes and despite its design, charter or intent, could well be perceived by the world as the only institution that can respond and therefore who should respond and become the global emergency response force of the future; a very different path to take in force structures or even a new charter.

Pollution

173.   Pollution today can be found across the globe, even in mid-ocean. In developing and poorer countries with their greater drive for economic improvement and fewer control mechanisms, industrial and urban pollution of air, water and food will have a harmful effect on the population. Increasing industrialisation in developing countries will pose accidental or indirect hazards to people and the environment. In wealthier countries, with the means to control, exposure will be to pollution that crosses boundaries and to self-generated pollution, if they choose not to reduce or legislate.

Flooding

174.   Among the effects of global warming, the sea levels are expected to rise, flooding coastal areas. Some studies suggest that sea levels will rise by 5 cm (2 inches) by 2015 and 10 cm (4 inches) by 2030.[181, 182.] Currently, many cities are at or below sea level, and most centres of population are within 200 miles of the coast,[183] putting increasing numbers at risk of flooding, the consequent salination of fresh water and agricultural land, and disruption of industry and commerce. In poorer countries, without the aid of technology the only choice may be to

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[179] The United Nations Framework Convention on Climate Change (UNFCCC), The Kyoto Protocol on Climate Change, 16 February 2005.
[http://unfccc.int/resource/docs/convkp/kpeng.html]
[180] JDCC, *Strategic Trends – 1st Edition,* The Environment, paragraph 6.
[181] DCDC, *Strategic Trends - 2nd Edition*, Global warming, paragraph 1-14.
[182] EU Institute for Security Studies, *Long Term Vision*, page 1, provides a more soft forecast: "... sea levels are expected to rise only slightly (between 0.14 cm to 0.3 cm) and will not endanger coastal areas by 2030".
[183] DCDC, *Strategic Trends - 2nd Edition*, Global warming, paragraph 1-14.

abandon the coastal and low-lying areas leaving ports inoperable and air infrastructure profoundly impacted. The possible loss of land due to flooding could alter immigration patterns with follow-on effects on cultural diversity and population distribution.

Damaged Agriculture, Fisheries and Forestry

175.   An upward trend in climate change and subsequent flooding will alter the paradigm of traditional agriculture. Temperature and precipitation changes will affect the amount of land that is suitable for growing crops. Suitable areas will increase in higher latitudes because of milder and shorter winters, and will decline in arid and semi-arid areas. Substantial reductions in the availability of water are predicted for Australia, India, southern Africa, the near East/North Africa, much of Latin America and parts of Europe. These shortages are forecast to deepen after 2030, but there could be negative effects on irrigation in the shorter term. The substantial rise forecast in average sea temperatures may have serious effect on fisheries. It could disrupt breeding patterns, reduce plankton growth or change its distribution, thereby lowering the food supply for fish, and cause the migration of mid-latitude species to northern waters. This could severely disrupt national and regional fishing industries and food supplies.[184] Offshore resources, Exclusive Economic Zones (EEZ's) and land borders would have to be re-defined with the consequent expectation of considerable international and local dispute perhaps manifested in violence. Forests are valuable resources providing food, shelter, fuel and daily supplies such as medicine ingredients and paper. The loss of forests would profoundly affect local and national economies and international trade. Depletion of forest resources, either through natural phenomenon such as fire or human activity such as clear cutting, and land conversion will have the effect of compounding any climate change trend. Depletion of forest resources will also have long-term effects on climate, soil, soil conservation, biodiversity and sensitive hydrological regimes.

Regional Food Shortages

176.   Global food production, including genetically modified food, will continue to increase faster than human numbers. However, while there will be enough food for those who can afford to buy it, prospects for secure food supplies will be more bleak for millions of poorer people. By 2010, one African in three will go hungry. The environmental issues worsen the prospect of assured food supply for poorer regions and physical trends (climate and people trends) described so far. Developing countries will increasingly depend on food imported from the richer countries. Changing diets due to rapid urbanisation in developing countries and rising prosperity among some of their citizens are meanwhile putting further pressure on supplies. The demand for meat is growing worldwide. This is causing a sharp increase in the demand for corn and other cereals. Feed grain

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[184] Food and Agricultural Organization of the United Nations (FAO), *World and Agriculture: Towards 2015/2030 - An FAO perspective*, 2003, Introduction and overview, page 28.

needs in the world's largest populations, in China and India, will grow by 3 % a year up to 2020. However, advances in agricultural technologies will allow world food grain production and stocks adequate to meet the need of a growing world population for at least the next 10 next years. Despite the overall adequacy of food, problems of distribution and availability will remain.[185]

177.   The main impacts of climate change on global food production capacity are not projected to occur until after 2030, but thereafter they could become increasingly serious. Up to 2030 the impact may be broadly positive or neutral at the global level. However the regional impacts will be very uneven.

Water Issues

178.   Clean fresh water is fundamental for human health. Whilst 71 % of the planet is covered by water, only 3 % is fresh and most of that is inaccessible in the form of ice and snow or deep aquifers. Less than 1 % of that water (i.e. 0.03 % of the world's water) is directly available for human needs.[186]   Several important water trends will be:[187]

- Although most of the world is not running out of freshwater, a number of regions face chronic freshwater shortages
- In the future, water shortages are likely to spread due to increasing demands, unsustainable withdrawal rates, difficulty in finding new supplies, pollution and source water contamination, and changing climatic and precipitation patterns
- Water shortages impact regional security by causing human health problems and population displacement, increasing conflicts between competing users, and damaging ecosystem health
- While regulatory responses are becoming more stringent, watershed-based management approaches are expanding.

179.   Natural water distribution is uneven and global consumption is rising quickly. One third of the world's population lives in countries already experiencing moderate to high water stress and the number could rise to two thirds by 2030.[188] There are not only more people, but in the prosperous nations each individual is using vastly more water than in poorer nations. Agriculture and industry are the biggest global users of water. Withdrawals from groundwater reserves are the only source of water for some countries. In most cases, groundwater is replenished more slowly than it is extracted, which will lead to scarcity. There is a growing disparity in water usage between richer and poorer countries.

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[185] NIC, *Global Trends 2015…,* page 26.
[186] JDCC, *Strategic Trends – 1st Edition*, Physical Dimension, paragraph 21.
[187] Global Environmental Management Initiative (GEMI), *Water Trends*, retrieved October 2006. [http://www.gemi.org/water/watertrends.htm]
[188] United Nations, *Millennium Assembly report*, 27 Jan 2000.

180.   Very few major water systems are contained within one political entity and many trans-border water systems are in places where the politics are already fractious, and where water resources are increasingly inadequate. Competition for water could become violent or indeed the root cause of future tension/conflict.

181.   Water scarcity and/or pollution in various regions of the world are reaching crisis levels at a time when larger populations and industrial capacity has increased demand. This is particularly true for several major water systems including the Tigris-Euphrates basin,[189] the Nile, La Plata, Lempa, Orange, Incomati, Limpopo, Okavango, Zambazi, Kunene, Lake Chad, the Senegal basin, the Jordan system, Kura-Araks, Ob, the Aral Sea, the Ganges - Brahmaputra - Meghna, Mekong, Yellow River, Han and Tumen basin.[190] Water conflicts exist not only between states but also in some regions within them.

182.   Human health can be affected by freshwater problems ranging from contamination of municipal water supply sources to pollution of water bodies used for fishing or recreation. Pathogens that cause acute illness and disease, or carcinogenic chemicals in high concentrations, can affect drinking water supplies. Non-industrial and developing nations face the most serious threats to human health from inadequate freshwater supplies. Various sources estimate that 1 to 1.5 billion people lack access to safe drinking water, 2 to 3 billion people lack access to proper sanitation, and 14,000 to 30,000 people die each day from water-borne illnesses.[191] These astonishing numbers will represent a significant challenge for individuals, governments, and businesses in coming decades.

183.   Inadequate water supply has many effects beyond human thirst. These include animal deaths, agricultural shortfalls, and a heavy burden on the transport system and reduced hydroelectric output. In turn, this contributes to economic stagnation, which may lead to protest and revolt. Drought, freshwater depletion, and floods contribute to population displacement.[192] Environmental degradation due to water shortage, and even conflict over water, is likely to increase in the future.

Health and Altered Diseases

184.   Changed climate, different flora, fauna, and new wetlands may alter the behaviour and development of infectious disease leading to new epidemics. When linked to greater connectivity through global air travel, a new epidemic is likely to spread fast. The upward trend in the pace of epidemic distribution is already profound.

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[189] Kaplan, Robert, *The Coming Anarchy*, 22 February 2000, Random House, ISBN: 0375503544, pages 36–37.

[190] Postel, Sandra L. and Wolf, Aron T., "Dehydrating Conflict", *Foreign Policy*, September / October 2001, pages 60–67.

[191] World Resources Institute (WRI), EarthTrends – Environmental Information, retrieved June 2006. [http://earthtrends.wri.org/]

[192] GEMI, *Water trends*, retrieved October 2006.

185.   According to the World Health Organisation (WHO), over 13 million people die annually, 1,500 per hour, from infectious diseases.[193] The diseases accounting for the highest mortality include pneumonia, tuberculosis (TB), diarrhoeal diseases, malaria, measles and HIV/AIDS. AIDS alone has created at least 8 million orphans, most of them in the developing world. TB once considered virtually eradicated, now kills over 1.5 million people per year and could get far worse since nearly 2 billion people have latent TB infection.[194] Many experts see Avian flu[195] and Pandemic Influenza as an emerging challenge. The recent Severe Acute Respiratory Syndrome (SARS) crisis in China and Canada, small in comparison to other pandemics, provides a useful example, nonetheless, of the rapidity with which outbreaks of disease can unfavourably affect economic activity.[196] In comparison, smallpox would require weeks and months to spread 100 years ago.

186.   Disparities in the state of health between developed and developing countries will widen. Since 1973, thirty infectious diseases have emerged in poor countries, where they wreak havoc: notably AIDS, Hepatitis C and Ebola. Old diseases, including tuberculosis, cholera and malaria, have spread geographically or emerged in new, drug-resistant forms. AIDS is a catastrophe in Africa where nearly 30 million people have the disease. In the worst affected states, urban elites are heavily infected, debilitating the group who would otherwise be leading economic activity. In countries of Eastern and Southern Africa, the percentage of the adult population infected with the disease varies between 10 % and 26 % and these numbers continue to rise. But AIDS is expected to develop into an even more serious problem in Asia, including Russia, where the incidence of cases will overtake Africa by about 2010.[197] AIDS and related infections, notably tuberculosis, are reducing life expectancies in Africa dramatically, and damaging economies.

187.   In developed countries, major inroads against a variety of maladies will be achieved by 2015 as a result of generous health spending and major medical advances. The revolution in biotechnology holds the promise of even more dramatic improvements in health and lifespan. Non-infectious diseases will pose greater challenges to health in developed countries than will infectious diseases. Progress against infectious diseases, nevertheless, will encounter some setbacks as a result of growing microbial resistance to antibiotics and the

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[193] United Nations (UN), World Health Organisation (WHO), *Report on Infectious Diseases 1999,* 1999. [http://www.who.int/infectious-disease-report/pages/textonly.html].

[194] WHO, *Report on Infectious Diseases 1999.*

[195] Avian flu, also called "bird flu", "avian influenza" and "bird influenza", is "flu from viruses adapted to birds".

[196] Canadian Department of National Defence/Operational Research Division, Canada, *Future Security Environment 2025*, September 2003, page 44.

[197] United Kingdom, Ministry of Defence, *Future Strategic Contexts for Defence*, 2001, paragraph 19.
[http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/PolicyStrategyandPlanning/FutureStrategicContext2001.htm]

accelerating pace of international movement of people and products that facilitate the spread of infectious diseases. New diseases should be expected.

Energy Trends

188.   World energy demand is growing at a rapid rate, and international cooperation to find economic, secure and sustainable energy sources is of vital importance for both industrial and developing nations. Energy demand will likely double within the next twenty years.[198] The Earth's energy resources are more than adequate to meet demand until 2030 and well beyond. Less certain is how much it will cost to extract them and deliver them to consumers.[199] Asia will replace North America as the leading energy consuming region, accounting for more than half of the world's total increase in demand. China and India will see especially dramatic increases in consumption.[200] By 2015, only one-tenth of Persian Gulf oil will be directed to Western markets. More than two-thirds of the growth in world energy use will come from the developing countries where economic and population growth is highest.[201] Fossil fuels (oil, gas and coal) will remain the dominant form of energy accounting for some 85 % of demand.[202] The share of nuclear power will decline marginally, while that of hydropower remains broadly constant. Other renewable energy sources, including geothermal, solar and wind energy, will grow faster than any other energy source, but still account for only 2 % of primary energy demand in 2030.[203]

189.   The Organisation of the Petroleum Exporting Countries (OPEC) will increase its share of world oil production to over 50 % by 2015, enhancing its strategic leverage. Gas will become increasingly important, remain plentiful and probably experience fewer price variations. Reserves of fossil fuels are not expected to be nearing exhaustion by 2030 or for some time thereafter, but will become more geographically concentrated. MENA countries will remain as the biggest producers, while the Caspian basin, West Asia, Gulf of Guinea, Russia and North Africa will increase their importance as producing regions and, therefore, become regions where stability and security will be of even greater concern. Energy security is becoming an issue of increasing importance as some energy producers are showing a tendency to use oil and gas as a political leverage.[204] Unique coalitions, such as a gas coalition on the Caspian Sea, are likely to form to exert leverage in areas where they can compete on military terms. Their success will drive the trend. In the developing world, there is

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[198] Program of Atlantic Security Studies (PASS), *Energy and Security: Global Challenges-Regional perspectives,* Conference conclusions, Prague, October 2004, page 120. [http://www.pssi.cz/files/documents/pass/energy-security-report.pdf]
[199] International Energy Agency (IEA), *World Energy Outlook 2004 Edition*, 2004, page 29. [http://www.iea.org/textbase/nppdf/free/2004/weo2004.pdf]
[200] NIC, *Mapping the Global Future…*, page 66.
[201] IEA, *World Energy Outlook 2004*, page 31.
[202] Ibid, page 31.
[203] Ibid, page 62.
[204] Congressional Research Service (CRS), *NATO and Energy Security*, CRS Report for Congress, 11 September 2006, (by Gallis, Paul), page 1. [http://italy.usembassy.gov/pdf/other/RS22409.pdf]

potential for aggressive competition for resources as nations seek to industrialise, to cope with population growth and to meet expectations of an improved standard of living. Natural resources will still continue to be discovered such as those recently in the Gulf of Mexico and those already discovered more economically feasible to exploit such as those found in Canada. Exploration and technological development will continue to find and exploit new sources of energy resources.

190.   For under-developed areas, the most serious energy issue will be affordability in a seller's market. For energy producers and NATO consumers the question will be one of stability of supply and security of supply lines. Offshore energy fields are becoming increasingly important. The interruption of energy supplies by storms, earthquakes, wars (including terrorist attacks and sabotage) or other events have quickly and impressively demonstrated how dependent NATO countries have become on the energy supply. Secretary General Jaap de Hoop Scheffer recently said in his "Fresh Changes for a New NATO" lecture: "I believe that there are many more issues that we should consider bringing to the NATO table, and one that leaps to mind is energy security. NATO's Strategic Concept includes elements of the protection of vital supply lines as one area critical to the security of Allies. Today, for reasons that are obvious - including the potential of terrorists targeting our energy supplies - it makes sense to me that the Allies should discuss this issue. [...] I want all Allies to engage in a frank and open discussion, to anticipate future trends and to develop a common perspective."[205] An unprecedented effort will be required to protect infrastructure and transportation corridors.[206] There is also likely to be an increasing use of nuclear power globally as renewable energy sources fail to cope with demand for energy as fossil fuel supplies dry up and concerns over global warming become increasingly pressing. Paradoxically, the Middle East, currently rich in oil reserves, will see increasing demand for nuclear power generation for desalination plants to cope with the water demand of an increasing population.[207]

SOCIAL AND DEMOGRAPHIC TRENDS

Demographic Change

191.   Several demographic trends may place significant burdens on international stability in the coming decades. It took a century for the world's population to grow from 1 billion to 2 billion people, but only 12 years to grow from 4 billion to 5 billion. The world population reached 6 billion in 1999. At the current rate, the world will have approximately 8 billion people in the year 2025.[208] The overwhelming share of world population growth will be in

[205] NATO Forum on Energy Security, *Fresh Changes for a New NATO*, 22-24 February 2006, Prague, retrieved 6 February 2007. [http://www.iags.org/natoforum.htm]
[206] Program of Atlantic Security Studies (PASS), *Energy and Security: Global Challenges-Regional perspectives,* Conference conclusions, Prague, October 2004.
[207] Ibid, pages 34-35.
[208] EU / ISS, *Long Term Vision (Stand One)….*, page 5.

developing countries (98.4 % in 2010-2020).[209] Six countries will account for half of this projected population increase: India, China, Pakistan, Nigeria, Bangladesh and Indonesia.[210] In developed countries as a whole the fertility rate is currently 1.56 children per woman (compared to 2.12 between 1970-75) and is projected to increase slowly to 1.84 children per woman in 2045-2050.[211] Some countries of the developing world also face an aging population where it is estimated that the population over sixty-five years of age will outnumber those less than five years of age by 2020.[212] In addition, the "baby-boomers" are approaching retirement age contributing to declines in workforce while placing greater pressure on increasingly ambitious social security and health care programmes. In other regions of the developing world and failing states, particularly parts of the Middle East and Africa, the situation is reversed, with a disproportionate number of youths, and unemployment - e.g., in Iran 70 % of the population is under thirty. Population in the developed world in total will remain stable, but growth rates will differ greatly between the US (+17.4 %), the EU (+2 %), Japan (-2.6 %) and Russia (-10.8 %).[213]

Regional Poverty and unemployment

192.   Economies in the developed world show steady growth of per capita income, which in the developing world, are increasing dramatically. In the LDCs[214] of the world there has been no growth. In at least 54 countries there has been a slump, increasing the number of people in extreme poverty by more than 100 million[215]. However, in many LDCs, there are small very wealthy groups, linked to the world economy. For example in parts of Latin America the income of the richest fifth of the population is 30 times that of the poorest fifth[216], creating great rifts and the seeds of dissent and violence.

193.   Disorder, failing economies and deprivation will increase poverty in parts of the world. Generally poor people do not themselves pose a direct threat, but their plight often stirs others who are better able to attack those they hold responsible. An effect of poverty can be susceptibility to the persuasion of anyone who can offer a release from the situation. This includes forces such as

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[209] EU / ISS, *Long Term Vision (Stand One)….*, page 5.
[210] United Nations, *UN Population Division report – the revision 2004*, 2005, executive summary, page xvii.
[211] Ibid, executive summary, page xvii.
[212] Canadian Department of National Defence/Operational Research Division, Canada, *Future Security Environment 2025*, September 2003, paragraph 51, pages 33-34.
[213] UN, *UN Population Division report …*, cited in EU / ISS, *Long Term Vision (Stand One)….*, page 5. The projections are controversial.
[214] The development of a country is measured with statistical indexes such as income per capita (Gross Domestic Product - GDP), the rate of illiteracy, and access to water. The UN puts forth a compound indicator using these lists of statistics, to create, a "human development index" which gives a sense of how developed countries are.
[215] United Nations, *A more secure world: Our shared responsibility.* Report of the High-level Panel on Threats, Challenges and Change, 2004, page 24.
[216] UN, *A more secure world …*, page 24.

drugs traffickers, warlords, slavers and tribal chiefs who often brutalise and criminalise the population, particularly, the young men.

Regional III-Education

194.   Education will be an important determinant of success in 2015 at both the individual and national levels. The globalising economy and technological change inevitably place an increasing premium on a more highly skilled labour force.[217] Education is a clear benefit to people, economies and tolerance (if it is impartial and balanced). Again, LDCs are slipping backwards in this regard, undermining hopes of prosperity and perpetuating ignorance and prejudice. Poor education makes people much more susceptible to the propaganda of angry causes as well as to economic decline. Meanwhile in NATO countries we expect to see education continue to thrive, bringing its many benefits. This is another diverging trend.

Migration

195.   Migration flows have shifted in recent years with the changing poles of attraction for labour migration.[218] People migrate to regions where they perceive better chances for survival or well being when faced with many of the trends above. As a result, developing countries lose population and skills; and prosperous countries worry that immigration or a lack of social or cultural integration will threaten social order. Migration rates are likely to increase from regions that are unable to support growing populations.

196.   In the period up to 2015, in developing countries, 45 million people *a year* will reach employment age. Many will fail to find work and will emigrate. Illegal migration will grow dramatically, matching or exceeding other forms of migration into many countries in Europe, Asia, Africa, USA and Latin America. In Russia and other Eurasian states, weak controls, fitful economic development, ethnic conflicts and discrimination against minorities will maintain migratory pressures. In the Middle East and sub-Saharan Africa, refugees will remain a source of instability and political polarisation. In populous China and India migration to developed countries, particularly USA and Japan, is set to grow.[219] Another observed trend is that immigrants tend not to disperse into the communities they come to, but build strong diasporas and do not assimilate.

197.   The greater the immigration pressures, the greater the likelihood that the destination countries will try to put up barriers. Migration laws, institutional structures and procedures have tightened as part of the broader efforts to combat terrorism. These are affecting migration patterns and the distribution of their costs and benefits, as well as relations between governments. Restrictive

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[217] NIC, *Mapping the Global Future…*, page 28.
[218] International Organization of Migration (IOM), *World migration 2005: Costs and benefits of international migration*, 2005, page 13.
[219] National Intelligence Council (NIC), *Growing Global Migration and its implications for the United States"*, March 2001, pages 3-5.

migration regimes contradict the increasingly open flow of goods, capital and foreign direct investments, an asymmetry that increasingly tries to correct itself through irregular and clandestine migration.[220] This will cause anger and will damage cultural relations. The best way to reduce mass migration is to reduce people's urge to leave their homes. Cross-border migration, combined with the "brain drain" from developing to industrial countries will be one of the major forces shaping the landscape of the 21st century.[221]

Urbanisation

198.   The ratio of urban to rural dwellers is steadily increasing. By 2015 more than half of the world's population will be urban. When examined in conjunction with possible flooding of costal urban areas, this will cause great challenges. The number of people living in enormous cities - those containing more than 10 million inhabitants such as Sao Paulo, Lagos and Bangkok - will double to more than 400 million. On the positive side, urbanisation will provide many countries with better opportunity to tap the information revolution and other technological advances. But, the explosive growth of cities in developing and failing countries will test the capacity of governments to stimulate investment, to generate employment and to provide the necessary services: homes, infrastructure, transport, water supply, sanitation, public health and pollution controls.[222] Many of the larger cities of the world are in underdeveloped countries and their governments are already unable to provide the basic public services. This includes law and order, thus increasing the potential for chaos and unrest.   The number of cities with 5 million inhabitants or more will increase from 41 in 2000 to 59 in 2015. Among those cities, the number of "mega-cities" (those with 10 million inhabitants or more) will increase from 19 in 2000 to 23 in 2015.[223] All cities can be lonely places for the newcomer, and in chaotic ones, the young in particular may be drawn to any fraternal voice however malignant to society. Over time such cities may become ungovernable and increasingly run by criminal gangs, warlords or zealots.

Internal Displacement

199.   Nearly 25 Million Internal Displaced People (IDP's) have been uprooted within their own country by conflicts and human rights violations; and internal displacement affects 52 countries. At the end of 2005, there were more than 12.1 million IDP's in Africa of a total of 23.7 worldwide[224], the majority by civil wars and tribal violence. As an example, the worst displacement situations in 2005 were seen in Burma (Myanmar), Sudan (Darfur), Democratic Republic of the Congo (DRC), Zimbabwe, Côte d'Ivoire (Ivory Coast), Colombia, Iraq,

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[220] IOM, *World migration 2005 …*, page .

[221] World Global Trends, *Key findings Refugees and Migration – Trends*, retrieved October 2006. [http://www.t21.ca/refugees/index.htm]

[222] NIC, *Global Trends 2015 ….*, page 20.

[223] United Nations, *World Urbanization Prospects – The 2003 Revision,* 2004, page 3

[224] Norwegian Refugee Council (NCR), The Internal Displacement Monitoring Centre (IDMC), *Global overview of trends and developments in 2005*, 2006, page 6.

Somalia, Uganda, and Nepal.[225] Under international law, governments are responsible for resolving these internal issues, but many are unable or unwilling to do so while some are the cause. It is likely that internal displacement will continue to be a huge challenge, especially in Africa.

Radicalised youth

200.   Many young people are naturally idealistic and seek a sense of belonging. Those who feel humiliated and helpless can become enraged and particularly susceptible to radicalisation by strong leaders who offer a different world order or the promise of personal wealth. The growing ranks of youth in many poor countries may conclude that few prospects of employment, health and well being exist, and turn their anger towards their own society or those perceived to be the cause of their bleak future. This, in turn, may lead to migration or aggression against NATO countries.

Culture conflicts

201.   Culture conflicts are also a challenge. It is quite easy for cultural conflicts to become racial, adding *causes celebres*[226] for inflammatory accusations of racism. Racial mistrust is exacerbated by differing social credos. The scope for social and political disturbance from the presence of immigrant populations is increased by racist perceptions. This, in turn, could provide material for antagonistic rhetoric against NATO countries from abroad.[227] Culture conflicts between local population and NATO forces in an area of operation, is also a challenge that must be faced.

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[225] NRC, IDMC, *Global overview of trends and developments in 2005 …,* page 6.
[226] Causes celebre, an issue arousing widespread controversy or heated public debate.
[227] ACT, LTRS, *The Long Term Requirement Study (LTRS) – Base-line Paper*, page 15.

SECTION V: FUTURE CHALLENGES AND OPPORTUNITIES

*"The future is something, which everyone reaches at the rate
of 60 minutes an hour, whatever he does, whoever he is."*

C. S. Lewis 1898 - 1963

Key Findings

- *The Future Security Environment will be revolutionised by the growing effect of multidisciplinary technology.*
- *The revolution of information availability and utility will continue to affect the world.*
- *Advances in Information Technology (IT) are affecting most segments of the world today; they will continue in the future and might lead to new threats.*
- *Military forces are likely to have an increased role in engaging terrorism.*
- *The will and capability for armed Non-State Actors to seek strategic effect and to act internationally will continue to increase, particularly through international terrorism.*
- *Terrorism is likely to become more widespread, extreme, international and autonomous.*
- *Advances in military technology are likely to lead to wider development and employment of electromagnetic and blast effect weapons.*
- *An important driver of change in military operations is likely to be the increasing dominance of unmanned capabilities.*
- *Globalisation has enhanced the need for strengthening and increasing the effectiveness of the role of nation states, governments and the public sector.*

SUMMARY

202.   Although the *technologies* described in this section appear to have the most promise for significant global effects, such foresights are plagued with uncertainty. As time progresses, unforeseen technological developments or effects may well eclipse these trends. Other trends that because of technical challenges do not yet seem likely to have significant global effects by 2015 could become significant earlier if breakthroughs are made.

203.   Taken together, the revolution of information, biology, materials, devices, and manufacturing will create wide-ranging trends, concerns, and tensions across the globe by 2015. Major trends will be:

- Accelerating pace of technological change
- Increasingly multidisciplinary nature of technology
- Competition for technology development leadership
- Continued globalisation
- Latent lateral penetration
- Concerns and Tensions.

204.   Concerns and tensions regarding the following issues already exist in many nations today and will grow over the next 15 years:

- Class disparities. As technology brings benefits and prosperity to its users, it may leave others behind and create new class disparities
- Reduced privacy. Various threats to individual privacy include the construction of Internet-accessible databases, increased sensor capability, DNA[228] testing, and genetic profiles that indicate disease predispositions
- Cultural threats.

205.   Despite multilateral regulation it will be increasingly hard to control key technologies. Diffusion, collaboration, and leakage will probably lead to a widening number of military and non-state actors accessing advanced military technologies.

206.   NATO has systems for assessing and dealing with developing threats through defence and operational planning. They will need to be attuned to the new military threats.

207.   NATO seems likely to continue to be called upon to fight subversion and insurrection, to tackle internal conflicts as part of the continuum of efforts to create world stability. These will be very dangerous missions with belligerents difficult to identify, rules of engagement very tight for fear of offending standards of behaviour, and the mission complicated by the influence of armed non-state actors. Stability and reconstruction operations will be present simultaneously with several other actions in the full spectrum of military operations. Keys to success will be cooperation and coordination with other Non-NATO countries, agencies and organisations (including IOs, NGOs) and those actions to gain non-committed audiences among civil population through PSYOPS and Media Ops.

208.   Military forces are likely to have an increased role in engaging terrorism, both domestically and abroad, in seeking to deter, disrupt and destroy terrorist organisations and prevent state assistance to them. Domestically, in most NATO nations, governments will continue to discuss the role of the military versus police and other law enforcement bodies but it is a relationship that is undergoing profound pace of change, which may already be ahead of legislative action.

209.   Future military operations will have a strong urban dimension and in this environment the population will have a pre-eminent role. The overlapping of different operations such as urban combat operations, stabilisation and reconstruction and humanitarian relief, will add enormous complexity to Military operations, in which an enhanced Civil- Military (CIMIC) interaction with all the actors will be a must for success.

210.   The nuclear stand off between Pakistan and India is likely to endure throughout the period and although this poses no direct challenge to NATO, the

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[228] DNA - Dexyribonucleic Acid.

fringe effect is considerable. India poses a much more significant challenge to NATO's current technological dominance. In almost every technology area, India will have the capability by 2025 to emulate the NATO nations in the sophistication and capability of its defence technology. Despite large-scale investment and development, China's 2025 conventional capabilities should not be overestimated. China will be limited by shortcomings in professionalism and technical skills, and the military ethos will continue to be based on quantity rather than quality. The likely state of Chinese military forces overall will remain mediocre and lagging behind the most advanced global militaries, but will be peppered with pockets of excellence, where training, technology and professionalism have combined to create premium-quality, world-class military forces. North Korea possesses the world's fifth largest military. Overall, the effectiveness of the North Korean conventional forces is questionable, but the DPRK missile system is cause for great concern to many nations within Asia. Iran strives to modernise its armed forces in the longer term. This is especially true of air defence systems; aircraft and tanks are to be ordered from Russia. Like many other armies in the region, the Syrian armed forces have to cope with a serious modernisation crisis. The modernisation that has occurred has been badly mismanaged because Syria continues to try to support a force structure at least one-third larger than it has the resources to make effective.

211.   It seems inevitable that NATO forces will face child soldiers in the future. This presents a terrible dilemma in terms of balancing mission objectives and force protection with traditional western cultural and social values concerning children. This could be addressed through specific doctrine and training.

212.   In the last ten years, the concept of global governance that has increasingly prevailed in international political discourse has emphasised the significance of network structures involving state and private sector actors within international politics. This approach, which is in fact dubbed a "multi-stakeholder approach", is based on the premise that governments cannot overcome growing global economic, social and ecological problems alone but are dependent on the co-operation of the private sector and of civil society.

213.   Far from reducing the role of governments, globalisation has enhanced the need for strengthening and increasing the effectiveness of the role of nation states, governments and the public sector. The nation-state will continue to be the dominant unit of the global order, but economic globalisation and the dispersion of technologies, especially information technologies, will place enormous strains on governments. The emergence of a whole range of transborder issues from economic globalisation to the environment to terrorism will be one of the key discussions surrounding whether or not the nation-state is obsolete as the best form of political organisation to deal with these problems. Rising nationalism and a trend toward populism also will present a challenge to governments. Declining state power, or sovereignty, has been in evidence over 50 years and shows no sign of diminishing markedly.

214.   A whole range of private organisations has emerged to infringe on sovereign authority as well. In addition to human rights NGOs, global civil society organisations have emerged around numerous issues. These organisations might become significant players in future military operations. As international problems become more pressing for national interests, the need for international solutions will increase.

215.   Consolidation of some traditional governance functions under regional economic, political, and military supra-organisations, like the EU, will continue, but the member nation-states will retain significant powers. International organisations, to include private business organisations, will proliferate and assume some of the powers now held by local and national governments. Nations will have to either adapt or co-evolve with changes the future will bring.

216.   States will remain the principal guarantors of individual security and welfare, and international law will continue to represent the means by which they formalise their agreements on cooperation and by which they conduct their affairs. While the UN Charter dominates jus ad bellum, there are four issues that are of current importance and which will challenge the Charter's ability to cope with future international circumstances and the United Nations Security Council's (UNSC) intended monopoly of authority in relation to the use of force. First, the future interpretation of the right to self-defence, secondly, future interpretation of threats to peace and security, thirdly, the future balances between intervention and State Sovereignty and finally, the future effectiveness of the UNSC.

217.   By reference to the inherent right of self-defence, it seems to imply the preservation of the pre-existing customary right of pre-emption or anticipatory self-defence. States are no longer at liberty to abuse the human rights of their own citizens without attracting significant international reproach and risking possible intervention by the international community, particularly Western states. There is a clear international desire by the UNSC to remain the authoritative source of legitimacy.

SCIENCE AND TECHNOLOGY TRENDS

Introduction[229]

218.   The Future Security Environment will be revolutionised by the growing effect of multidisciplinary technology across all dimensions of life: social, economic, political, and personal. Biotechnology will enable us to identify, understand, manipulate, improve, and control living organisms (including ourselves). The revolution of information availability and utility will continue to profoundly affect the world in all these dimensions. Smart materials, agile

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[229] RAND Corporation, *The Global Technology Revolution: Bio/Nano/Materials Trends and Their Synergies with Information Technology by 2015*, 2001, (By Anton Philip, Richard Silberglitt, and James Schneider.), page xi.

manufacturing, and nanotechnology will change the way we produce devices while expanding their capabilities.

219.   Effects may include significant improvements in human quality of life and life span, high rates of industrial turnover, lifetime worker training, continued globalisation, reshuffling of wealth, cultural amalgamation or invasion with potential for increased tension and conflict, shifts in power from nation states to non-governmental organisations and individuals, mixed environmental effects, improvements in quality of life with accompanying prosperity and reduced tension, and the possibility of human eugenics and cloning.

220.   The actual realisation of these possibilities will depend on a number of factors, including local acceptance of technological change, levels of technology and infrastructure investments, market drivers and limitations, and technology breakthroughs and advancements. Since these factors vary across the globe, the implementation and effects of technology will also vary, especially in developing countries. Nevertheless, the overall revolution and trends will continue through much of the developed world with interacting trends in biotechnology, materials technology, and nanotechnology as well as their facilitations with information technology.

221.   Science and Technology work is becoming more multi-disciplinary and it is possible that developments in information technology, biotechnology and nanotechnology will converge and become mutually reinforcing. This has the potential to trigger a truly revolutionary change in the manner in which the physical world is understood and manipulated.[230]

Information revolution

222.   Advances in Information Technology (IT) are affecting most segments of the world today, and they will continue in the future. Some technology developments can be foreseen, including continued exponential growth in computing power for at least 15 to 20 years, continued convergence in voice and data communications and major leaps in available bandwidth during the next two decades such as from laser technology. Also new products and services developments will greatly extend access and the utility of information systems.

223.   The Information Revolution is enabling new business models that are transforming the business and financial worlds, are affecting mechanisms of governance and empowering new political actors and shapes: they are being shaped by social and cultural values. But, the manner in which every nation will approach the information revolution will depend on several factors (economical, social, cultural and political) resulting in visible differences among and between regions and countries.

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[230] JDCC, *Strategic Trends – 1st Ed.*, paragraph 5-17.

224.   These developments could also lead to new threats. The information revolution is altering, and will continue doing so, the nature of conflicts across the spectrum. Two developments deserve attention. First, this revolution is favouring and strengthening network forms of organisation, often giving them advantage over hierarchical forms. This rise of networks could see power migrating to non-state actors. Second, as the Information Revolution deepens, the conduct and outcome of conflicts will increasingly depend on information and communications.

225.   The worldwide web (www) gives belligerents systems for command and control, intelligence gathering and adversaries are learning to emphasise "Information Operations" and "perception management".[231] Global banking is used to launder and hide terrorist and criminal funds. Within NATO countries there is a growing dependence on information systems, and an increasing price for disruption through interference or their destruction. Secrecy may also be compromised. Catastrophic damage is possible from the actions of a handful of people or even lone attackers, as well as from enemy powers, all of whom would see NATO countries' information systems as both a strategic target and a source of information that makes espionage easier.

226.   The information revolution is not the only technology-driven trend under way in the world today but merely the most advanced. Advances in biotechnology and nanotechnology, and their synergies with IT, should also change the world over the course of the 21st century.

Biotechnology

227.   Biotechnology will begin to revolutionise life itself by 2015. Disease, malnutrition, food production, pollution, life expectancy, quality of life, crime, and security will be significantly addressed, improved, or augmented. Some advances could be viewed as accelerations of human-engineered evolution of plants, animals, and in some ways even humans with accompanying changes in the ecosystem. Research is also under way to create new, free-living organisms.[232]

228.   The biotechnology revolution is at a relatively early stage, and major advances in the biological sciences coupled with information technology will increasingly affect life in the 21st century. On the positive side, developments in biotechnology offer immense prospects for resilient, nutritious and productive crop varieties, for health care systems, for effective environmental practices and for industry. In the long term, biotechnology could be a "levelling" agent between developed and developing nations. However, even as the dispersion of biotechnology promises a means of improving the quality of life, it also poses a major security concern. There is a risk that advances in biotechnology will

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[231] Media-oriented measures that aim to attract or disorient rather than coerce, and that affect hoe secure a society, a military, or other actor feels about its knowledge of itself and its adversaries.
[232] RAND Corporation, *The Global Technology Revolution…,* page xii, (Summary).

augment not only defensive measures but also offensive biological warfare agent development and allow the creation of advanced biological agents designed to target specific systems – humans, animals or crops.[233]

229.   Thus, the revolution of biology will not come without issue and unforeseen redirections. Significant ethical, moral, religious, privacy, and environmental debates and protests are already being raised in such areas as genetically modified foods, cloning, and genomic profiling. These issues will not halt this revolution, but they will modify its course over the period as populations come to terms with new powers enabled by biotechnology.[234]

230.   The revolution of biology relies heavily on technological trends not only in the biological sciences and technology but also in micro-electromechanical systems, materials, imaging, sensor, and information technology. The fast pace of technological development and breakthroughs makes foresight difficult, but advances in genomic profiling, cloning, genetic modification, biomedical engineering, disease therapy, and drug developments are accelerating.[235]

Nanotechnology

231.   Observers and scientists alike accept that developments in nanotechnology[236] could have enormous impact on many aspects of social and business life, with wide possibilities. When mature, it will lead to new understanding and control over the fundamental building blocks of all physical things, such as, new medicines, smaller more powerful computers, cleaner supplies of energy, stronger buildings and smart clothes. Applications using nanoparticles, which are significantly stronger than traditional materials, have already made an impact in the car and packaging industries.[237]

232.   The major driver behind nanotechnology is currently the civil market. The USA's National Science Foundation predicts that the total market for nanotechnology products and services could reach $1 trillion by 2015.[238] The consensus being that the IT and entertainment industries, preceded by venture capitalists, will continue to provide the impetus for smaller and faster goods. Medical applications will likely be slower due to costs and safety concerns. A parallel interest in nanotechnology is directed towards more sophisticated and vastly more powerful versions of microtechnology products. Extensions of microtechnology into nanotechnology will lead to sensors detecting at the single

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[233] NIC, *Mapping the Global Future*, page 36.
[234] RAND Corporation, *The Global Technology Revolution…,* page xii, (Summary).
[235] Ibid, (Summary).
[236] Nanotechnology is simply the technology of things - measure, see, predict and make - on the scale of atoms and molecules. The nanotechology realm is defined as being between 0.1 and 100 Nanometres (a nanometre being one-billionth of a meter). Nanotechnology is really an amalgam across the traditional disciplines of biology, physics, engineering, maths and chemistry.
[237] JDCC, *Strategic Trends – 1st Edition*, paragraph 4-16.
[238] National Science Foundation, *Societal implications of Nanoscience and Nanotechnology*, March 2001, page 3.

molecule level, using ever more powerful computer processing and vastly greater memory. Together these technologies may enable sophisticated information networks that will lead to more effective surveillance, for example for natural resource and pollution monitoring. If the technological applications remain commercially led, and given the increasing risk of technology leakage, there will be significant risk that these advantages will be available to potential opponents and thus also represent new threats.[239]

Materials technology

233. New development and application of materials technology and structures may be significant for military applications, particularly in terms of novel and smart materials. Novel material developments may deliver advantages such as unorthodox electrical, magnetic, and optical properties offering the potential for various ultra-high strength, information storage, and low observational properties. The concept of "smart materials" is not new, but future developments may allow integrated self-monitoring of the condition of the material thus increasing safety. By 2015, the development of smart materials could enable the commercially viable production of clothes that respond to weather, interface with information systems, monitor vital signs, deliver medicines and automatically protect wounds. The level of development and integration of these technologies into everyday life will probably depend more on consumer attitudes than on technological developments *per se.*[240]

234. By 2015, nanomaterials such as semiconductor "quantum dots" could begin to revolutionise chemical labelling and enable rapid processing for drug discovery, blood assays, genotyping, and other biological applications. Chemical, fluidic, optical, mechanical, and biological components will be integrated with computational logic in commercial chip designs. Instrumentation and measurement technologies are some of the most promising areas for near-term advancements and enabling effects. Even entire systems (such as satellites and automated laboratory processing equipment) with integrated micro scale components will be built at a fraction of the cost of current macro scale systems, revolutionising the sensing and processing of information in a variety of civilian and military applications.[241]

MILITARY DOMAIN

Introduction

235. Traditional military threats may have receded but they have not disappeared and may reassert themselves alongside the increasing incidence of asymmetric threats. The resort to large-scale lethal violence against populations and infrastructures will remain the ultimate means of exercising power. At the

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[239] JDCC, *Strategic Trends – 1st Edition*, paragraph 4-17.
[240] Ibid, paragraph 4-18.
[241] RAND Corporation, *The Global Technology Revolution…,* page xii, (Summary).

grand strategic level, the military lever of power will often more and more be exercised alongside the political, civil and economic levers. Armed conflict will occur between states (interstate conflict), within states (intrastate conflict including domestic terrorism), and between non-state actors and foreign states (international terrorism).[242]

The Future of Armed Conflict[243]

236. On a global basis post Cold War history has seen a general trend towards an increasing number of conflicts, especially conflicts within states driven by independence movements, separatist nationalism, and surrogate superpower conflict. Intrastate conflicts are likely to remain prevalent and perhaps increase in frequency as globalisation increases cultural conflict, penalises ineffective governance, and increases the ease with which irredentist groups can operate.

237. The frequency of interstate conflict is likely to remain low overall in comparison to the last 100 years. First, there is not very likely to be renewed bipolar competition or the surrogate wars generated between the superpowers in the Cold War. Secondly, US superiority is likely to discourage strategic attacks on it, its allies, or those areas where it has interests. Thirdly, the risks of interstate war are ever decreasing due to the cost and lethality of weapons systems, the knock-on effect to regional and global stability, and the strengthening international presumption against war and the associated penalties to those conducting it. However, wars will still occur and some are likely to be significant when they do due to the increasing lethality and mass effect of weapon systems and due to the widening impact of conflict as globalisation spreads interdependencies.

238. Military forces are likely to have an increased role in engaging terrorism, both domestically, within their own overseas territories, and abroad in seeking to disrupt and destroy terrorist organisations and prevent state assistance to them.

239. Military forces will also engage a range of other non-state actors, either directly, or through assistance to other agencies. In particular, organised crime is likely to grow in sophistication, scope and scale and may more often employ para-military-style techniques and capabilities, or become sufficient of a threat to national security to perhaps demand a military response. Relationships for mutual benefit between terrorists and organised crime are likely to increase.

Interstate Conflict

240. The frequency of classic war between states seems set to decline, but the growing availability of arms, and the potential for competition for resources makes the threat of war unlikely to disappear. The impact of classic war on NATO societies could be greater than ever before, with the lethality of weaponry

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[242] JDCC, *Strategic Trends – 1st Edition …..,* Paragraph 7.2
[243] Ibid.

much increased. NATO will need to start take account of the increased military, political, and economic power of China and India and the decline and reversion towards dictatorial rule in Russia. The chase for resources will bring more reappraisal of areas of strategic interest: many will be regions, which are volatile or "failed".

To illustrate the point, possible hot spots for war over water alone are:

- The Jordan-Litani system and the West Bank aquifers where Israel and Jordan are already using more water than is being replenished naturally.
- The Nile waters are stretched very thinly affecting Egypt downstream, Sudan, Ethiopia and even Uganda upstream.
- The Tigris-Euphrates system.
- The Ganges system between India and Bangladesh, and the Indus between Pakistan and India, which is in a region notorious for its sabre-rattling and warfare, most recently over Kashmir.
- The Carvery River in south-eastern India, where there have already been pitched battles between troops and citizens from the states of Karnataka and Tamil Nadu.
- In the North African littoral, there are no major rivers, but Libyan mining of the sub-Saharan aquifer is causing alarm amongst neighbours, most notably Algeria.
- Botswana and Namibia which have several times come close to war over Namibia's threat to divert waters away from the Okavango system, home to Botswana's major source of water.

Intrastate Conflicts - Subversion and Insurrection

241.   Subversion and Insurrection cause internal conflict, many of which will continue to be vicious, long lasting and difficult to terminate - leaving bitter legacies in their wake. They frequently will spawn internal displacements, refugee flows, humanitarian emergencies, and other regionally destabilising dislocations. In many regions of the world valuable resources fund civil wars and contribute to the prolongation of conflicts. A scan of the global conflict areas provides ample evidence of the trends. Fighting in places such as the Democratic Republic of Congo, Burundi, Ivory Coast, Papua New Guinea, Indonesia, Angola, Mozambique and Colombia has been funded by valuable resources such as diamonds, oil or illegal drugs. Hence, it is likely that resource-rich areas that have weak governance and economy will have a greater potential for conflict in the coming decades. If left to fester, internal conflicts will spill into interstate conflicts as neighbouring states move to exploit opportunities for gain or to limit the possibilities of damage to their national interests. Weak states will spawn recurrent internal conflicts, threatening the stability of the international trading system.

242.   Internal conflicts stemming from state repression, religious and ethnic grievances, increasing migration pressures or indigenous protest movements will occur most frequently in Sub-Saharan Africa, the Caucasus, Middle East, Central Asia, and parts of south and southeast Asia, Central America and the Andean region. There might be spillover of violence to NATO countries from trans-national or foreign conflicts, fuelled by the immediacy of media coverage.

Non-State Actors (NSAs)

243.   Important non-state actors (NSAs) in international relations include: Non-governmental organisations (NGOs); Firms and businesses, especially multinational corporations (MNCs) and private military companies (PMC); the international media; Armed non-state actors among others.

Armed non-state actors

244.   "Armed non-state actors" can be defined as armed groups that operate beyond state control purposely.[244] It includes, but is not limited to, the following groups:

- Insurgents who are engaged in protracted political and military struggle aimed at weakening the power and legitimacy of a ruling government.
- Terrorists who spread fear through the threat or use of proscribed violence for political purposes.
- Militias made up of irregular yet recognisable armed forces operating within an ungoverned area or a weak failing state.
- International criminal organisations engaged in one or more type of criminal enterprise that operates across regions and national borders.[245]

245.   The will and capability for armed NSAs to seek strategic effect and to act internationally will continue to increase, particularly through international terrorism. Terrorism is likely to become more widespread, extreme, international and autonomous.

246.   These armed non-state actors become particularly dangerous when they are hosted by or operate in conjunction with illegitimate states (rogue states or failed states). In such cases, the state itself becomes a functioning criminal enterprise while continuing to enjoy - use for illegal purposes - many of the international benefits of statehood (e.g. the ability to issue recognised diplomatic passports; maintain shipping and airplane registries; control border entry and exit points).[246]

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[244] Holmqvist, C., *Engaging non-state actors in post conflicts settings*, Security Governance and Post-conflict Peacebuilding, Geneva Centre for the Democratic Control of Armed Forces (DCAF), Berlin, Lit Verlag, 2005. (eds. Bryden, A. and Hänggi, H.).
[245] Farah, Douglas, *Terror in the Shadows.* A Volatile Mix: Non-State Actors and Criminal States, 5 October 2004. [www.americanprogress.org]
[246] Ibid.

Non Governmental Organisations (NGOs)

247.   The Information Age has been distinct by the growing role of NGOs on the international stage. Modern communications have led to a dramatic increase in scale, with number of NGO's jumping from 6,000 to approximately 26,000 during 1990's alone, varying enormously in their organisation, budgets, accountability, and sense of responsibility for the accuracy of their claims.[247] Nowadays these organisations embrace almost every field, from defence of human rights to environmental issues, being able to develop new norms by directly pressing governments and business to change policies, and indirectly by altering public perceptions of what governments and firms should do. The dependence of some states or regions on foreign aid for survival will give international aid organisations *de facto* powers. The most influential NGOs will remain those based in the West, but more active and visible NGOs will emerge from the developing world. NGOs face a number of dilemmas, one of the most difficult of which is their relationship with military actors. Many NGOs have coordinated their humanitarian activities with different military forces in a number of contexts, with varying degrees of reluctance. Events in Somalia, Bosnia, Rwanda and Kosovo have created increasingly fraught relationships between NGOs and military forces, but most NGOs have distinguished between coordinating with the military as a temporary "marriage of convenience" and being coordinated by the military.[248] NGOs will remain generally unwilling to act in concert with government and particularly their armed forces, whether as a matter of principle, charter, or for fear that they will be manipulated or seen to be colluding.

Private Military Companies (PMCs)

248.   A western countries trend is the "privatisation of armed conflict", which are private military or security companies (PMCs) contracted by belligerent states or entities (Multinational Companies - MNC and NGOs) to provide armed "services" in VIP protection, intelligence, logistics, facilities management, advisory/consultancy, and above all, fighting in proxy for the contracting agent. PMCs are currently engaged in numerous international conflicts in Iraq and Afghanistan, as well as in Africa; they are expected to increase significantly in terms of numbers and responsibilities in the foreseeable future.[249]

249.   Today's PMC is no longer a small company, built by a few veteran soldiers; it is now big business, traded legitimately on international trading markets. Industrial giants moving into the growing PMC market have purchased the oldest and most respected PMCs in the industry. In conflicts around the globe, PMCs have some times proven themselves to be more efficient and more effective than government managed forces. The role of private military companies has also changed. In the past, private military companies would

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[247] Nye, Joseph S., *The rising power of NGO's*, Project syndicate, June 2004. [http://www.project-syndicate.org/commentary/nye10]

[248] Lister, Sarah, *The Future Of International NGOs - New Challenges In A Changing World Order*, BOND's NGO Futures program, April 2004. [http://www.bond.org.uk/futures]

[249] IISS, *Military Balance*, page 416.

focus mainly on military skills training. A growing segment of the industry's operations are located in the context of donor-sponsored Security Sector Reform (SSR) programs, where PSCs are hired to rebuild and retrain police, military and intelligence agencies,[250] and this seems set to continue.

250. The privatisation of military support gives armed forces the possibility to concentrate on its core functions and save costs. Modern PMCs operate as regular companies targeting a market niche by offering a wide variety of military skill sets. PCMs are often tied to other firms within as well as beyond their own industry through legal financial arrangements.[251] PMCs serve customers according to the market demand. Those customers are governments and their armed forces, the UN or NGOs. The structure and organisation of PMCs make them fundamentally different from the classical type of mercenaries.[252]

251. PMCs are offering services such as: consulting, training, logistic support, maintenance, intelligence, surveillance and reconnaissance, de-mining, escorting supply convoys and providing personal security for VIPs. The lack of regulation, the difficulty of democratic control, as well as the inadequacy of measures to hold PMCs to account for their actions, are of particular concern and look set to continue.[253]

252. The involvement of Private Military Companies on the battlefield is a growing trend, which will fundamentally influence future NATO operations. The use of PMC raises a wide range of concerns and challenges, like deficiency in accountability, the lack of clear mandates, rules of engagement (ROE), including legitimacy and sustainability.[254] Their legitimacy or role appears to be slowly crystallising and accepted although considerable debate in international law will have to ensue if clear lines of demarcation are ever to be established. The trend for PMC involvement sees almost exponential growth over the last 15 years. There are no signs that this trend will slow or reverse in the foreseeable future and NATO will have little choice but to accommodate this and learn to leverage it rather than resist it.

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[250] Holmqvist, C., *Engaging non-state actors in post conflicts settings*, Security Governance and Post-conflict Peacebuilding, Geneva Centre for the Democratic Control of Armed Forces (DCAF), Berlin, Lit Verlag, 2005. (eds. Bryden, A. and Hänggi, H.).
[251] Geneva Centre for the Democratic Control of Armed Forces, Occasional Paper, *"Privatizing Security",* No. 6. Geneva, March 2005, page 7.
[252] Danish Institute for International Studies (DIIS), DIIS Working Paper, *"Privatisation of Conflict, Security and War"*, Paper No. 2005/2, Copenhagen 2005, page 16.
[253] Ibid, page 22.
[254] Holmqvist, C., "Engaging non-state actors in post conflicts settings," (eds.) Bryden, A. and Hänggi, H., Security Governance and Post-conflict Peacebuilding, Geneva Centre for the Democratic Control of Armed Forces (DCAF), Berlin, Lit Verlag, 2005.

Future Military Power

Defence Spending

253.   It is almost certain that the US will dominate technical innovation in most areas, and particularly defence, until at least 2015 with the EU and Japan remaining major players. The West will therefore retain its overall technical advantage in military technology. India and China may become significant competitors by 2030. Until 2015, most European allies will concentrate military deployments abroad on stabilisation operations, although these may be over a wider range of potential regions. The EU may develop collective defence and intervention capabilities by 2030.

254.   It is not possible to predict future defence spending with any degree of certainty. However, the table below gives an *illustrative* assessment of *relative* military spending for the top ten military budgets in 2015 and 2030. The USA's defence spending is likely to exceed the sum of the next five biggest spenders until at least 2030. China and India will probably see the most significant relative increases in defence spending. China may be the second largest spender by 2030. The assessment is founded on *quantitative projections* of economic *growth rates* assuming a *constant rate* of defence spending. The table has not taken into consideration the current spending (figures in USD $ Billion 2000 equivalent).[255]

Table 2

2000		2015		2030	
USA	291.2	USA	337.5	USA	375.0
Russia	60	Russia	80	China	100
Japan	45.6	China	71	Russia	90
China	42	Japan	50	Japan	70
France	35	France	43.5	France	50.8
UK	34.6	UK	40.4	India	47.3
Germany	28.8	Germany	38.5	UK	45.5
Saudi-Arabia	18.7	India	34.5	Germany	45.5
Taiwan	17.6	Saudi-Arabia	29	Saudi-Arabia	33
India	14.7	Taiwan	21.6	Taiwan	26.3

- Military spending levels will remain high in Europe, despite stabilising trends in recent years. In Eurasia overall, spending is low but manpower levels are high. Russia still maintains 1.2 million troops. Altogether, more that 2 million troops are under arms in Eurasia.
- In comparative terms, manpower levels are high, while spending levels are low in the Greater Middle East and South Asia. This low spending slows the pace of modernisation in both places, but limited funds for new conventional weapons provide an incentive for acquiring WMD.

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[255] JDCC, *Strategic Trends – 1st Edition,….* Page 8-4.

- In Asia, manpower and spending levels are higher than commonly realised. China, Japan, the two Koreas, and other countries maintain large forces. Although Asia, and Taiwan are today's obvious flash points, but they are not the only places where violence and war are a threat. Spending is about 75 % that of Europe's, where as Asia's military manpower doubles Europe's. If Asia's wealth increases, this may permit larger defence budgets and faster modernisation.
- In Africa and Latin America, troop levels and budgets are low relative to population sizes and geography. Most militaries are used for civil control, rather than external operations, and do not have modern equipment. Nevertheless, light infantry weapons can inflict great damage, as has been seen in recent intrastate conflicts.

Military and defence technology developments

255.   Advances in military technology are likely to lead to wider development and employment of electromagnetic and blast effect weapons by 2015.[256] The development of Lasers, High Power Microwave (HPM) weapons, Charged Particle Beams Weapons (CPBW), Antimatter Particle Beams (APBS), seem to coincide with early years of 21st century. The unique ability of lasers and microwaves to reach targets at the speed of light will eventually revolutionise warfare, although significant technical advancement is required before they reach their potential. These weapons can burn out radar receivers, disable electro-optic sensors (including the human eye) or intercept ballistic missiles in boost phase. The speed-of-light attack and fast destruction of targets, characteristic of Directed Energy Weapons (DEWs), are helpful in defeating targets such as theatre ballistic missiles before they can deploy defence-saturating sub munitions and to allow these weapons to operate effectively against multiple threats. Advances in power sources will provide DEWs with larger magazines, providing a greater number of engagements.[257]

256.   Despite multilateral regulation it will be increasingly hard to control key technologies. Diffusion, collaboration, and leakage will probably lead to a widening number of military and non-state actors accessing advanced military technologies.[258]

Militarisation of space

257.   Space is fundamentally different as it is a global environment with no boundaries and where there is an absolute freedom of movement. These aspects make it an essential part of any strategy. Space applications can be used in addition to or as a substitute for other resources for situation evaluation, intelligence, operational control and crisis management. Space applications provide top-ranking civil and military officials with the information required to

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[256] JDCC, *Strategic Trends – 1st Edition…* paragraph 3.19
[257] Hillaby, Bill, *Directed Weapons Development and Potential*.
[258] JDCC, *Strategic Trends – 1st Edition…* paragraph 3.2

conduct a security and defence policy. They can also multiply the effectiveness of military resources, which can make a decisive difference in terms of military power.[259]

258.   Developments in space technology and, particularly, reducing launch costs, resulting from miniaturisation, scramjet propulsion, as well as economies of scale and reliability, are likely to make this environment much more accessible. Near Earth space exploitation will continue to be commercialised at a rapid pace. Much of the growth in the industry will be in the satellite services sector arising from the commercial acceptance of broadband telecommunication services, mobile location devices, and remote sensing services.[260]

259.   The US military will retain its overall lead in space exploitation but space is likely to be exploited by the militaries of several other countries and the traditional military monopoly on surveillance will be closely matched by commercially operated systems. It is judged that space will become more contested militarily. The militarisation of space has so far concentrated on sensor and communication systems rather than purely offensive ones. This could change if US, or other country programs, expand into space-based weapons systems (DEWs) and are better funded. Opponents may in turn attempt to develop their own anti-satellite capabilities to offset any perceived disadvantage.[261] Competition over unequal distribution of radio frequencies and geostationary positions could lead to conflicts.[262]

Precision weapons and delivery systems

260.   Technological advances will continue the trend towards weapons having increased range, autonomy, precision and lethality, and a wide range of delivery systems. More precisely, weapons will fly at longer ranges and at higher velocities (in the hypervelocity regime), where novel propulsion technologies will be needed. Automatic target acquisition and recognition capabilities will be aboard the missiles and they will be equipped with communication links and integrated to the battle space for battle damage information and assessment. Autonomous unmanned vehicles (for the air, land as well as underwater environments) will be used, as precision weapons for future missions deemed too dangerous for conventional systems.[263]

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[259] French Chief of Armed Forces Staff (Chef d'Etat-Major des Armées - CEMA) and French Armament Procurement Agency (Délégation génerale pour l'armement – DGA), *The 30 Year Prospective Plan*, June 2005.

[260] JDCC, *Strategic Trends – 1st Edition…* paragraphs 3-60 - 3-65.

[261] Ibid.

[262] CEMA, DGA, *The 30 Year Prospective Plan*, page 6.

[263] Defense Research and Development Canada, *Technology Investment Strategy 2002 for The Evolving Global Security Environment.* [http://www.drdc-rddc.gc.ca/researchtech/tis/activ4_e.asp - precision]

Future Operations and Military Trends

Future Operations

261.   Many countries are leaving behind the bipolar era and beginning to shape their defence postures for a new era that is more fluid and complicated. It brings with it new military technology and doctrine. Some countries are thinking multilaterally, like Europe and the EU, but outside Europe, many are thinking in strictly national terms.[264]

262.   Most great powers are downsizing their nuclear arsenals. At the same time they are pursuing stricter arms control and non-proliferation mechanisms. However, some countries have in the past and some may still be selling technological components and missiles to those seeking WMD in order to obtain hard currency.[265]

263.   Population shortfalls will constrain most of western armed forces as their recruiting pool shrinks and competition increases. New technologies, complex scenarios (physical-social-informational), and irregular adversaries will lead to smaller, high readiness and capability based armed forces with more accurate and sophisticated weapons, doctrine and tactics.

264.   After 2015, an important driver of change in military operations is likely to be the increasing dominance of unmanned capabilities. Remotely controlled systems with humans in the loop but out of danger are likely to become prevalent in all environments for advanced militaries by 2015. Fully autonomous capabilities with no-one in the loop and independent tactical decision making and engagement capabilities are likely to become possible by 2030. The associated reduction in risk could offer the temptation of an earlier resort to force for those possessing these capabilities. Their effective employment would require significant changes in both political and military ethos and structure.[266]

265.   A trend over the last decade is the use of combined (or multinational) forces[267] and participation by NATO and other nations in coalitions.[268] The use of combined forces has also involved NATO Partnership for Peace (PfP) nations. These operations are demanding when assessing standardisation and interoperability. Use of combined forces and coalitions is likely to expand in the future and will involve a greater array of actors than at present, such as

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[264] INSS, *"Strategic assessment 1999",* chapter 4, page 57.
[265] Ibid, page 59.
[266] ACT, LTRS *Baseline Paper*, page 52.
[267] Combined force: A force composed of elements of two or more nations. Allied Administrative Publications (AAP), *AAP-6: NATO Glossary of Terms and Definitions*, January 2006, page 2-C-7.
[268] Coalition: a temporary alliance of distinct parties, persons, or states for joint action. Merriam-Webster Online, retrieved 7 Aug. 2006.

international organisations, regional supra-organisations, nation-states, NGOs, local leaders, multi-national corporations, special-interest groups, etc.[269] NATO has already adapted and will have to continue to adapt to this reality and expand multi inter-agency coordination. In this complex environment, an enhanced concept for the Civil- Military coordination is needed. As military action alone is insufficient to prevent or resolve current and future crises/conflicts, success in future operations will require enhanced integration among NATO and Non-NATO actors at all levels.

266. Demographic trends indicate that further urbanization of towns and cities will continue, and that future military operations of all types could be expected to have an urban dimension. Furthermore, one can expect urban combat, stabilisation operations and humanitarian assistance operations to be synchronise and conceivably conducted simultaneously.

Rising powers and countries of concern – their military trends

267. The rising powers China, India, and Russia have earlier been discussed by the economic, social and developmental trends. The countries of concern North Korea, Iran and Syria have been evaluated by their potential threats. In this paragraph we will take a look at their possible military development.

268. Whether co-operative or competitive, *China* will focus heavily on investment in and development of her military capabilities. Currently China has 2,255,000 personnel under arms and reserve forces numbering 800,000.[270] She will wish the People's Liberation Army (PLA) to be capable of defeating other regional powers on the periphery of Chinese territory, and to present a credible deterrent to outside military forces considering intervention in support of her regional adversaries. Achieving this aim will involve: improving deployability and sustainability; raising standards of professionalism across all services; and enhancing existing capabilities in power projection, deep-strike, INFO OPS and CNO, including the acquisition of laser-assisted weaponry used to attack satellites.[271]

269. With increased demand for resources the protection of shipping lanes will be a key impetus in the development of Chinese military capability. This is particularly true of the energy domain: by 2025 95 % of her oil and gas imports will be sourced from the Middle East. Therefore, China will pour resources into the development of the maritime component, acquiring carrier, tanker and airborne warning and control systems (AWACS) capability and strengthening command and control (C2), aerospace and joint structures. Enhanced capabilities in these areas will allow her not only to guarantee the security of her imports, but also enable her to conduct sea-denial operations, both in the South

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[269] Joint Forces Command, United States, *The Joint Operational Environment – Into the Future,* Coordinating Draft, January 2005, pages 39-40.
[270] The International Institute for Strategic Studies (IISS), *The Military Balance 2005–2006,* page 270.
[271] ACT, LTRS, *The World in 2025 – A Global and Regional Review…*, page 24.

China Sea, and elsewhere. This ability to deny other states access to regional waters is likely to be considered a significant threat both by NATO and others.[272]

270.   Despite large-scale investment and development, her 2025 conventional capabilities should not be overestimated. China will be limited by shortcomings in professionalism and technical skills, and the military ethos will continue to be based on quantity rather than quality. The likely state of Chinese military forces overall will remain mediocre and lagging behind the most advanced global militaries, but will be peppered with pockets of excellence, where training, technology and professionalism have combined to create premium-quality, world-class military forces.[273]

271.   Enhancements in the ground forces are concentrated on amphibious, SOF and airborne formation. In particular, a second Airborne Army may be formed, whilst the first Airborne Army is receiving a new type of armoured vehicle, which can be dropped by parachute. Currently, China is due to receive more aircraft from Russia, in particular *Su-30 MKK Flanker* FGA and *Su-27 Flanker* fighter aircraft (FTR). In addition China is due to acquire more amphibious assault ships, fast attach craft, two *Project 965EM* missile destroyers, eight new Russian *Kilo-class* patrol submarines (SSKs) equipped with *Club-S* (*SS-N-27 Sizzler*) ASCM (range 220-300 km – payload 200 kg).[274]

272.   In the nuclear domain, China will excel. It is assessed that China already has closed the gap with the most advanced global nuclear powers, achieving parity with the US and possessing missiles with ranges of 8,000 km (*CSS-9 / DF31* IRBM) and 12,000 km (*CSS-X-10 / DF-41* ICBM).[275] She is likely to have fielded a new nuclear powered attack submarine (SSN) *Type 093* and should be considered on an equal strategic footing.[276]

273.   By 2010 China will have deployed a space-based surveillance system made up of a combination of radar imaging, signal intelligence (SIGINT) gathering, photographic and high-resolution imagery satellites. Within a two-year timeframe, it is expected that China will launch eight new surveillance satellites, four *HJ1A/B* electro/optical and four *HJ1C* radar satellites.[277] It is expected that China's theatre ballistic missiles (TBM) already include the *CSS-5* (*DF-21 / 21A*) missile (range 2,150 km *DF-21A* - payload 600 kg warhead with a nuclear capability believed to be 250-500 KT). This mobile system is launched from a transporter-erector-launcher (TEL) vehicle. Terminal guidance will be added to the missiles and the variety of warheads will be widened to include fuel air explosives. Reportedly, China has also tested a submarine-launched ballistic missile (SLBM) in 2005. The *Ju Lang-2* missile, which is believed to be the sea-

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[272] ACT, LTRS, *The World in 2025 – A Global and Regional Review…*, page 24.
[273] Ibid, page 24.
[274] The International Institute for Strategic Studies (IISS), *The Military Balance 2005–2006,* pages 259-260.
[275] IISS, *The Military Balance 2005–2006,* page 310.
[276] ACT, LTRS, *The World in 2025 – A Global and Regional Review…*, pages 24-25.
[277] IISS, *The Military Balance 2005–2006,* page 259.

launched version of the *CSS-9*, was said to have achieved an estimated range of 8,000 km.[278] China is also taking active measures in relation to Missile Defence countermeasures that include saturation missile strikes, manoeuvrable warhead re-entry vehicles and on-board electronic jammers. China is also building a range of new land attack cruise missiles.[279] As earlier stated in the paragraph on defence spending, China may be the second largest spender by 2030. China is expected to increase its spending from $ 42 Billion in 2000 to $ 100 billion by 2030.

274.   Currently *India* has 1,325,000 personnel under arms and reserve forces numbering 1,155,000.[280] In August 2004 India carried out the third flight test of the *Agni II* medium-range (2,000 km – payload 1,000 kg) ballistic missile. The first test of the long range *Agin III* missile (estimated at 3,000 km – payload unknown). The missile was first test fired on 9 July 2006, but the missile failed to fully meet mission objectives. The root cause can be fixed with relatively simple modifications and follow on test flights scheduled for first quarter of 2007. Initially just 3 missile tests were planned before entering service in 2008, but in light of maiden test flight failure more test flights will now be required to prove its robustness[281]. The joint Indo-Russian supersonic (mach 2.8) cruise missile *BrahMos* (range 290 km – payload 300 kg) is already operational in the Indian Navy, and being fitted alongside Russian-origin *Klub-N* (*SS-N-27 Sizzler*) anti-ship subsonic cruise missile (ASCM) anti-ship missiles (range 220-300 km – payload 200 kg) on the *Talwar Class* Guided Missile Stealth Frigates. The air force version of the *BrahMos* is expected to begin testing in 2006, with plan for deployment on the *Su-30 MKI Flanker,* Fighter Ground Attack (FGA). The construction of India's first air defence ship (ADS) has begun. The 37.500 tonne aircraft carrier is planned to be ready in 2012. India is also buying new maritime surveillance aircraft and are licence-producing 140 *Su-30 MKI* multi-role aircraft. They are also looking into purchase of *F-16 / F-18* aircraft and are planning to increase its Special Forces (SOF).[282] As earlier stated in the paragraph on defence spending, China and India will probably see the most significant relative increases in defence spending. India is expected to increase its spending from $ 14.7 Billion in 2000 to $ 47.3 billion by 2030.

275.   Given the "de facto" nuclear weapons status of India and Pakistan, their long-running conflict will remain a concern to the international community. That said, it would not lend itself to external intervention, either diplomatically or militarily. It is anticipated that India will enjoy political stability over the next few years. The opposite is true for Pakistan, whose economic and political situation will continue to deteriorate, although fears of a possible nuclear-armed failed state are exaggerated. For mainly domestic reasons, Pakistan is likely to continue promoting insurgency in the Indian state of Jammu and Kashmir,

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[278] IISS, *The Military Balance 2005–2006,* page 259.
[279] ACT, LTRS, *The World in 2025 – A Global and Regional Review*, page 25.
[280] IISS, *The Military Balance 2005–2006,* page 236.
[281] Bharat-Rakshak, The Consortium of Indian Military Websites, *Indian missiles,* retrieved 19 January 2007. [http://www.bharat-rakshak.com/MISSILES/Agni.html#101]
[282] IISS, *The Military Balance 2005–2006,* pages 228-230.

imposing a serious military and financial burden on India. Both India and Pakistan will actively pursue nuclear weaponisation and ballistic missile development, although the progress will be slowed by its cost.[283] The nuclear stand off between Pakistan and India is likely to endure throughout the period. Although this poses no direct challenge to NATO, the fringe effect is considerable. Both countries are already in the position to export nuclear technology. Those countries anxious to acquire nuclear weapons are likely to court both India and Pakistan and thus, the more Islamic that Pakistan becomes, the more potent the indirect threat to NATO. Already Syria is alleged to have acquired certain WME materials from Pakistan.[284]

But the challenge to NATO is wider than a focus on nuclear capacity. India's economy will become one of the biggest in the world by 2025 and there will be a high degree of global inter-dependence by then. NATO has an interest in preserving the stability and strength of India as, should either be undermined, it would have a ripple effect on the global economy. India poses a much more significant challenge to NATO's current technological dominance. In almost every technology area, India will have the capability by 2025 to emulate the NATO nations in the sophistication and capability of its defence technology.[285]

276.   *Russia* currently has 1,037,000 personnel under arms and reserve forces numbering 20,000,000.[286] The ongoing reform and modernisation within Russian armed forces are looking into introducing professionalisation and to reduce conscription. Russia's ability to maintain her current level of nuclear weapons out to 2025 is doubtful as almost all the systems that were constructed under the Soviet system will have reached the end of their lives before then. Indeed over 58 % of Russia's strategic systems have already reached the end of their planned lives and exist only after expensive extension programmes. The significance for this review is that those nuclear weapons that Russia will possess in 2025 will be those that are procured since the end of the Soviet Union. However the likelihood of Russia being able to afford a *broad* reconstitution of her strategic force structure is, in view of current economic indicators, remote. That said, nuclear weapons are important to Russia in terms of profile, status and psyche and thus it can be expected that the retention of nuclear forces will be accorded a higher priority than other programmes. As the draw-down of strategic missile divisions from 15 to 13 continues, plans to convert the ageing ICBM arsenal by 2010 progresses with the deployment of silo-launched *SS-27 Topol-M* missiles (range 10,500 km). The missiles currently carry a single warhead, but have the capability to carry 3 to 6. It is also reported that flight-testing of the SLBM variant of *Topol-M* (*SS-NX-30*) *Bulava* (range 10,000 km) could be completed soon. The SSBN *Dmitri Donskoy* is undergoing trails after being modernised over a ten-year period to enable it to carry the

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[283] Canadian Defence Staff, Directorate of Defence Analysis, *Military Assessment 2000*, 2003, page 11.
[284] ACT, LTRS, *The World in 2025 – A Global and Regional Review…*, page 19.
[285] Ibid, page 19.
[286] IISS, *The Military Balance 2005–2006,* page 158.

Bulava system.[287] The key programme for Russia is the development of the *Borey* class SSBN as all existing SSBNs will be obsolete by 2025.

277.   An upgrade in strategic TMD capability has begun with the deployment of the *Iskander-M* short-range ballistic missile (SRBM), designed for tactical battlefield use (range 280 - warhead payload 480 kg). Considerable assets are being allocated to developments in space. It is expected that under the new allocation of $ 10.65 Billion for the Russian space program in the period 2006-15, the number of military satellites will increase from 11 to 18 by the end of 2006, thus expanding the military component of the Russian GLONASS orbital navigation system (similar to Global Position Satellite - GPS).[288] The prospects for the bomber element of the forces being modernised are not good. The land-based element will continue to exist. In summary Russia will have a much reduced nuclear capacity in 2025; although there are likely to be fewer launchers, it is expected that most will have multiple independently targetable re-entry vehicle (MIRV) capability.[289]

278.   Russia's military will continue to be focused on protecting the homeland. It will be limited in terms of its capacity to project force and to control the high seas. The military will be challenged by a combination of demographic decline, which will affect its capacity to draft and/or recruit troops. Given the challenges, Russia may attempt to make the transition to a professional army.[290]

279.   In short Russia will present a number of challenges to NATO in 2025; these will stem largely from economic weakness, migration and a surge in organised crime. The security of nuclear material will remain a major concern in order to prevent terrorist groups acquiring it.[291]

280.   Currently *North Korea* has 1,106,000 personnel under arms and reserve forces numbering 4,700,000[292] including SOF with an estimated strength of 100,000 (world's largest) in numbers at least. North Korea possesses the world's fifth largest military and is the most militarised nation in proportion to population (estimated at 22 million). Military spending is $ 5.2 billion or 22.9 % of North Korea's GDP. Around 70 % of North Korea's army is deployed within 65 km of the Demilitarised Zone (DMZ). Overall, the effectiveness of the North Korean conventional forces is questionable. The majority of its tanks, for example, were acquired from the now defunct Soviet Union (Russian T-54 and T-55 tanks) - many of which are over 50 years old. In addition, visitors to the North claim that it is quite common to find abandoned military vehicles along the roads. A senior

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[287] IISS, *The Military Balance 2005–2006,* page 152.
[288] Ibid, page 152.
[289] ACT, LTRS, *The World in 2025 – A Global and Regional Review…*, pages 12-13.
[290] NIC, *Global Trends 2020 - Russia*, page 8.
[291] ACT, LTRS, *The World in 2025 – A Global and Regional Review…*, page 13.
[292] IISS, *The Military Balance 2005–2006,* page 282.

officer who defected from the Korean People's Army claims that the North does not possess enough fuel for military exercises and soldiers are told not to waste bullets during training.[293]

281.	The Korean People's Army (KPA) inventory consists of among others 3,800 main battle tanks (MBT), 2,270 armoured personnel carriers (APC) and 17,900+ artillery pieces. The DPRK Navy is employed primarily for coastal defence, offensive and defensive mining operations, and in-land support. Intelligence reports indicate that approximately 40 out of the country's estimated 430 combat vessels have the ability to be a viable threat. Included in this assessment are guided-missile ships, which are equipped with *Styx / SS-N-2* anti-ship missiles (ASM) (range 80 km). The DPRK Air Force is comprised of approximately 590 combat capable aircraft; of these 299 are fighter aircraft. Most of the fighters are 1960's era *MiG*s and they have 20 technologically advanced *MiG-29*s. These are competent aircraft, however, due to severe fuel shortages, pilots are limited to less than 10 hours of flight training per year, compared to the 200 to 300 hours that U.S. air-force pilots receive.[294, 295]

282.	The DPRK missile system is cause for great concern to many nations within Asia. While the reliability of these weapons is questionable, the fact that the North possesses between 600-750 ballistic missiles is disconcerting. The land-based system has an estimated range of 2,500 km to 4,000 km, while the range of sea-based are 2,500 km - placing all of Japan, South Korea, and large portions of Russia and China within range of a possible WMD attack.[296]

283.	DPRK ballistic missile systems:[297]

- *No-dong 1* (Ro-dong 1), MRBM, payload single warhead 1,200 kg, range1,300 km, status: operational
- *No-dong 2* (Ro-dong 2), MRBM, payload single warhead, range 1,500 km, status: unknown
- *Scud B* variant (Hwasong 5), SRBM, payload single warhead 985 kg, range 300 km, status: operational
- *Scud C* variant (Hwasong 6), SRBM, payload single warhead 700 kg, range 500 km, status: operational
- *Scud D* variant (Hwasong 7), SRBM, payload single warhead 500 kg, range 700 km, status: operational
- *Taep'o-dong 1* (Moksong 1, Pekdosan 1), MRBM, payload single warhead, range 2,000 km, status: operational

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[293] Martin, Robert W., "North Korean Military Capabilities Conventional Forces", *About*, retrieved 9 August 2006.
[294] Ibid.
[295] IISS, *The Military Balance 2005–2006,* pages 282-284.
[296] Martin, Robert W., "North Korean Military Capabilities Conventional Forces", *About*, retrieved 9 August 2006.
[297] The Claremont Institute, MissileThreat.com, *Ballistic Missiles of The World – North Korea*, retrieved 9 August 2006.

- *Taep'o-dong 1* SLV, payload single warhead, range 5,000 km, status: under development
- *Taep'o-dong 2*, (Moksong 2, Pekdosan 2), ICBM, payload single warhead, range 6,000 – 9,000 km, status: under development.

284.	North Korea has an estimated 13,000 artillery sites stationed in secure bunkers, many of which are aimed at targets in and around the South Korean capital, Seoul. Indeed, the presence of such a large force is seen by many as a significant threat. U.S. officials believe every fourth round has a chemical tip; the artillery arm of the DPRK military could inflict a considerable amount of casualties upon the population of South Korea.[298]

285.	*Iran* currently has 420,000 personnel under arms and reserve forces numbering 350,000.[299] In view of its economic growth, Tehran strives to modernise its armed forces in the longer term. Especially air defence systems, aircraft and tanks are to be ordered from Russia. Currently, Iran has around 1,500 middle-aged tanks, a huge number of artillery systems (2,300), and 900 rocket launchers. A few anti-tank systems, an obsolete air defence, and an outdated air force are of little value.[300]

286.	Of the active armed forces, some 220,000 of this total are 18-month conscripts that receive limited training and have marginal military effectiveness. The reserves receive negligible training and Iran lacks the equipment, supplies, and leadership cadres to make effective use of such reserves without months of reorganisation and training. Iran's military manpower problems are shaped by a number of factors. Iran divided its armed forces into regular and revolutionary components, following the revolution in 1979, creating a split between the regular forces that existed under the Shah, and the Revolutionary Guards installed during the rule the Ayatollah Khomeini. This split has been reinforced by a highly compartmented or "stove piped" military forces force, which have only made limited progress in joint warfare. Military training is often subject to political problems and many large-scale exercises do more to "posture" to Iran's neighbours than create effective forces. The combat-trained military personnel Iran developed during the Iran-Iraq War have virtually all left service. Iran is now a largely conscript force with limited military training and little combat experience. The deep divisions between "moderates" and "hard-liners" in Iran's government have inevitably politicised the armed forces, which remain under the command of the supreme religious leader, the Ayatollah Khamenei.[301]

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[298] Martin, Robert W., "North Korean Military Capabilities Conventional Forces", *About*, retrieved 9 August 2006.
[299] IISS, *The Military Balance 2005–2006,* page 188.
[300] International Network of Engineers and Scientists Against Proliferation (inesap) *Military Capabilities in the Near and Middle East*, Bulletin 21 – Non-Proliferation and Preventive War, Feb 2006, (By Christian Mölling and Götz Neuneck), retrieved 8 August 2006.
[301] Center for Strategic and International Studies (CSIS), *The Gulf Military Forces in an Era of Asymmetric War – Iran*, Working draft, revised 28 June 28 2006 (By Anthony H. Cordesman and Khalid R. Al-Rodhan), retrieved 8 August 2006, page 27.

287.   US and Israeli experts and politicians warns of an "aggressive program" to develop WMD and ballistic missiles with a range up to 2,000 km. Civilian nuclear projects done in cooperation with China and Russia fuelled speculations that Iran might use its economic power to provide for a nuclear option. In 1992, Moscow and Tehran concluded a treaty on the construction of two nuclear power stations. While Russia hopes for exports of its nuclear technology, the US protests such cooperation because it fears the boosting of Iran's nuclear ambitions. Further concern was caused by the native development of an Iranian ballistic missile *Shihab-3* (range 1,200 km – payload 1,200 kg) to which Russia and North Korea contributed. Moreover, Iran has two versions of *SCUD* missiles, with ranges of 300 and 500 km, respectively. It is also assumed that Iran is capable of producing chemical weapons agents and has constructed at least two production facilities. Allegedly, nerve gas production was taken up in 1994. As to biological weapons, it is believed that Iran can start production of Anthrax and Botulinum toxin if necessary.[302]

288.   The threat analysis by the US intelligence services (NIE 2001) points out North Korea assisted Iran in building long-range missiles. The similarities between the *Shihab-3* and the *Nodong* missile seem to support this claim. The partly civilian launch platforms under development *Shihab–4* (range 4,000 km)*, –5* (range 4,000 km), and *–6* (estimated range 6,000 km – payload estimated 500 -1,000 kg) show remarkable similarities to North Korean missile projects.[303]

289.   Currently *Syria* has 307,600 personnel under arms and reserve forces numbering 354,000.[304] Like many other armies in the region, the Syrian armed forces have to cope with a serious modernisation crisis. Equal in numbers to the Israeli forces, their weapon systems (3,700 cannons, 500 rocket launchers, 4,700 tanks) are outdated. A modern air defence is lacking, and air force equipment is not combat-ready (approx. 600 fighter jets).[305]

290.   In order to understand Syrian forces, it is necessary to understand that Syria first created a vastly inflated force structure with Soviet aid after 1973, and then sought military parity in force numbers with Israel after 1982. It was never able to match its force numbers with adequate manpower quality, however, and the fall of the Soviet Union deprived it of the arms aid and arms loans necessary to sustain its force numbers. Syria also made little effective use of the aid it received during the Gulf War, wasting most of it on adding to its armoured force and air force numbers, rather than improving overall force quality.

291.   According to the CIA, Syria reports annual defence expenditures of under $1 billion a year, although this almost certainly badly understates actual spending. This is equivalent to roughly 6 % of its GDP. There are no reliable

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[302] International Network of Engineers and Scientists Against Proliferation (inesap) *Military Capabilities in the Near and Middle East*, Bulletin 21 – Non-Proliferation and Preventive War, Feb 2006, (By Christian Mölling and Götz Neuneck), retrieved 8 August 2006.
[303] Inesap, *Military Capabilities in the Near and Middle East*, retrieved 8 August 2006.
[304] IISS, *The Military Balance 2005–2006,* page 209.
[305] Inesap, *Military Capabilities in the Near and Middle East*, retrieved 8 August 2006.

data on the break out of Syrian military expenditures, but it is clear than Syrian force modernisation has lagged badly behind Israel for more than a decade.[306]

292.   The modernisation that has occurred has been badly mismanaged because Syria continues to try to support a force structure at least one-third larger than it has the resources to make effective. Syria also has failed to modernise the training of its officers and relies heavily on poorly trained conscripts. Like many of the forces in the developing world, it lacks an effective cadre of non-commissioned officers and its officers often refuse to do the menial work of NCOs. This combination of inadequate equipment and manpower is not atypical of Arab forces. It is compounded by a static defensive approach to exercises and force planning. The garrison duty in Lebanon has led to widespread corruption in the Syrian military forces. Syrian readiness and maintenance standards are poor, and large amounts of army, air, and naval equipment are not combat-capable, or have limited sustainability in combat.[307]
Child Soldiers

293.   Child soldiers have proliferated in wide areas of South America, Africa and Asia. The UN estimates that at least 300,000 boys and girls under the age of 18 are under arms, and also serving as spies, informants, and couriers in conflicts around the globe. Children are able to use modern weapons, which are light, easy to use yet powerful.[308] The problems associated with Child Soldiers should not be underestimated. In many cases, they have years of combat experience and are more battle hardened than their adult adversaries. They often do not respect the laws of war or follow any specific rules of engagement. Normally they do not take prisoners of war, and if they do, it is usual to kill them for recruit training and motivation. On the other side, adult, professional soldiers initially see child soldiers as they see children in their own cultures – harmless and innocent. Killing children is anathema to them and often has a very debilitating psychological effect on professional combat forces. This trend is firmly established and shows no sign of changing.

POLITICAL TRENDS

294.   Globalisation, growing interdependence and the indivisibility of security has greatly increased the need for the international community to enhance the rules-based system of multilateral co-operation in all spheres of human endeavour. This has been most obvious in the fields of environment and trade but the need for more universal global rules is evident in many fields of social life.[309]

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[306] Center for Strategic and International Studies (CSIS), *If Its Syria: Syrian Military Forces and Capabilities*, April 15, 2003 (by Anthony H. Cordesman), page 2, retrieved 8 August 2006.
[307] Ibid, page 2.
[308] United Nations, Human rights. [http://www.un.org/rights/concerns.htm]
[309] Helsinki process, Globalisation and Democracy, *Mobilizing Political Will*, Friedrich-Ebert-Stiftung (FES) briefing paper, August 2005, retrieved September 19 2006. (By Martens, Jens).

295.	In the last ten years, the concept of global governance that has increasingly prevailed in international political discourse has emphasised the significance of network structures involving state and private sector actors within international politics. Within this new paradigm, the future of international co-operation beyond traditional nation-state multilateralism is seen to be in public private partnerships', or "Global Public Policy Networks" involving various interest groups (the so-called 'stakeholders'). This approach, which is in fact dubbed a "multi-stakeholder approach", is based on the premise that governments cannot overcome growing global economic, social and ecological problems alone but are dependent on the co-operation of the private sector and of civil society.[310]

296.	Far from reducing the role of governments, globalisation has enhanced the need for strengthening and increasing the effectiveness of the role of nation states, governments and the public sector. Whilst recognising the need to extend the role and participation of international and non-governmental organisations in international co-operation, governments will continue to be the primary actors and those who can provide democratic legitimacy to the governance of globalisation.[311]

297.	At the end of the period, states will still be central actors in global politics. However, non-state actors will increasingly affect the context in which states and inter-governmental organisations operate. Interactions between government, business and civil society will grow in intensity and scope.[312]

Internal state politics

298.	Nation-state will continue to be the dominant unit of the global order, but economic globalisation and the dispersion of technologies, especially information technologies, will place enormous strains on governments. Regimes that were able to manage the challenges of the 1990s could be overwhelmed by those of the 2020. Contradictory forces will be at work: authoritarian regimes will face new pressures to democratise, but fragile new democracies may lack the adaptive capacity to survive and develop. With migration on the increase in several places around the world— from North Africa and the Middle East into Europe, Latin America and the Caribbean into the US, and increasingly from Southeast Asia into the northern regions—more countries will be multi-ethnic and multi-religious and will face the challenge of integrating migrants into their societies while respecting their ethnic and religious identities.[313]

299.	Populist themes are likely to emerge as a potent political and social force, especially as globalisation risks to deliver on expanding popular demands and risk becoming state failures aggravating social divisions along economic and ethnic lines. Rising nationalism and a trend toward populism also will present a

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[310] Helsinki process, Globalisation and Democracy, *A Question of Political Will*, Friedrich-Ebert-Stiftung (FES) briefing paper, August 2005, retrieved September 19 2006. (By Martens, Jens).
[311] Helsinki process, Globalisation and Democracy, *A Question of Political Will*, page 24.
[312] EU, *Long Term Vision…,* page 36
[313] NIC, *Mapping the Global Future*, page 73.

challenge to governments. Experts note that a new generation of leaders is emerging in Africa from the private sector; these leaders are much more comfortable with democracy than their predecessors and might provide a strong internal dynamic for democracy in the future.[314]

300.   Part of the pressure on governance will come from new forms of identity politics centred on religious convictions and ethnic affiliation. Over the next 15 years, religious identity is likely to become an increasingly important factor in how people define themselves. The trend toward identity politics is linked to increased mobility, growing diversity of hostile groups within states, and the diffusion of modern communications technologies.[315]

Declining state sovereignty

301.   While much of international law at least until WWII, was developed to reinforce sovereignty, the post war saw how the society of states forged a series of agreements to protect the human rights of their own citizens, a restriction on the authority within the state.[316] Declining state power, or sovereignty, has been in evidence over 50 years and shows no sign of diminishing markedly. The emergence of a whole range of transborder issues from economic globalisation to the environment to terrorism, one of the key discussions surrounds whether the nation-state is obsolete as the best form of political organisation to deal with these problems. Economic and social processes increasingly fail to conform to nation-state borders, making it increasingly difficult for states to control their territory, a central component of sovereignty. What is more, a whole range of private organisations has emerged to infringe on sovereign authority as well. In addition to human rights NGOs, global civil society organisations have emerged around numerous issues. Civil society groups have had a growing, yet uneven, effect on nation-states and international organisations.[317] Governments of democratic states are further constrained or alternatively empowered through trends in the constitutional rights of citizens and by the effects of a global media, which give events elsewhere in the world immediate impact at home. In these circumstances, governments have lost some measure of control and are less able to deliver solutions to their citizens. Frustrated by the inability of governments to govern in their interests, people may well look to other agencies to shape affairs, thus hastening the decline of state sovereignty.

302.   Governments have to act in concert to tackle trans-national problems, such as environmental threats, international crime, weapons proliferation, migration, health and terrorism. As international problems become more pressing for national interests, the need for international solutions will increase. Within NATO, the countries of the EU are likely to consolidate some traditional

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[314] NIC, *Mapping the Global Future*, pages 77-78.
[315] Ibid, page 79.
[316] Brahm, Eric, *Sovereignty: The Concept of Sovereignty - Beyond Intractability,* Conflict Research Consortium, University of Colorado, Boulder, September 2004, retrieved 19 September 2006. (Eds. Burgess, Guy and Burgess, Heidi).
[317] Ibid.

governance functions under regional economic, political and military organisations.

State Interaction

303.   Consolidation of some traditional governance functions under regional economic, political, and military supra-organisations, like the EU, will continue, but the member nation-states will retain significant powers. Other states, such as Belarus and Russia, may join together to form larger states or unions. These regional supra-organisations represent a pooling of sovereignty to achieve more power. Individual nations in regional supra-organisations have the potential to become increasingly powerful, capable of concerted diplomatic, information, military, and economic actions, although economic actions may have lesser impact than today.[318]

304.   International organisations, to include private business organisations, will proliferate and assume some of the powers now held by local and national governments. However, certain international organisations may become obsolete and dissolve, combine into different entities, or fade into obscurity because they are no longer relevant. States will find it increasingly difficult to act unilaterally and will have to be more adept at forming temporary alliances[319] and multilateral arrangements. Otherwise, they will find themselves increasingly isolated, especially as economic zones, such as Europe or the Far East, emerge with power equal to or greater than that of states. Nations will have to either adapt or co-evolve with changes the future will bring.[320]

Supranationalism and Intergovernmentalism

305.   Supranationalism is a method of decision-making in international organisations, where power is held by independent appointed officials or by representatives elected by the legislatures or people of the member states. Member-state governments still have power, but they must share this power with other actors. Furthermore, decisions are made by majority votes, hence it is possible for a member-state to be forced by the other member-states to implement a decision against its will; however, unlike a federal state, member states fully retain their sovereignty and participate voluntarily, being subject to the supranational government only so far as they decide to remain members.

306.   Few international organisations today operate on the basis of supranationalism; the main exceptions are the EU and the South American

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[318] United States Joint Forces Command (USJFCOM), *The Joint Operational Environment - Into the future*, Coordinating Draft March 2005, page 33.
[319] Alliance: in international relations, a formal agreement between two or more states for mutual support in case of war. Contemporary alliances provide for combined action on the part of two or more independent states and are generally defensive in nature, obligating allies to join forces if one or more of them is attacked by another state or coalition (Encyclopaedia Britannica online).
[320] USJFCOM, *The Joint Operational Environment …*, page 34.

Community of Nations, often called supranational unions, as they incorporate both intergovernmental and supranational elements.

307.   Intergovernmentalism is a theory of decision-making in international organisations, where power is possessed by the member states and decisions are made by unanimity. Independent appointees of the governments or elected representatives have solely advisory or implementational functions. Intergovernmentalism is used by most international organisations today.

United Nations (UN)

308.   The United Nations is an international organisation that aims at facilitating cooperation in international law, international security, economic development and social equity. With 192 member states as of 2006, including virtually all internationally recognised independent states, the UN's influence on international politics is significant. After "the United Nations Millennium Declaration (2000), eight goals were agreed by all nations to be achieved by 2015, that commits states to eradicate poverty and hunger, achieve primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS and other diseases, ensure environmental sustainability and develop a global partnership for development.

309.   The UN remains the only forum where all the nations of the world can gather to discuss pressing issues of peace and security. The UN's greatest asset remains its ability to speak as the world's voice, offering legitimacy and guidance on the paths nations follow to solve their problems. The UN will likely play an increasingly central role in international politics in the coming decades. An important milestone was the Report of Secretary General's High level panel on threats, challenges and change "A more secure world: Our shared responsibility" (2004) in which major challenges and threats for the 21st century are addressed but also recommendations for adapting the United Nations to the 21st century; recommendations to change, among others, the Security Council, or the Commission on Human Rights, opened a great debate that will be the challenges for the organisation in the coming years.

310.   Institutions are dynamic entities. The UN is not immune from the external environment in which it operates. Therefore the hope for change and for ensuring that the values embraced by the founders of the UN will endure is not unrealistic in these early years of the 21st century. With new threats that no longer reside within the boundaries of states, the types of international consensus on managing these challenges will be best served among a community of states that shares a common framework of respect for human rights, for the protection of individuals living in their respective states and for a

consensus around values of democracy that know no ethnic or regional limitation.[321]

European Union (EU)

311.   The EU will remain the world's most ambitious and most integrated supranational institution. It will continue to push towards "an ever closer union of the peoples' of Europe" The primary issues will concern its breadth (the number of peoples), its depth (the closeness of their union), and the relation between these characteristics and the consequent implications for its nature.[322]

312.   The EU has never been a fixed entity. It has flourished in the post-war era through a dual process of adaptation and innovation in relation to the international environment. At the turn of the 21st century, the EU needs to face new challenges, most importantly globalisation and its own enlargement. The EU Summit in Laeken recognised this task, where the EU Heads of State or Government adopted a declaration on the future of the EU: the Laeken Declaration. The Declaration recognised that the EU "stands at a crossroads, a defining moment in its existence", and that in this historical juncture, the EU "faces twin challenges, one within and the other beyond its borders". To move forward the debate on these issues, the EU summit decided to establish a Convention to lead the debate on the future of the Union.[323]

The Organization of the Petroleum Exporting Countries (OPEC)

313.   The cartel was formed in 1960 to withstand pressure from major oil companies to drive down oil prices. OPEC controls approximately two-thirds of the world's oil reserves, and provides half of all oil exports and 40 % of oil production in the world. Members of OPEC agree on a production quota, thereby restricting market supply of crude oil. Generally ignored, most member nations produce at capacity, with Saudi Arabia able to withhold its own supply from the market to maintain the quota.

314.   Current members are Algeria (since 1969), Libya (1962), Nigeria (1971), Iran (1960), Iraq (1960), Kuwait (1960), Qatar (1961), Saudi Arabia (1960), United Arab Emirates (1967), Venezuela (1960) and Indonesia (1962). (Indonesia is no longer a net exporter of oil; her membership is under review). The organisation's principal objectives are: To co-ordinate and unify the petroleum policies of the Member Countries and to determine the best means for safeguarding their individual and collective interests; *To seek ways and means of ensuring the stabilisation of prices in international oil markets, with a view to eliminating harmful and unnecessary fluctuations; and provide an efficient*

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[321] Forman, Johanna Mendelson, *Can reform save the United Nations? - Opportunities for creating an effective multilateral body for the 21st century*, WP 40/2005 documents, September 20 2005, retrieved from "The Elcano Royal Institute" September 19 2006.
[322] JDCC, *Strategic Trends*, paragraph 6-33.
[323] European Union, *The Future of Europe*, December 9 2002, retrieved September 19 2006.

economic and regular supply of petroleum to consuming nations and a fair return on capital to those investing in the petroleum industry".[324]

Commonwealth of Independent States (CIS)

315.   The Commonwealth of Independent States (CIS) was created in December 1991. In the adopted Declaration the participants of the Commonwealth declared their interaction on the basis of sovereign equality. At present the CIS unites: Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan and Ukraine. CIS is likely to remain inwardly focused until at least 2015 and collapse will be a more significant security risk to the West than resurgence Russia will probably need ongoing Western economic assistance to maintain economic growth and internal stability. Russia has the potential to enhance its international role with others due to its position as a major oil and gas exporter.[325]

316.   Other important international organisations with the ability to influence regionally or globally future international politics are, among others:

- Organisation for Security and Co-operation in Europe (OSCE)
- North American Free Trade Agreement (NAFTA)
- Association of Southeast Asian Nations (ASEAN)
- Shanghai Cooperation Organisation (SCO)
- African Union (AU)

LEGAL TRENDS[326]

International Law

317.   States will remain the principal guarantors of individual security and welfare, and international law will continue to represent the means by which they formalise their agreements on cooperation and by which they conduct their affairs. The actions of the most powerful states will continue to drive developments in customary international law.[327]

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[324] Organization of the Petroleum Exporting Countries (OPEC), *Background – Objectives*, retrieved September 19 2006.
[325] ACT, *LTRS Base-line paper*, page 18.
[326] This chapter on Legal Trends is based on the text in the JDCC Strategic Trends (1st Edition) paper. The JDCC paper is the *only* FSE paper that ACT has found that discusses legal trends. The chapter have been reviewed by LEGAD ACT and LEGAD JWC.
[327] Also called Public International Law or Law of the Nations.

Resort to Force (*Jus ad Bellum*)[328]

318.   The UN Charter dominates the current legal framework for the use of force. This document can be regarded as the modern manifestation of the Just War Theory.[329] While the UN Charter dominates *jus ad bellum*, there are four issues that are of current importance and which will challenge the Charter's ability to cope with future international circumstances and the United Nations Security Council's (UNSC) intended monopoly of authority in relation to the use of force. First, the future interpretation of the right to self-defence; second, future interpretation of threats to peace and security; third, the future balances between intervention and State Sovereignty and finally, the future effectiveness of the UNSC.

Future Interpretation of the Right to Self-defence

319.   There has long been dispute over the precise meaning of Article 51[330] of the UN Charter. On the one hand, by reference to the inherent right of self-defence, it seems to imply the preservation of the pre-existing customary right of pre-emption or anticipatory self-defence. On the other and, its reference to the need for an armed attack to occur prior to the legitimate use of force in self-defence seems to deny the legitimacy of pre-emptive action. This issue will continue to be disputed over the period.

Future Interpretation of a "Threat to International Peace and Security"

320.   The UNSC has accepted that the internal circumstances of some states can generate threats sufficient to warrant enforcement action under Chapter VII[331] of the Charter. States are no longer at liberty to abuse the human rights of their own citizens without attracting significant international disgrace and risking possible intervention by the international community, particularly Western states.

321.   The international community has accepted a normative shift in customary international law, and there is no evidence to suggest that this process has reached its limit. Nevertheless, there are significant opponents of this development, with key states tending to draw the line at the point at which their own internal activities risk being compromised. From time to time there may be a

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[328] Latin for "Justice to War"; a set of criteria that are consulted before engaging in war, in order to determine whether entering into war is justifiable.

[329] Just War theory, the attempt to distinguish between justifiable and unjustifiable uses of organized armed forces.

[330] Article 51 - Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of this right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security.

[331] Chapter VII - action with respect to threats to the peace, breaches of the peace, and acts of aggression.

break applied to this shift, but over time it seems likely that the international community will impose stricter and stricter limits on the legitimate domestic activities of states.

The Future Balance between Intervention and State Sovereignty

322.   This leads onto the relationship between sovereignty and intervention. The idea of humanitarian intervention has been given an increasing profile in recent years. If states fail to meet their international human rights obligations, can the international community take action to ensure compliance, including resort to military intervention? An examination of the UN Charter would suggest not, given the non-interventionist tone of Article 2. However, the development of human rights law (especially the obligation to prevent the crime of genocide) and evidence of UNSC practice suggests otherwise. Indeed, the UNSC has endorsed the idea of humanitarian intervention on several occasions since the end of the 1980s and it seems likely that it will continue to do so. It was the prospect of a Russian veto that prompted NATO to intervene in Kosovo in 1999 without a specific UN mandate. That intervention prompted debate, with the international legal community at variance over the legitimacy of the action. It is judged that international law will become increasingly permissive about when outside force can be used to intervene in a nation's domestic affairs, if there are strong humanitarian grounds for that intervention.

The Future Effectiveness of UNSC Authority

323.   There is a clear international desire by the UNSC to remain the authoritative source of legitimacy. There is an equally strong desire in the international community that the UNSC act, and be seen to act in a manner consistent with the international community's humanitarian obligations. The more interventionist Permanent Members will continue to determine the best course to obtain a mandate, on a case-by-case basis, but will continue to be criticised if they act without UN authority. It is judged that the UNSC will remain the key multinational clearinghouse for providing international sanction and moral acceptability to acts of war or intervention operations until at least 2015.

Employment of Force (*Jus In Bello*)[332]

The Future of the Law of Armed Conflict

324.   The way force is employed during conflict is principally based on the Law of Armed Conflict (LOAC)[333], which is under constant review and development. The four Geneva Conventions dating from 1949 are the key instruments of the LOAC, but the two Additional Protocols (AP) of 1977 supplemented these. These two protocols expanded the law in relation to both international (AP 1) and

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[332] Jus in bello, law concerning acceptable practices while engaged in war, e.g. the Geneva Conventions.
[333] Also called International Humanitarian Law (IHL) or Law of War.

internal armed conflicts (AP 2).[334] The APs are not as widely agreed as the 1949 parent conventions, with the US in particular withholding its formal support.

325.　The principle of the LOAC's general application to the conduct of hostilities is largely settled. But the LOAC has moved forward with respect to individual accountability (for example in distinguishing between military and civilian targets and proportionality) and limitations on the development and employment of certain types of weapon.[335] These developments have been pushed by case law emerging from the International Criminal Tribunals for Yugoslavia (ICTY) and Rwanda (ICTR), and may develop further through the International Criminal Court (ICC). It is judged that international law will become increasingly restrictive about when military force is appropriate or legal in the period up to 2025.

The Future of Weapons Law

326.　Another issue is the legality of weapons systems, with increasing pressure to limit the use of future weapon systems. Within AP 1 (Article 36) there is a stated requirement for all parties to review the legality of new weapon systems.

327.　The growth of additional international agreements that limit the means of warfare and which can be regarded as a form of arms control will increase. Current examples include: conventions dealing with chemical and biological weapons; the Ottawa Convention on anti-personnel land mines; and further development of the Convention on Certain Conventional Weapons (CCW). Specific issues that are currently running include the legality of various "non-lethal weapons" and the campaign to outlaw weapons that leave potentially lethal residues, in particular air dropped cluster bombs that leave unexploded remnants on the battlefield and cause post-conflict injuries.

328.　In the further future, domestic pressure against the use of imprecise weapons may be translated into calls for legal limitations on their use. Development of effective non-lethal weapons may also stimulate calls for legal limitations on the employment of lethal weapons.

329.　It is assessed that there will be a general trend towards more regulation of the development and use of weapons as well as the traditional focus on their immediate effect. This may see demands to clear battlefields of remnants and to pay compensation to civilian or military personnel affected after the battle.

The Future of International Criminal Law

330.　During the last decade, the international momentum towards the imposition of individual responsibility for international crimes has been significant. The creation, by the UNSC, of the two criminal tribunals for the Former Yugoslavia and Rwanda renewed the debate over the need for an ICC, which

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[334] Additional Protocol 1 (AP 1) and Additional Protocol 2 (AP 2).
[335] To prevent unnecessary suffering or superfluous injury.

culminated in the drafting of the Rome Statute.[336] The subjection of two former heads of state to judicial process (Pinochet through extradition hearings in the UK, and Milosevic at the International Criminal Tribunal for the Former Yugoslavia (ICTY) in The Hague, has also raised the profile of this trend.

331.   The Rome Statute has now attracted sufficient formal support for the ICC to be established, but support for the ICC is by no means universal. By far the most obvious opposition is that expressed by the US who judges that the ICC poses a sufficient threat to US sovereignty, risking individual soldiers or leaders being prosecuted as a proxy for criticism of the US itself. US concerns have been temporarily managed through a recent UN Security Council Resolution and are being pursued via Article 98 Agreements.[337] Whilst the US is opposed to the ICC, it is still in favour of bringing international criminals to justice.

Future Legal Status of International Terrorists

332.   As armed non-state actors, terrorists present different legal issues to states, as they are neither signatories to treaties nor subject to the other rules governing security between states. A key debate will remain whether they should be considered as criminals or combatants. Typically, domestic terrorism has been viewed as a criminal act with the perpetrators dealt with under the domestic criminal law of the states concerned with extradition arrangements between states to facilitate this. The situation becomes more complicated with military action overseas against terrorist groups, with the possibility that suspects involved in international attacks are captured as result of military operations against irregular terrorist forces. US practice is currently treating them as unlawful combatants under international law. This policy is creating considerable domestic and international dissent and may continue to generate complications within the coalition against international terrorism. There may be calls for international agreement on the legal status of international terrorists to clarify their military or civilian status, extradition and rights issues.

Legal Implications for Future International Coalitions

333.   The increasing body of international law, the widening divergence in adherence to it, and the differing interpretation of it between states are likely to complicate further coalition operations. Problems are already evident within NATO in areas such as targeting (with differing views of target legitimacy); the status of captured terrorists (as prisoners of war, criminals, or hostile agents); and the employment of anti-personnel land mines. The extent to which these legal complications have a real impact on coalition operational effectiveness will continue to depend on the gravity of the military situation. Although they will tend to be examined principally in retrospect they may nevertheless obstruct fluent operational decision making during crises. There may be an increasing need

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[336] The Rome Statute of the International Criminal Court (Rome Statute).
[337] Article 98 Rome Statute 1998 – "Cooperation with respect to waiver of immunity and consent to surrender".

therefore to extend the concept of interoperability from its current focus on equipment and doctrine to include legal frameworks.

Developments in the Legal Regime for the Oceans

334.   The legal regime for the oceans was transformed during the 1970s and 1980s as a consequence of the Third UN Conference on the Law of the Sea (UNCLOS III). The resultant UN Convention of 1982 combined vast extensions and enhancements of coastal state jurisdiction with careful preservation of the rights of maritime mobility. The compromise reached, between coastal state aspirations and the desire of the major maritime powers in particular to retain strategic mobility, was agreed by the vast majority of states.[338]

335.   These laws are currently working well, however some challenges still exist. Most states define their maritime boundaries in accordance with the Geneva Convention of 1958, UNCLOS of 1982, which entered into force in 1994. UNCLOS supports the Median Line concept or the principle of equidistance from sovereign coastal baselines. Some states recognise the Sector Line principle. Disputes over maritime border are an issue between many nations and will probably continue to be so over the period. Key future issues in relation to strategic mobility may focus on straits transit and archipelagic passage and with attempts by coastal states to assert excessive and non-economics based rights within Exclusive Economic Zones (EEZs). The latter may become more significant should land-based resource depletion and technical developments make sea floor mineral extraction more viable.

Defence and Security Implications of the Future of International Law

336.   It is unlikely that there will be meaningful progress in the development of independent supranational enforcement mechanisms to force states to obey international law. International law will remain subject to interpretation, with the most powerful Western states providing the will and means to enforce international law on behalf of the international community, at least for the time being. Other states, in particular the least developed and non-state actors, may refuse to comply with its strictures and may increasingly contest claims that the West equates to the international community. International law will become increasingly permissive with respect to when outside force can be used to intervene in a nation's domestic affairs, especially if there are strong humanitarian grounds for that intervention.

Resort to Force

337.   The US, UN and NATO action following 11 September 2001 strengthened the claim to a right to pre-emptive self-defence against states harbouring or sponsoring non-state actors. Anticipatory action against other states will remain

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[338] The US remains outside the formal regime but has accepted the bulk of the Convention as customary law.

more contentious than against armed non-state actors. Other states may use this precedent to justify their own actions.

338. The concept of what constitutes "threats to international peace and security" is likely to widen further to encompass extreme humanitarian crises and terrorism. This, in turn, is likely to provide greater opportunity for the legitimate use of force than hitherto.

339. State sovereignty might become more conditional on the adherence to customary international norms. It is probable that the West will gain mandates to intervene when states gravely breach these norms.

340. UN mandates will remain desirable to underpin Western action. Constructive abstention in the Security Council, and resort to the General Assembly may be advocated as mechanisms to gain mandates more readily. The UNSC will remain the key multinational clearinghouse for providing international sanction and moral acceptability to acts of war or intervention operations over the period.

Employment of Force

341. There will be increasing pressure to expand the scope of weapons law in such areas as imprecise weapons, lethal weapons when non-lethal alternatives are available, directed energy, and blast weapons. The focus on post-conflict effects will continue and may extend to encompass environmental impacts. Throughout the period up to 2030 there will be an increasing trend to seek to hold individuals more systematically to account for war crimes. In the period up to 2015, this will be limited by the current US position on the ICC. The categorisation of terrorists as combatants or criminals may be determined by US precedent in the short term, but may be subject to more systematic international agreement after 2015. Divergent national positions on legal doctrine will increasingly complicate interoperability in coalitions unless harmonisation is sought more systematically.

SECTION VI: REGIONAL TRENDS

"Look to the future, because that is where you'll spend the rest of your life"

George Burns 1896 - 1996

Key Findings

- *Sub-Saharan Africa will continue to be particularly at risk for major new or worsening humanitarian emergencies stemming from conflict.*
- *China and India are likely to emerge as significant economic powers, increasing their military potential, if they choose to develop it.*
- *South Caucasus will remain in flux because of unresolved local conflicts, weak economic fundamentals, and continued negative Russian influence.*
- *The role played by the United States in global affairs remains the most important geopolitical factor shaping the international security environment.*
- *Over the next 2 decades, the Middle East is likely to become less, not more, stable.*
- *The states of North Africa face a troubled economic future.*

SUMMARY

342.   In Africa, differential government performances in implementing economic reform and governance measures will be one of the most important drivers contributing to growing heterogeneity of the region. According to regional experts, Asia will exemplify most of the trends that we see as shaping the world over the period. China and India are likely to emerge as significant economic powers, increasing their military potential, if they choose to develop it. The Northeast Asian security environment has become highly fluid and potentially unstable. China will maintain pressure on Taiwan to rejoin the People's Republic; North and South Korea are likely to remain estranged and potentially in conflict. For the foreseeable future, most Southeast Asian states will be preoccupied with enhancing economic stability.

343.   The southern Caucasus will assume a growing geo-strategic importance for the West, particularly for Europe. As demand for imported energy continues to increase, so will desire for pipeline routes from new central Asian suppliers that reduce dependency on Russia and the Middle East. Russia has the potential to enhance its international role with others due to its position as a major oil and gas exporter.

344.   Like the role of globalisation in world economic affairs, US predominance is so great that its influence is felt in every region of the planet. The role played by the US in global affairs remains the most important geopolitical factor shaping

the international security environment. It is assed that Canada will be a leading player in the Americas after the US, along with Mexico and Brazil. As the "Southern Cone", particularly Brazil and Chile, reach out to new partners in Asia and Europe, Central America and Mexico, along with Andean countries, could lag behind and remain dependent on the US and Canada as their preferred trade partners and aid providers.

345. The Middle East will probably remain a conflict-prone region, riven by deep- running political and ethnical tensions. Peaceful solutions to endemic conflicts in Iraq and Palestine are difficult to imagine, and relations with Iran may well deteriorate further. The development and utilisation of Iranian military might is likely to continue, with the consolidation of power projection and air defence capabilities and the pursuit of enhanced WME capabilities. By the end of the period there conceivably could be 4 - 8 nuclear powers in the Middle East.

346. The states of North Africa face a troubled economic future. The extent of arms proliferation across the region and the effects of this on the strategic environment will prove a significant concern internationally. Terrorism, migration, the threat to energy supplies, the possibility of ballistic missile attack and the large-scale proliferation of nuclear weapons constitute a potent cocktail of threats to NATO.

347. The trends described in this section will have different impacts, depending on region. Each continent / region will therefore face different challenges; those that are assessed to have the *biggest impact*, are therefore examined in this section. This section has primarily been evaluated by economic, social, and developmental trends, as well as presence in the International Political Domain.

AFRICA – SUB SAHARA

348. The profound economic crisis and conditions of scarcity that affect the whole continent will be the most serious challenge over the period. Climate change and water shortages will have a continued and profound impact as there is no evidence of change for the better. Fourteen African countries are subject to water stress or water scarcity, and a further eleven will join them by at the end of the period.[339] With this in mind, the likely impacts of increasing vulnerability in the region over coming decades will include increasing poverty and migration - illegal or otherwise - with millions of people risking their lives to migrate to urban areas and developed regions. Over-exploitation of the environment will continue making it difficult to break the poverty cycle and will increase demands for humanitarian assistance.[340] Greater economic growth will lead to more robust government income. If the leaders of the countries can manage to reverse the current decline, there is at least the possibility to address the other challenges.

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[339] United Nations Environment Programme (UNEP), *Geo 2000 - Water Stress in Africa*, retrieved 15 August 2006.
[340] United Kingdom (UK), Defence Intelligence Staff (DIS), *Climate change in sub-Saharan Africa: triggers for increased instability*, presentation given at the Sub-Saharan Africa policy and defence relation seminar, Nairobi 2006, (by Millar, Keith), retrieved from NSWAN 14 June 2006.

Differential government performances in implementing economic reform and governance measures will be one of the most important drivers contributing to growing diversity and disparity heterogeneity of Africa. To cut the poverty rate in half by 2015 - 2020, a GDP growth rate of 7 % per annum is needed, at the moment this growth rate is only 2.5 %. Therefore, at the end of the period, Africa will increasingly resemble a patchwork quilt with different parts coexisting with each other more because of accidents of geography than similarities in economic, political or social performance.[341]

349.   With regard to the demographic projections in Africa, there are some uncertainties. For instance, if vaccines for malaria and AIDS drugs are developed, they will have *enormous* consequences for Africa. AIDS will become one of the most important problems in Africa. The UN assesses, that more than 80 million Africans may die from AIDS by the end of the period. Up to 90 million people or 10 % of the continent's population could be affected by HIV infection.[342] Therefore epidemics can severely undermine defence forces capabilities, just as they distort civilian worker productivity. By galvanising mass cross-border population flows and fostering economic problems, they can also help create the type of widespread volatility that can quickly translate into heightened tension both within and between states. This combination of military, demographic, and fiscal effects has already been created by the AIDS crisis in Africa and shows no sign of diminishing. Conditions are likely to perpetuate a situation of recurring humanitarian disasters. The area is likely to remain a secondary security concern, but ethical pressure to assist, including military stabilisation operations, will increase. In addition, it can be assumed, that poverty and weak governments will provide roots for extremism to grow and opportunities for terrorists to establish new havens and for organised crime to operate unfettered, as has been evidenced in other areas of the world. Finally, the relationships between terrorists and organised crime groups are coalescing and becoming mutually beneficial and reinforcing.

350.   According to some forecasts, South Africa's economy is projected to grow in the 6 % range over the decade[343] if reformist policies are implemented. Experts disagree over whether South Africa can be an engine for more than southern Africa or will instead forge closer relationships with middling or up-and-coming powers on other continents. South African experts adept at scenario building and gaming see the country's future as lying with partnerships formed outside the region.[344] The most plausible scenario is that Southern Africa begins to look increasingly different from the rest of Africa.

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[341] National Intelligence Council (NIC), *Global trends 2020 - Africa in 2020*, Summary of Discussion by Select Panel of US Experts, January 9, 2004, page 5.

[342] Joint United Nations Programme on HIV/AIDS (UNAIDS), *AIDS in Africa: Three scenarios to 2025*, Press release March 2005, retrieved 15 August 2006.

[343] Global Insights, *Eskom Plans "Mega Power Projects" for South Africa's Growing Economy*, retrieved 14 August 2006.

[344] NIC, *Mapping the Global Future*, page 56.

351.   Sub-Saharan Africa will continue to be particularly at risk for major new or worsening humanitarian emergencies stemming from conflict. Genocidal conflicts aimed at annihilating all or part of a racial, religious, or ethnic group, and conflicts caused by other crimes against humanity - such as forced, large-scale expulsions of populations - are particularly likely to generate migration and massive, intractable humanitarian needs.[345]

ANTARCTICA

352.   The continent covers over 14 million sq. km making it 1.5 times the size of the USA. Antarctica occupies approximately 9 % of the world's land surface and contains over 70 % of the world's fresh water and 90 % of the world's ice. Natural resource exploitation is not allowed in the Antarctic, in accordance with the Antarctica International Treaty[346], although the continent is thought to contain vast amounts of minerals, including gold, nickel, platinum, uranium and chromium, as well as huge oil and gas reserves. The treaty also prohibits any measures of a military nature in Antarctica, such as the establishment of military bases and fortifications, the carrying out of military manoeuvres, or the testing of any type of weapon.

353.   Despite the 1991 Madrid Protocol's 50-year moratorium placed on the exploitation of Antarctica's natural resources, future economic and population pressures could pose significant environmental threats to the continent of Antarctica. The demand for fresh water may make the exploitation of the Antarctic icecap economically viable. An expected and dramatic increase in world demand for energy over the next 30 years may expose the continent to countries and markets looking, or forced to look for alternative petroleum supplies.

ASIA

354.   According to regional experts, Asia will exemplify most of the trends that we see as shaping the world over the period. Northeast and Southeast Asia will progress along divergent paths - the countries of the North will become wealthier and more powerful, while at least some states in the South may lag economically and will continue to face deep ethnic and religious cleavages. As Northeast Asia acts as a political and economic centre of gravity for the countries of the South, parts of Southeast Asia will be a source of transnational threats - terrorism and organised crime - to the countries of the North. The North/South divisions are likely to be reflected in a cultural split between non-Muslim Northeast Asia, which will adapt to the continuing spread of globalisation, and Southeast Asia, where

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[345] NIC, *Mapping the Global Future,* pages 97-98.

[346] Antarctic Treaty Summary - the Antarctic Treaty, signed on 1 December 1959 and entered into force on 23 June 1961, establishes the legal framework for the management of Antarctica. There are currently 42 signatories to the Antarctica treaty. Antarctic Treaty Consultative Meetings govern the continent and decisions are made by consensus (not by vote) of all consultative member nations. Decisions from these meetings are carried out by these member nations (with respect to their own nationals and operations) in accordance with their own national laws.

Islamic radicalism may increasingly make inroads in such states as Indonesia, Malaysia, and parts of The Philippines. Demographic factors will play a key role in shaping regional developments. China and South Korea and other countries in Northeast Asia, will experience a slowing of population growth and an aging of their population over the period. In Southeast Asian countries such as the Philippines and Indonesia, rising populations will challenge the capacity of governments to provide basic services. Population and poverty pressures will spur migration within the region and to Northeast Asia. High population concentrations and increasing ease of travel will facilitate the spread of infectious diseases, risking the outbreak of pandemics.[347]

355.   As discussed in Section II, China and India are likely to emerge as significant economic powers, increasing their military potential, if they choose to develop it. As India's economy grows, governments in Southeast Asia - Malaysia, Singapore, Thailand, and others - may move closer to India to help build a potential geopolitical counterweight to China. At the same time, India will seek to strengthen its ties with countries in the region without excluding China. India is likely to seek a more influential role as regional power on the back of economic growth, the political influence of the second largest population and its increasing military capabilities.[348]

North East Asia

356.   The Northeast Asian security environment has become highly fluid and potentially unstable. China will maintain pressure on Taiwan to rejoin the People's Republic; North and South Korea are likely to remain estranged and potentially in conflict. China and Russia are likely to maintain stable relations.[349] Russia and North Korea are discussed in further details in Section II.

357.   The most likely economic outlook will be that rich societies such as Japan, Korea, Hong Kong, Taiwan, Singapore, and pockets in China and elsewhere - will get richer, with Japan likely to continue to be a leader in science and technology development and applications for commercial use. In contrast, the poor societies like Vietnam, Cambodia, Laos, and rural areas in western China and elsewhere - will fall further behind.[350]

358.   Given considerable uncertainty about the future, Northeast Asia will remain one of the *most heavily armed* regions of the world.[351] In North East Asia, nuclear development will likely to continue to serve as a primary factor in determining regional peace over the period. The resolution of the dispute over North Korea's development of nuclear weapons will have an effect on the future

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[347] NIC, *Mapping the Global Future …*, page 55, paragraph: Asia: The cockpit for Global change?
[348] ACT, *LTRS Base line paper*, pages 20-22.
[349] JDCC, *Strategic Trends – 1st Ed.*, paragraph 6-79.
[350] NIC, *Global Trends 2015*, page 63.
[351] Canadian Chief of Defence Staff (CDS), Directorate of Defence Analysis (DDA), *Military Assessment 2000*, 2003, page 9.

of force in that region, which includes the building of security alliances with key players such as China, Japan, South Korea and the US.

Japan

359.   Japan will become more actively involved in regional security affairs, reflecting the emergence of a perceptibly more dangerous strategic environment, and especially the latent threat posed by North Korea. Japan will maintain its strong defence ties with the US, but it may also seek to plot a more independent security policy in the region. China and other Asian states will remain concerned lest these developments presage Japanese "remilitarisation".[352]

360.   Japan's population will peak by 2006 and then begin to decline.[353] Japan and South Korea's relationships with the Association of Southeast Asian Nations (ASEAN)[354] are to some extent pulled along by China's influence and initiatives, and will continue to be. All three countries have an ongoing interest in ASEAN+3, and will probably move towards a separate North-Asian economic grouping as well.[355] Japan will probably retain the most technologically sophisticated armed forces in East Asia, apart from those of the US. It will revise its constitution to allow it to play an increasingly active role in its own defence.[356]

Southeast Asia

361.   For the foreseeable future, most Southeast Asian states will be preoccupied with enhancing economic stability. Some states like Indonesia, Burma and Cambodia, will face internal challenges of varying degrees of severity and the outcomes will be unpredictable.[357]

362.   The ASEAN framework of consensus and non-interference has precluded concerted multilateral action on economic, political and security issues. In the event of a regional security crisis, it seems doubtful that most states, individually or collectively, will have the political will or capacity to respond forcefully.[358]

Indonesia

363.   Over the course of the period, Indonesia may overcome the crisis of late 90s and revert to high economic growth of 6 – 7 %, which along with its expected

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[352] CDS/DDA, *Military assessment 2000,* page 10.
[353] NIC, *Mapping the Global Future*, page 1.
[354] The Association of Southeast Asian Nations or ASEAN was established on 8 August 1967 in Bangkok by the five original Member Countries, namely, Indonesia, Malaysia, Philippines, Singapore, and Thailand. Brunei Darussalam joined on 8 January 1984, Vietnam on 28 July 1995, Laos and Myanmar on 23 July 1997, and Cambodia on 30 April 1999. The ASEAN region has a population of about 500 million, a total area of 4.5 million square kilometres, and a combined gross domestic product of US $737 billion, and a total trade of US$ 720 billion.
[355] NIC, *Mapping the Global Future,* page 6.
[356] Ibid, page 7.
[357] CDS/DDA, *Military assessment 2000,* page 9.
[358] CDS/DDA, *Military assessment 2000,* page 9.

increase in its relatively large population from 226 to around 250 million would make it one of the largest developing economies. Such high growth would presume an improved investment environment, including intellectual property rights protection and openness to foreign investment. With slower growth its economy would be unable to absorb the unemployed or under-employed labour force, thus heightening the risk of greater political instability. Indonesia is an amalgam of divergent ethnic and religious groups. Although an Indonesian national identity has been forged in the five decades since independence, the government is still beset by stubborn secessionist movements.[359]

364.   Indonesia's size, its huge potential, and its traditional leadership role in Southeast Asia mean that adverse developments there could affect the security of the whole of our nearer region, and beyond. Three issues in particular stand out. The first is the challenge of political evolution through democratisation and decentralisation. The second is the need for wide-ranging economic reforms to put Indonesia back on the path to sustainable growth. The third is the resolution of religious, separatist and other challenges to the cohesion and stability of Indonesia.[360]

South Asia

365.   During 1999 the Indian population reached 1 billion, highlighting the demographic pressures in the region. Unfortunately, generally poor economic management, heavy spending on defence, debt servicing, and prestige projects have reduced investment in health and education, with adverse political, social, and economic consequences – this will persist, with the expected consequences in terms of stability and opportunities for demagoguery in foreign policy. Events in Afghanistan, Pakistan, and some Indian states (including Kashmir) seem to confirm the dangers of religious extremism and its export in South Asia, though its impact on the region as a whole can be exaggerated. Nonetheless, civil violence will remain endemic, even as most countries enjoy political stability and economic growth over the next few years.[361]

366.   Although disadvantaged by its landlocked nature, Afghanistan has traditionally capitalised on its geographic location. Historically a trading nation with a strong private sector, Afghanistan has long served as a trade and transit bridge between three main geographic regions: Central Asia, South Asia, and the Middle East. The extension of inter-regional economic ties can revive Afghanistan's historical role, contributing to its economic recovery. Afghanistan's recent inclusion in the South Asian Association for Regional Cooperation (SAARC)[362] and the adoption of the "Kabul Declaration" on regional cooperation

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[359] NIC, *Mapping the Global Future*, page 54.
[360] Australian Ministry of Defence, *Defence White Paper 2000*, 2000, Chapter 3 - Australia's Strategic Environment.
[361] CDS/DDA, *Military assessment 2000,* pages 10-11.
[362] The SAARC groups seven South Asian countries: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.

at a 12-nation[363] conference in Kabul in early December 2005 can facilitate the resurgence of Afghanistan as the hub of inter-regional economic exchange. A number of supporting projects are under way or agreed-upon, including the construction of the southwest Zaranj-Dilaram highway in Afghanistan that connects the country to the Chahbahar port of Iran, and a multilateral agreement in 2004 between Afghanistan, Iran, Tajikistan, and Uzbekistan on building transit routes connecting Central Asia with the Middle East through Afghanistan. Constructing a projected gas pipeline from Turkmenistan to Pakistan through Afghanistan is another potential opportunity.[364]

367.   At the end of the Bonn Process, Afghanistan finds itself at a crossroads. Continued international security and economic assistance, for at least *ten more years*, and sustained domestic leadership for reform will enable the country to build on achievements made during the past four years, and enable it to become a success story in the region. The other option is for the country to slide back into the difficult past of instability and tension

368.   Kashmir has been a flashpoint between India and Pakistan for more than 50 years. Currently a boundary - the Line of Control[365] - divides the region in two, with one part administered by India and one by Pakistan. India would like to formalise this status quo and make it the accepted international boundary. But Pakistan and Kashmiri activists reject this plan because they both want greater control over the region. The Kashmir region continues to be a concern, also in the long term.

South Caucasus and Central Asia

369.   Boundaries in the South Caucasus will continue to be disputed, and the threat of civil wars and civil upheavals will persist. However, the next five years may see some resolution of these issues. The Central Asian states are likely to continue on their paths as reasonably stable countries, but with an exaggerated potential for Islamic radicalism being used to justify authoritarian rule.[366]

South Caucasus

370.   South Caucasus will remain in flux because of unresolved local conflicts, weak economic fundamentals, and continued negative Russian influence. Georgia probably will have achieved a measure of political and economic stability, fuelled in part by energy transit revenues, but it will remain the focus of Russian attention in the region. Armenia will remain largely isolated and is likely

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[363] The ministerial meeting was attended by delegations from Afghanistan, China, the Islamic Republic of Iran, Tajikistan, Uzbekistan, Turkmenistan, Pakistan, India, Turkey, the United Arab Emirates, Kazakhstan, and Kyrgyzstan. Representatives from the World Bank, Asian Development Bank, G8, and NATO also participated.
[364] Jalali, Ali A., "The Future of Afghanistan", *Parameters*, Spring 2006, pages 4-19, retrieved 16 August 2006, page 17.
[365] The ceasefire line after the 1947-48 war.
[366] CDS/DDA, *Military assessment 2000,* page 7.

to remain a Russian or possibly Iranian client and, therefore, a regional wild card. Azerbaijan's success in developing its energy sector is unlikely to bring widespread prosperity. Baku will be a one-sector, energy economy with pervasive corruption at all levels of society.[367]

371. The southern Caucasus will assume a growing geo-strategic importance for the West as well, particularly for Europe. As demand for imported energy continues to increase, so will desire for pipeline routes from new central Asian suppliers that reduce dependency on Russia and the Middle East. The southern Caucasus seems to provide a more attractive outlet than routes through Russia, Iran or Afghanistan and Pakistan. As with Central Asia, instability will provide opportunities for terrorists and organised crime.[368]

Central Asia

372. Central Asian states are weak[369], with considerable potential for religious and ethnic conflict over the period. Religious and ethnic movements could have a destabilising impact across the region. Central Asia is likely to become more differentiated despite the fact that demographic counter forces - such as a dearth of manpower in Russia and western Eurasia[370] and an oversupply in Central Asia - could help pull the region together. Moreover, Russia and the Central Asians are likely to cooperate in developing transportation corridors for energy supplies.

373. Central Asian countries - Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan - face the stiff challenge of keeping the social peace in a context of high population growth, a relatively young population, limited economic prospects, and growing radical Islamic influence. Allowing more emigration could help alleviate these pressures in Central Asian countries.

EUROPE

374. Primarily, Europe faces a demographic problem: the aging of the population and decreasing fertility rates. The former has been thought to raise special problems as the populous baby boom generation nears the age of retirement. There are some worries, that this could lead to the un-sustainability of the welfare state and possibly to no or very slow growth.[371] The military aspect of a decreasing population is that it will be increasingly difficult to find young men who are able to take the stress of military life, inclined to join the services or can be offered the right incentives in competition with industry.[372]

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[367] NIC, *Global Trends 2015*, page 69.
[368] ACT, *LTRS Base-line paper*, page 17.
[369] NIC, *Mapping The Global Future*, page 74.
[370] Eurasia is the landmass composed of Europe and Asia, mostly in the eastern and northern hemispheres.
[371] ACT, *LTRS Base-line paper*, page 15.
[372] Ibid, page 15.

375.   Bosnia, the Former Yugoslavia, the Former Yugoslav Republic of Macedonia (FYROM)[373] and Albania are likely to remain broadly stable to 2015, given continued political, economic, and security support from the West. But inter-ethnic tensions will be suppressed rather than resolved, and the risk from organised crime will remain in the absence of strong local governance.[374]

376.   An expanding EU may inherit boundary disputes in the further future, such as those of Moldova or Romania. Any form of significant conflict in Europe will be seen as unacceptable, and draw significant Western intervention.

377.   The European homeland will probably remain relatively safe between now and 2025. A massive military attack against one of them remains highly unlikely. In contrast, instability may grow on the Union's eastern borders, in particular if enlargement continues.[375] The main threat to the European homeland and the security of its citizens will probably come from (catastrophic) *terrorism* and potentially *epidemics*. Given the growing vulnerability and interdependence of modern societies, both could cause cascading effects and have a major impact, even if the total number of casualties were limited.[376]

378.   Immigration is not expected to increase dramatically. However, the total number of immigrants in European societies will continue to grow steadily (12-14 million newcomers over 20 years, on top of those already living in the EU, plus second- generation immigrants). Major efforts will thus be required to improve integration and ensure social cohesion. On the other hand, the demand for a skilled workforce in Europe may lead to further brain drain in the developing world and have destabilising effects in migrants' countries of origin.[377]

379.   With 4,000 organisations comprising tens of thousands of members and an even bigger grey zone of (IT, scientific and financial) "professionals" and facilitators in Europe alone, organised crime is already a major security threat. In the future, criminal organisations are expected to exploit both economic and technological aspects of globalisation to form even larger networks across national borders and diversify "portfolios" of illicit activities (illegal migration and trafficking in human beings, drug trafficking, money laundering, etc.). Particularly dangerous is the possibility of organised crime infiltrating politics and public services.[378]

380.   While energy demand in the EU area will continue to grow (about +13 %) by 2025, it will do so at a slower rate than in the past (and less than in the US). Should current trends persist, the European Commission foresees that: "the total energy picture in 2030 will continue to be dominated by fossil fuels: 38 % oil, 29

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[373] Turkey recognises the Republic of Macedonia with its constitutional name.
[374] ACT, *LTRS Base-line paper*, page 15.
[375] EU, ISS, *Long Term Vision (Stand One)…*,page 40.
[376] Ibid.
[377] Ibid.
[378] Ibid.

% gas, 19 % solid fuels (coal), 8 % renewables and barely 6 % nuclear energy".[379]

381. Dependence on energy *imports* will grow (from current 50 % to 70 % in 2030), with 90 % of oil and 80 % of gas being imported in 2025. OPEC, and in particular Saudi Arabia, Iran, Iraq and Algeria, are expected to provide over 80 % of the EU's oil needs (currently 45 %), while the remainder will come from Norway and Russia. Gas imports are expected to come mainly from Russia (60 %), followed by Norway and Algeria.[380] The gas imported to Europe is mainly piped gas.[381, 382] The pipelines from Asia, North Africa, Russia and the North Sea to Europe are vulnerable, a recent example being the Russian-Ukrainian gas dispute in 2005. However, the growing use of Liquefied Natural Gas (LNG)[383] could help to diversify gas imports, with countries such as Qatar and Egypt as suppliers.[384] The LNG import is expected to increase considerably by 2020[385, 386], transported mainly by sea.

382. Russia, Iran and Qatar together[387] contain over 55 % of the world's proved gas reserves.[388] Some of Russia's greatest deposits are located at the borders of NATO. One of the world's biggest deposits, the Shtokman (Shtockmanovskoye) gas condensate deposit in the Barents Sea, is assessed to contain gas reserves of 3.2 trillion m³, with another 31 million ton of condensate.[389] The total natural gas reserves of the Barents Sea are estimated at about 100 trillion m^3.[390] Together with the Barents Sea, the North Sea will be of great importance to Europe's future growing gas demands.

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[379] EU, ISS, *Long Term Vision (Stand One)…*, page 18.

[380] Ibid, page 18.

[381] Piped gas import, ~ 170 Billion m^3 in 2004, expected to rise to 310 Billion m^3 in 2020.

[382] Pfaff, Dieter (Vice-President, Gas Supply Policy Division E.ON Ruhrgas AG), *Options for Mitigating Short-Term Gas Supply Disruptions, Industry Perspective*, presentation IEA Gas Security Workshop, Paris, June 12, 2006.

[383] LNG is natural gas that has been processed to remove impurities and heavy hydrocarbons and then condensed into a liquid at almost atmospheric pressure by cooling it. LNG is transported by specially designed cryogenic sea vessels and cryogenic road tankers; and stored in specially designed tanks. LNG is about 1/614th the volume of natural gas at standard. temperature and pressure (STP), making it much more cost-efficient to transport over long distances where pipelines do not exist.

[384] EU, ISS, *Long Term Vision (Stand One)…*, page 18.

[385] LNG gas import, ~ 45 Billion m^3 in 2004, expected to rise to 100 Billion m^3 in 2020.

[386] Pfaff, Dieter (Vice-President, Gas Supply Policy Division E.ON Ruhrgas AG), *Options for Mitigating Short-Term Gas Supply Disruptions, Industry Perspective*, presentation IEA Gas Security Workshop, Paris, June 12, 2006.

[387] Gas reserves, Russia (47.5 trillion m^3), Iran (27.5 trillion m^3) and Qatar (25.8 trillion m^3). The volume of gas from *Oil & Gas Journal,* Vol. 103, No. 47, December 19, 2005.

[388] Shell International Limited (SIL), *Shell Global Scenarios to 2025 – Global Summary and Excerpts*, 2005, page 31.

[389] Offshore-technology.com, *Shtokman Gas Condensate Deposit*, retrieved 13 September 2006.

[390] Barents, natural resources, *Oil and Gas Resources in Northwest Russia*, retrieved 14 September 2006.

383.   Up until now, power generation in Europe has been based mainly on nuclear energy (35 %) and coal (27 %), with gas (16 %), renewables (15 %) and oil (8 %) being less important. New capacity is expected to be mainly gas-generated. However, the expected decline of nuclear energy (from 15 % to 8.1 % of the total energy mix by 2020) may put in question projections for electricity production, where capacities will have to grow from 600 Gigawatt (GW) today to 800-900 GW in 2020 to meet the demand.[391] Recent trends show a growing public acceptance of nuclear energy, particularly in light of the unstable oil market and price fluctuations.

NORTH AMERICA[392]

384.   Few international affairs experts would challenge the notion that much of the world now lives, as Kupchan suggests: *"in America's unipolar moment"*. Like the role of globalisation in world economic affairs, United States predominance is so great that its influence is felt in every region of the planet. The role played by the US in global affairs remains the most important geopolitical factor shaping the international security environment. It seems entirely reasonable to believe that the 21st century, like the 20th, will indeed be America's century. Given the huge gap in military capabilities between the USA and its allies (and potential adversaries) – at the moment the gap appears to be on the verge of becoming even larger because of unmatched US investment in defence research and development – and based on the probable continuation of American dominance in the global economy, it seems certain that the USA will remain the sole world power for the next two decades and likely beyond.[393, 394]

385.   While the US retains great asymmetric advantages over potential adversaries, especially in the areas of military capabilities, technological acumen and wealth, it remains vulnerable to several forms of negative asymmetry. Weaker states or non-state actors that wish to challenge the US or regard it as an obstacle to some policy or ideological objective must avoid direct confrontations with US forces and look for ways to target American weaknesses. To stand any chance of success, these adversaries must attack US vulnerabilities. Most of these vulnerabilities involve what might be considered the soft underbelly of US strength: its civilian infrastructure or, more broadly, its society.[395]

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[391] EU, ISS, *Long Term Vision (Stand One)…*, page 18.
[392] According to the United Nations geoscheme, the North America region includes the sub-regions Northern America, Central America and The Caribbean.
[393] Canadian Department of National Defence/Operational Research Division, Canada, *Future Security Environment 2025*, September 2003, page 20 and "Table 26: International Comparisons of Defence Expenditures and Military Manpower, 1985, 2000, and 2001".
[394] The International Institute for Strategic Studies, *The Military Balance 2002–2003,* London, Oxford University Press, 2002, pages 332–37. For US defence research and development spending see, ISS, *Military Balance*, pages 240–41.
[395] Canadian DoD, *Future Security Environment 2025*, …., page 27.

386.   North America in general and the US in particular, will remain vulnerable to terrorist attack over this period. Article 5 of the Washington treaty was invoked following the terrorist attacks on 11 September 2001. It is significant because this pivotal decision was not triggered by a border incursion in Central Europe but by an attack on the American homeland. In his State of the Union address to Congress on 29 January 2002 President Bush declared its commitment against terrorism and those who sponsor terrorists: *"Our second goal is to prevent those that sponsor terror from threatening America or our friends with weapons of mass destruction"*. In short the tactical action of 9/11 had a strategic effect much larger than the perpetrators will have imagined. It had a profound effect on the American psyche and is therefore likely to be repeated.[396]

387.   The US will be affected by instability in South America, a region that may remain unstable for the foreseeable future. The whole spectrum of defence technologies can be exploited to counter the threat to NATO (and in particular USA) posed by criminal and terrorist elements within this region. Surveillance is a particularly useful tool, and the capabilities of satellite and aircraft imagery and electronic surveillance will improve markedly over the period. At the same time, computer-processing power will increase so that useful information can be extracted from a deluge of data. Developments in Artificial Intelligence (AI) will allow much of this extraction to be carried out automatically. Developments in computing and information systems, led by the US, should allow interception, decryption and timely interpretation of the sort of mobile telephone and internet traffic commonly used by criminal and terrorist groups. This increasing reliance on surveillance and information technologies increases vulnerability to the use of decoys and sensor-dazzling lasers and the information systems will be vulnerable to CNO.[397]

388.   Advances in biotechnology and nanotechnology will allow the US (and its NATO allies) to address the drugs-related part of this problem at source. Firstly, it might be possible to alter the behaviour of those who have a tendency to consume the illegal drugs, thus reducing or even eliminating the market. Secondly, biological agents will be produced which will selectively destroy the source without damaging food and legitimate cash crops. However in each case the opposite will apply in the hands of an adversary – biotechnology can be used to increase the propensity to drugs misuse.

389.   It is assed that Canada will be a full participant in the globalisation process over the period and a leading player in the Americas after the US, along with Mexico and Brazil. Ottawa will still be grappling with the political, demographic, and cultural impact of heavy Asian immigration in the West as well as residual nationalist sentiment in French-speaking Quebec. The vast and diverse country, however, will remain stable amidst constant, dynamic change. Ottawa will continue to emphasise the importance of education, and especially science and technology, for the new economy. Canada also will promote policies designed to

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[396] ACT, LTRS, *The World in 2025 – A Global and Regional Review*, page 39.
[397] ACT, LTRS, *The World in 2025 ….*, pages 40-41.

stem the flow of skilled workers south and will seek to attract skilled immigrants, especially professionals from East and South Asia, to ensure that Canada will be able to take full advantage of global opportunities.[398]

390.   Canada's status as the pre-eminent US economic partner will be even more pronounced at the end of the period. National sensitivity to encroaching US culture will remain, even as the two economies become more integrated. Ottawa will retain its interests in the stability and prosperity of East Asia because of growing Canadian economic, cultural, and demographic links to the Pacific region. As additional trade links with Latin America are developed through the North American Free Trade Agreement (NAFTA) and a likely Free Trade Area of the Americas, Canada increasingly will take advantage of developments in the Western hemisphere.[399]

391.   Pervasive throughout the discussions of the future of Mexico at a recent forum, was a sense of a loss of well-being and happiness in Mexican society, combined with a lack of faith and the absence of a vision for the future. Two main areas were identified as targets for action: the economy and education. The forum noted that Mexicans' lack of faith in the future is not pessimism, rather it is a realistic response: In the last 20 years, Mexico has seen no development and no true generation of employment.[400]

392.   In a recent study of Latin America,[401] it is contended that global changes over the next 15 years could deepen divisions and serve to split Latin America apart in economic, investment, and trade policy terms. As the "Southern Cone", particularly Brazil and Chile, reach out to new partners in Asia and Europe, Central America and *Mexico*, along with Andean countries, could lag behind and remain dependent on the US and Canada as their preferred trade partners and aid providers.[402]

OCEANIA[403]

393.   Australia and New Zealand were strongly influenced by developments in the west and have created prosperous economies. Papua New Guinea is beginning to recreate its infrastructure and commercial sector after a nine-year war ended in 1997. The economies of the Pacific islands are mostly based on the fishing and tourism industries. The majority of the residents live in traditional

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[398] NIC, *Global Trends 2015*, pages 76-78.

[399] Ibid, page 78.

[400] University of California, Berkeley's Center for Latin American Studies, the Boalt Hall School of Law and Fundación Azteca, *Pensar México forum*, April 4 - 8, 2005. (By Alejandro Reyes-Arias), retrieved 13 September 2006.

[401] Latin America, countries of South America and North America (including Central America and the islands of the Caribbean) whose inhabitants speak a Romance language, Encyclopædia Britannica.

[402] NIC, *Mapping The Global Future*, page 74.

[403] Australia, New Zealand, Papua New Guinea, eastern part of Indonesia, East Timor as well as the thousands of coral atolls and volcanic islands of the South Pacific Ocean, including the Melanesia and Polynesia groups and Micronesia.

villages with fewer than 100 people. Moderate temperatures boost the thriving tourism sector, which can account for more than 50 % of GDP for some countries.[404]

394.   Australia, New Zealand and Papua New Guinea share the Southwest Pacific with 13 other countries. They are all unique, with different histories, cultures, institutions, opportunities and challenges, but they have some things in common. These include the inherent problems of national development for small and isolated nations, many with an unsustainable relationship between population and resources.[405]

395.   According to US Census Bureau projections, about half of the world's population lives in countries or territories whose fertility rates are not sufficient to replace their current populations. Both Australia and New Zealand face this challenge.[406]

396.   North America, Australia, and New Zealand, the traditional magnets for migrants, will continue to have the highest rates of population growth among the developed countries, with annual population growth rates between 0.7 % and 1.0 %.[407]

397.   There are potentially huge deposits of gas in Australia[408], including oil and gas deposits in the Timor Sea between Australia, Indonesia and East Timor.[409] Whilst this is very positive for the economy of the region it is also a potential source of dispute.

398.   There is increased pressure on fish stocks in the seas of the region. Given the over-fishing that has taken place in the northern hemisphere and in other parts of the Southern Ocean of the region, it is expected that the pressure will increase. This will affect Australia and New Zealand's EEZ, the Southern Ocean and Antarctic waters. It is assumed that unregulated or illegal fishing will increase in these zones.[410]

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[404] GlobalEDGE, *Country Insights - Overview of Oceania*, Michigan State University, retrieved 9 August 2006. [http://globaledge.msu.edu/ibrd/region.asp?RegionID=6]
[405] Australian Ministry of Defence, *Defence White Paper 2000*, 2000. Chapter 3 - Australia's Strategic Environment.
[406] Eberstadt, Nicholas, "Four Surprises in Global Demography", Foreign Policy Research Institute's *Watch on the West*, Vol 5, Number 5, July 2004.
[407] NIC, *Global Trends 2015…..,* page 19.
[408] NIC, *Mapping the Global Future…..*, page 62.
[409] US government, Congressional Research Service (CRS), *East Timor: Potential Issues for Congress*, Order Code RS22136, May 4, 2005, retrieved 21 September 2006.
[410] External Assessments Bureau, *Strategic Assessment 2000*, Department of the Prime Minister and Cabinet, New Zealand, 2000, chapter 2 - Key Judgments.

399.   The security of the neighbouring regions, Southeast Asia and the Southwest Pacific, could be affected directly by instability and conflict. The countries of Indonesia, East Timor, Papua New Guinea, and the island states of the southwest Pacific, face large economic and structural challenges.[411]

400.   East Timor's emergence as an independent state is a new factor in the region. The willingness of East Timor to facilitate a transition, and to build a friendly bilateral relationship with Indonesia, is important to the region. But important security issues remain, and probably will for years to come.[412]

401.   There is a significant risk of continued security challenges from armed militias opposed to independence. It is clearly important that East Timor should be allowed to develop in peace, without the threat of intimidation or violence. The prospect of continued insecurity is therefore disturbing. That insecurity could also pose problems for relations between Indonesia and East Timor.[413]

402.   Papua New Guinea has made little progress over the past few years, and in important respects has slipped backwards. Economic growth has been slow, corruption has afflicted public life, social progress in areas like education and health has been limited, and law and order have deteriorated. Papua New Guinea faces a long and uncertain road to prosperity and stability. Without progress, important problems that have significance for security and stability beyond its borders will remain.[414] Its abundant mineral resources are a potential source of growth and long-term stability.

403.   Current problems in Fiji and the Solomon Islands provide important evidence of deep-seated ethnic and political problems that pose threats to law and order, legitimate government and even national cohesion in some Pacific Island states. In others, such as the small states of Polynesia and Micronesia, economic and environmental challenges are uppermost. The Pacific Islands are well aware of many of these problems, and are taking steps to different degrees to address them. Even so, the stability, cohesion and viability of some of these nations will remain under significant pressure over the years ahead.[415]

404.   Small size and limited resources do not make a strong foundation for effective governments in the Pacific islands. This is a major challenge for the region. Economic growth is unlikely to keep pace with population increases. Urbanisation, with its accompanying problems of unemployment, increasing crime rates, and pressure on services, is becoming a phenomenon of the Pacific.[416]

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[411] Australian, *Defence White Paper 2000*, …… Chapter 3.
[412] The Asia Foundation, *East Timor: Overview*, retrieved 21 September 2006.
[413] Australian, *Defence White Paper 2000*, …… Chapter 3.
[414] Ibid, Chapter 3.
[415] Ibid, Chapter 3.
[416] New Zealand, *Strategic Assessment 2000*,.. Chapter 2.

SOUTH AMERICA / LATIN AMERICA[417]

405.   Over the period Latin America will continue being the region with the lowest relative exposure to the world conflicts of the 21st century, which have their axis -according to some analysts - on a "clash of civilisations" and terrorist tactics as the main strategy of fundamentalist groups. Compared to the scenario faced by other regions, Latin America will be relatively peaceful in the years ahead. Border conflicts and territorial claims will exist - there are still over 20 unresolved territorial conflicts in the Latin American continent, many of which will be tackled in the period - but a scenario of armed confrontations is unlikely. The advance of democratisation and trade integration, despite all the remaining problems, set strong trends mitigating the threat of interstate wars and even conflict involving non-state actors, such as irregular armed groups or mafias. Likewise, a series of transformations in international security on a global scale, such as multilateral efforts for conflict resolution, will have a positive effect on Latin America over the period in a direct manner.[418]

406.   However, some trends involving internal conflicts will prevail and, in some cases, produce international repercussions and involve extra-continental axes - as happened during the Cold War. Many of these conflicts will be related to non-traditional threats. The remnant guerrilla structures (Colombia is the most serious case but not the only one) will not be easily dismantled by nation-states, and effective international action against such threats are not likely to materialise in the next few years. However, over the period, the continental institutional evolution in terms of regional security could begin to provide the mechanisms to militarily confront the armed conflicts within national borders. Otherwise, the *Poderes Fácticos*[419] and non-state armed players (mafias, drug-traffickers, and international terrorist groups) both will seek partnerships or mergers - or at least a *modus vivendi* - with irregular armed groups in the region. Based on this scenario, the effects of which are already appearing and could increase in the coming years, the nexus between domestic governance and international insecurity of the region will escalate. Areas without states' full control (the departments of Boyacá, Caquetá and several others in Colombia; the Venezuelan-Brazilian and Venezuelan-Colombian borders; areas of Cochabamba in Bolivia; the coasts of Haiti, etc.) will be prime areas for this type of alliance.[420]

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[417] South America is the continent; Latin America is the countries of South America and North America (including Central America and the islands of the Caribbean) whose inhabitants speak a Romance language, Encyclopædia Britannica.
[418] National Intelligence Council (NIC), *Global trends 2020 – Latin America 2020*, Summary of conclusions of the workshop on Latin American Trends, June 8, 2004, pages 4-5.
[419] Poderes fácticos, in the absence of mass organisation, there is little to challenge the political dominance of elite groups that control property or capital, the modern means of mass communication, or the instruments of military force - what Latin Americans sometimes call the poderes fácticos (loosely translated as de facto power structures).
[420] National Intelligence Council (NIC), *Global trends 2020 – Latin America 2020*, Summary of conclusions of the workshop on Latin American Trends, June 8, 2004, page 5.

407.   The emergence of politically organised indigenous groups may also entail a risk to regional security. If in the years ahead the indigenous movements do not attain a legitimate role in the political system and certain levels of social inclusion, then many are likely to resort to claims of territorial autonomy (rather than insertion in national politics), as happened decades ago in the Nicaraguan Atlantic coast, in the south of Mexico, the Andean region, and some Central American nations. Old territorial claims driven by indigenous groups could set the stage for armed insurgency and political violence. Another factor that will grow in importance in the period is public insecurity in large cities. Insecurity and crime indicators have shown an upward trend for many years, reflecting the increase in poverty and inequality in most of the countries. Personal insecurity will be a leading issue in Latin American societies and elections: this phenomenon will give "heavy-handed" politicians and candidates access to mayoralties, governorships and presidencies in the region.[421]

408.   For Latin Americans, government ineffectiveness, in part, prevented many countries from realising the full measure of economic and social benefits from greater integration into the global economy in the past decade. Instead, the gap between rich and the poor, the represented and the excluded, has grown. Over the next 15 years, the effects of continued economic growth and global integration are likely to be uneven and fragmentary. Indeed, regional experts foresee an increasing risk of the rise of charismatic, self-styled populist leaders, historically common in the region, which would play on popular concerns over inequities between "haves" and "have-nots" in the weakest states in Central America and Andean countries, along with parts of Mexico. In the most profoundly weak of these governments, particularly where the criminalisation of the society, and even the state, is most apparent, the leaders could have an autocratic bent and be more stridently anti-American.

409.   Experts have made the following observations on regional prospects in other areas:

- *Identity politics.* Increasing portions of the population are identifying themselves as indigenous peoples and will demand not only a voice but also, potentially, a new social contract. Many reject globalisation as it has played out in the region, viewing it as a homogenisation force that undermines their unique cultures and as a US-imposed, neo-liberal economic model whose inequitably distributed fruits are rooted in the exploitation of labour and the environment.
- *Information technology.* The universalisation of the Internet, both as a mass media and means of inter-personal communication, will help educate, connect, mobilise, and empower those traditionally excluded.[422]

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[421] National Intelligence Council (NIC), *Global trends 2020 – Latin America 2020*, Summary of conclusions of the workshop on Latin American Trends, June 8, 2004, page 5.
[422] NIC, *Mapping the Global Future …..*, page 78.

THE MIDDLE EAST AND NORTH AFRICA (MENA) REGION

410.   Regimes in the region - from Morocco to Iran - will have to cope with demographic, economic and societal pressures from within and globalisation from without. No single ideology or philosophy will unite any one state or group of states in response to these challenges, although popular resentment of globalisation as a Western intrusion will be widespread. Political Islam in various forms will be an attractive alternative for millions of Muslims throughout the region, and some radical variants will continue to be divisive social and political forces.[423]

Middle East

411.   The Middle East is already a focus of global interest due to its predominance as an energy supplier, providing for half the world's energy needs. Its geo-economic and geo-strategic importance will increase as energy demands rise and more global players come to rely on Middle Eastern resources. Simultaneously the regions escalating notoriety as a centre of arms proliferation is guaranteed to retain global interest, as will its utilisation by extremist Islamic groups as a base from which to marshal support and conduct their activities.[424]

412.   A key driver for the Middle East over the period will be demographic pressures, specifically how to provide jobs, housing, public services, and subsidies for rapidly growing and increasingly urban populations. Middle East populations will be significantly larger, poorer, more urban, and more disillusioned.[425] Over the next 2 decades, the Middle East is likely to become less, not more, stable. A combination of economic, political and ethno-religious problems will be to blame. Population sizes will continue to rise. Economic problems, which impact on employment, housing, education and quality of life, will worsen. The impact of globalisation, urbanisation and growing dissatisfaction with governing bodies on the daily lives of ordinary people will cause growing social dissatisfaction. As popular frustration increases, extremist religious and political movements will exploit opportunities for recruitment of the disaffected, being mainly the younger generation. Radical Islam will be likely to attract those seeking a unifying force in opposition to existing regimes and a vehicle with which to voice their dissent and express their religious, rather than national identity.[426]

413.   The Middle East will probably remain a conflict-prone region, riven by deep- running political and ethnic tensions. Peaceful solutions to endemic conflicts in Iraq and Palestine are difficult to imagine, and relations with Iran may well deteriorate further. On top of that, problems are accumulating in all areas, to summarise the above:

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[423] NIC, *Global Trends 2015*, page 70.
[424] ACT, LTRS, *The World in 2025 – A Global and Regional Review*, pages 36-37.
[425] NIC, *Global Trends 2015*, page 71.
[426] ACT, LTRS, *The World in 2025 – A Global and Regional Review,* page 32.

- Water scarcity and rapid urbanisation will deteriorate environmental conditions and living standards
- Many countries are experiencing great difficulties in reforming their economies and will probably be unable to provide enough jobs for dozens of millions of young people entering the labour market over the next 20 years
- Unemployment and social inequality are likely to increase and become perfect breeding grounds for anger, alienation and unrest, further strengthening radical Islamic movements as alternatives to authoritarian regimes
- Governance will remain a major concern. In some countries (Iraq, Lebanon, Syria), ethnic conflicts and the growth of sectarianism will fuel political tensions and undermine democratisation. In others (Saudi Arabia, Egypt), political transition towards less repressive regimes may cause major unrest and lead to considerable instability in the region.

414.   The potential for a systemic breakdown of the Middle East, along the so-called "crescent of crisis" or "arc of crisis", cannot be dismissed. That could imply state failure, downfall of pro-western, authoritarian regimes and an even closer, perverse connection between different conflicts across the region (Israel - Palestine, Iraq, Afghanistan, Chechnya, Kashmir, Lebanon and the "Kurd-claimed areas"). In the absence of a major crisis, regimes in the Middle East are likely to remain less than reliable partners for Europe. This will notably be the case if Europe's ambivalence continues on how best to promote good governance and engage both with reformists and (non-violent) Islamic conservatives and radicals.[427]

415.   The Arab-Israeli conflict will run on inconclusively, continuing to colour all political developments in the region. With the religious dimension of the conflict becoming increasingly prominent and Islamism driving the Arab agenda, another Arab-Israeli war may break out. This could be either "hot" or "cold". In the case of hostilities being resumed, the area may well find itself "compartmentalised" to prevent the possibility of overspill into neighbouring areas.[428]

416.   Iran is also likely to be of considerable regional significance due to her strategically pivotal location at the mouth of the Straits of Hormuz and her accrued military might. The development and utilisation of Iranian military might is likely to continue, with the consolidation of power projection and air defence capabilities and the pursuit of enhanced WME capabilities. The proliferation of WME and missile delivery systems and their development are likely to profoundly affect the strategic environment. By 2025 there conceivably could be 4 - 8 nuclear powers in the region, if, for example, the development of Iranian nuclear capability prompts other states to pursue their own nuclear programme to guarantee their own standing in the region. Iran, Syria and Israel are all known already to possess chemical weapons or at least the means to produce them,

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[427] EU, ISS, *The new Global Puzzle …*, pages 205-206.
[428] ACT, LTRS, *The World in 2025 – A Global and Regional Review,* page 32.

and all are known to be following a biological weapons agenda.[429] It is likely that the area will be active in the next nuclear race.

North Africa

417.   The states of North Africa face a troubled economic future. Growth prospects remain flat, and in some cases, negative. High levels of unemployment will accompany youth bulges, rising inflation and excessive external debt. Across the region, with the possible exception of Libya, the potent amalgam of high population growth and economic stagnation will continue to generate popular instability as economic and social aspirations are thwarted and living conditions decline. Radical Islam will hold increasing appeal as an outlet for their frustrations and the only solution to deep-seated social predicaments. However, the trend will remain fractured and we are unlikely to witness the spread of a pan-Islamic movement in the period. It is likely that there will be an increase in the number of anti-Western terrorists and organisations originating from the North African region. Terrorism, migration and the threat to energy supplies will continue to be the main concerns.[430]

418.   The Algerian, Tunisian and Egyptian regimes are already fragile and look to become more so. Coercion is likely to remain the main basis of political order. Fearing the possibility of *coups d'etat*, the ruling elites are likely to prioritise the appeasement of the armed forces by maintaining large defence budgets, affording them privileges and ignoring instances of corruption. Securing the military "buy-in" is a means of ensuring short-term stability. By ensuring that comprehensive reform would be contrary to military interests, they shore up support in resisting calls to do so.[431]

419.   The extent of arms proliferation across the region and the effects of this on the strategic environment will prove a significant concern internationally. The region is already highly militarised but with the fear of regional rivals, states' desire to acquire chemical, biological and nuclear capabilities are likely to increase. The situation is currently constrained but Algeria and Egypt are all suspected to be running biological and chemical weapons programmes and may achieve their desired end-state in the next decade. It is highly possible that both will look to test their own nuclear capabilities by 2015 and we can expect any capability to have been honed by the end of the period. In a less predictable and more volatile security environment, the recourse to violence is likely to be much easier and swifter than in other areas.[432]

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[429] ACT, LTRS, *The World in 2025 – A Global and Regional Review,* page 33.
[430] Ibid*,* page 36.
[431] Ibid*,* page 36.
[432] Ibid*,* page 37.

420.   Terrorism, migration, the threat to energy supplies, the possibility of ballistic missile attack and the large-scale proliferation of nuclear weapons constitute a potent cocktail of potential threats to NATO. The combination represents the issue of "Southern Exposure" referred to above.[433]

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[433] ACT, LTRS, *The World in 2025 – A Global and Regional Review,* page 37.

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GLOSSARY OF ACRONYMS, TERMS AND DEFINTIONS

Acronym or Term	Term or Definition
ADS	Air defence ship
AI	Artificial Intelligence
AIDS / HIV	Acquired Immune Deficiency Syndrome or Acquired Immunodeficiency Syndrome (AIDS or Aids) is a collection of symptoms and infections resulting from the specific damage to the immune system caused by the Human Immunodeficiency Virus (HIV).
APBS	Antimatter Particle Beams
APC	Armoured personnel carrier
ASCM	Anti-ship subsonic cruise missile
ASEAN	Association of Southeast Asian Nations
ASEAN	Association of Southeast Asian Nations, currently Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei, Vietnam, Laos, Myanmar and Cambodia.
ASM	Anti-ship missiles
AU	African Union
Avian flu	Avian flu, also called "bird flu", "avian influenza" and "bird influenza", is flu from viruses adapted to birds.
AWACS	Airborne warning and control systems
BRIC	Brazil, Russia, India, and China
BW	Biological Warfare
C2	Command and control
CCW	Convention on Certain Conventional Weapons
Challenge	Challenge: to arouse or stimulate especially by presenting with difficulties.
CIMIC	Civil-Military Cooperation
CIS	Commonwealth of Independent States, currently Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan and Ukraine
CNA	Computer Network Attacks
CND	Computer Network Defence
CNE	Computer Network Exploitation
CNO	Computer Network Operations
COG	Centre of gravity
Concern	Concern: an issue of interest to the Alliance that may have future implications on global/regional security and stability.
CPBW	Charged Particle Beams Weapons
CRO	NATO Non-Article 5 crisis response operations

CW	Chemical Warfare
DC	Developed country
DEW	Directed Energy Weapons
DMZ	Demilitarised Zone
Domain	Domain, into each paradigm, society has several components that are constantly evolving and changing, and in which each change is an event.
DPRK	The Democratic People's Republic of Korea
Driver	Driver: designates the cause of an event that results in a specific trend into a component.
EADS	European Aeronautical Defence and Spaces Company
EBAO	Effect based approach to operations
EEZ	Exclusive Economic Zones
EEZ	Exclusive Economic Zones
EMP	Electromagnetic pulse
EPZ	Export-processing zones
EW	Electronic warfare
FDI	Foreign direct investment
FGA	Fighter Ground Attack
FYROM	Former Yugoslav Republic of Macedonia (Turkey recognises the Republic of Macedonia with its constitutional name).
GDP	Gross domestic product
GNI	Gross National Income
GPS	Global Position Satellite-
GW	Gigawatt
HPM	High Power Microwave
ICBM	Intercontinental Ballistic Missile
ICC	International Criminal Court
ICI	Istanbul Cooperation Initiative
ICT	Information Communication Technology
ICTR	International Criminal Tribunals for Rwanda
ICTY	International Criminal Tribunals for Yugoslavia
IED	Improvised Explosive Devices
IMF	International Monetary Fund
INFO OPS	Information Operations
Information revolution	Information revolution: a term that refers not only to computer and telecommunications technology, but also to the role of information itself.
IO	International Organisations
IT	Information Technology
Jihad	Jihad, a holy war waged on behalf of Islam as a religious duty; also a crusade for a principle or belief.
KPA	Korean People's Army
LACM	Land-Attack Cruise Missiles
LDC	Lesser-developed country

LOAC	Law of Armed Conflict
MBT	Main battle tanks
MD	Mediterranean Dialogue
MENA	Middle East and North Africa
MIRV	Multiple independently targetable re-entry vehicle
MNC	Multinational corporations
NAFTA	North American Free Trade Agreement
NAI	NATO Agreed Intelligence
Nanotechnology	Nanotechnology is simply the technology of things - measure, see, predict and make - on the scale of atoms and molecules. The nanotechology realm is defined as being between 0.1 and 100 Nanometres (a nanometre being one-billionth of a meter). Nanotechnology is really an amalgam across the traditional disciplines of biology, physics, engineering, maths and chemistry.
NCO	Non-commissioned Officer
NGOs	Non-Governmental Organisations
NNEC	NATO Network Enabled Capabilities
NSA	Non-state actors, in international relations include: Non-governmental organisations (NGOs); Firms and businesses, especially and
NSA	Non-state actors
NSIE	MC 161 - NATO Strategic Intelligence Estimate
OPEC	Organization of the Petroleum Exporting Countries
OSINT	Open Source Intelligence
Paradigm	Paradigm: The defined ground which is not changing or which is changing at a low speed. Cultural beliefs, concepts, habits, languages, - that constitute the way of living of any population. Globalisation can be considered as the new paradigm, in which "open societies" have evolved.
PfP	Partnership for Peace
PMC	Private military companies
Potential threat	Potential threat: a threat is characterised as potential by the existence of a threatening capability but the absence of current hostile intent, or conversely of a hostile intent and a developing threatening capability.
PPP	Purchasing Power Parity (PPP) per capita, the value of all final goods and services produced within a nation in a given year divided by the average population for the same year.
PRC	People's Republic of China
PSYOPS	Psychological operations
RIA	Regional integration area
Risk	Risk: the hazards to which a state's/coalition's interests or strategies are assessed to be exposed. These risks, which are risks to stability and security, do not necessarily

	originate in, or in the vicinity of, the state or the coalition.
ROE	Rules of engagement
SAARC	South Asian Association for Regional Cooperation, currently Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.
Salafi	"Salafi" refers to adherents of Salafism, a movement with origins in the 19th century whose goal is the restoration of the pure Islam of the first generation of Muslims (the salaf al-saliheen).
SARS	Severe Acute Respiratory Syndrome
SCO	Shanghai Cooperation Organisation
SIGINT	Signal intelligence
SLBM	Submarine-launched ballistic missile
SLV	Space launch vehicles
SME	Subject matter expert
SOF	Special Operations Forces
SRBM	Short-range ballistic missile
SSN	Nuclear powered attack submarine
SSR	Security Sector Reform
TB	Tuberculosis
TBM	Theatre ballistic missiles
TEL	Transporter-erector-launcher
Terrorism	Terrorism, the unlawful use or threatened use of force or violence against individuals or property in an attempt to coerce or intimidate governments or societies to achieve political, religious or ideological objectives. Allied Administrative Publications 6 (AAP-6) - NATO Glossary of Terms and Definitions.
Threat	Threat: a state's/coalition's perception that it is in some degree of danger based on the assessed capabilities, intentions and actions of another state/coalition or group.
Trends	Trends: The evolution of repetitive events represents a trend. Consequently, trends show how the components (domains) are changing.
UAV	Unmanned aerial vehicles
UNCLOS III	Third UN Conference on the Law of the Sea
UNSC	United Nations Security Council
WIPO	World Intellectual Property Organization
WMD	Weapons of mass destruction, weapons that is capable of a higher order of destruction and of being used in such a manner at to destroy people, infrastructure or other resources on larger scale. Allied Administrative Publications 6 (AAP-6) - NATO Glossary of Terms and Definitions.
WME	Weapons of Mass Effect
WTO	World Trade Organization