Geneva Centre for the Democratic Control of Armed Forces (DCAF)

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Trends and Challenges in International Security: An Inventory

Fred Schreier

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Introduction

The Geneva Centre for the Democratic Control of Armed Forces (DCAF) was founded in October 2000 at the initiative of the Swiss government. DCAF counts today some fifty-four member states and has evolved into one the world's leading centres of excellence in the areas of security sector reform (SSR) and security sector governance (SSG). It is unique through its holistic approach that encompasses the entire spectrum of SSR and SSG, through its combination of conceptual and analytical work with hands on operational missions on the ground, as well as through its organisational structure that places the Centre at the crossroads between an NGO and an intergovernmental organisation.

The Centre has decided to commemorate its up-coming tenth anniversary through a series of studies to be published throughout the year. They will look at three issues: (1) The trends and challenges which will determine SSR and SSG in the years to come; (2) how the environment will evolve in which SSR and SSG will have to operate; and – above all – (3) how the SSR / SSG approach will have to further evolve in order to be able to cope with the new realities of a globalising world.

The corresponding programme has been called "Horizon 2015." There are several reasons for this choice of a relatively narrow time horizon. First, a more distant horizon – for instance 2025 or 2050 – would contain the risk that the series could embark on shallow guess work and simple speculation. In 2050 everything is possible – while 2015 is close enough to impose intellectual rigour. Secondly, DCAF will have to adopt in 2011 a new Strategy Paper for the years 2012–15. "Horizon 2015" should, thus, contribute to the debate what DCAF's strategy should be in the years to come.

"Trends and Challenges in International Security: An Inventory" is the first "Horizon 2015" study. Its objective is to depict the overall environment in which SSR and SSG will have to be shaped in the years to come. It is an inventory of problems and challenges, not an answer to the question of how SSR and SSG will have to evolve as a result of these trends. That will be the subject of subsequent "Horizon 2015" studies. Nor does this first study claim to be comprehensive – neither with respect to the topics covered or the depth of analysis. There are additional topics that would merit to being looked at and there is much more that could be said on all the issues covered. The study seeks merely to recall the overall background against which the issue of SSR and SSG must be discussed in the coming years. The volume's job is, so to speak, to set the stage for further analysis to come within the "Horizon 2015" series.

The study breaks down into three parts: (1) Problems and trends that have a fundamental impact on the subject matter but are not going to be solved till 2015. This group of issues includes topics such as the climate change, resource scarcities, or demographics. (2) Problems that are well known and understood but escape easy solutions – and thus are likely to be still very much on the agenda in 2015. That group includes issues like corruption, organised international crime, and illegal migration. (3) Topics that figure already on the agenda – and thus are addressed by current SSR / SSG approaches – but whose full implications appear still to be underestimated and, therefore, consume a good deal of our time in the years to come.

The "Horizon 2015" series will focus on a select group of such issues, focusing, above all, on those that are likely to demand modified, expanded, or new SSR / SSG approaches.

The term SSR was originally coined by Claire Short, a member of Tony Blair's cabinet and responsible for development cooperation. The key point was to recognise that there is a need to coordinate so far separate policies such as development cooperation and defence assistance. SSR understands all components of the security sector – armed forces, police, border guards, intelligence agencies, presidential or national guards, paramilitary forces, and so forth – as pieces of one great puzzle that hang together. These "gens d'armes", i.e., the armed component of state authority, are all, in different ways, called upon to establish, defend, and if necessary impose, the state monopoly of legitimate force. Their respective mandates must be clear, distinct, and precise (for instance: who has the right to arrest somebody – and for what reason?). Such precise mandates imply automatically the notion of accountability (both with respect to failure to fulfil one's mandate or to overstep its limits). This, in turn, lays the basis for an efficient oversight framework at the governmental, parliamentary, and ultimately public levels. The concept makes obvious sense – but drives a coach and horses through previously existing, and jealously guarded parochial service and administrative interests.[1]

There is a clear nexus between security and development. Without security there cannot be any development. If the most essential security needs of a society cannot be assured, there is simply no way for economic development to make any headway. There is, simply put, no point in digging wells, if somebody is poisoning them. Nobody invests in a war zone. Inversely, there cannot be any security in the longer term, if there is no development. People with empty stomachs will eventually grab their Kalashnikovs, join organised international crime, or migrate.

Once the security / development nexus was recognised, another insight was inevitable. In order to establish security and to foster development, it is necessary to build up the foundations for the rule of law. The precise definition of the components of the security sector and of the mandates and resulting competences of its components implies the adoption of constitutionally based, transparent, and effective laws and regulations. Only a security sector established on such a solid legal base will cease to be part of the problem and transit towards being part of its solution. Thus, SSR directly contributes to the establishment of the rule of law. Similarly, sustained economic development is, in turn, a motor for establishing the rule of law – in order to set up a predictable framework for economic activity, investments and ultimately prosperity. Out of such an emerging rule of law may then ultimately grow the roots of democracy and a free market economy.

Kofi Annan has highlighted these interrelationships in his 2005 report *In Larger Freedom.*[2] The study triggered fundamental change in how the international community perceived and addressed the issue. SSR and SSG have in the last few years be understood as at the very basis of an effective development approach, for the need for close international cooperation – both at the multilateral and bilateral level – and for a genuine "whole of government" approach (bringing together development agencies, defence and foreign ministries).

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1 Heiner Hänggi and Theodor H. Winkler, eds., *Challenges of Security Sector Governance* (Geneva: LIT Verlag / DCAF, 2003), 296; Alan Bryden and Heiner Hänggi, eds., *Reformand Reconstruction of the Security Sector* (Geneva: LIT Verlag / DCAF, 2004), 275.

2 A/59/2005

The "whole of government" concept has ever since been gaining ground. However, the ways in which the inter-linkages between security, development, and the rule of law are described vary. The OECD talks of the three "D"s (*D*evelopment, *D*efence, and *D*iplomacy), whereas at a conference organised by Switzerland in March 2009 in Geneva the catch phrase were the three "C"s (*c*oherent, *c*oordinated, *c*omplementary). Whatever the specific approach, the overall thrust is pointing in the same direction.

Many OECD countries have, by now, either created – or are in the process of creating – the necessary governmental structures for shaping coherent national and international strategies on SSR / SSG. This includes the establishment of an expert base, the shaping of integrated approaches between the various government agencies concerned, the creation of inter-ministerial bodies mandated and able to develop, implement, and monitor the resulting national strategies (as well as to link them with the emerging and relevant multilateral efforts and strategies), and the setting-up of dedicated and solid implementation mechanisms. In some countries even funding is pooled at an inter-agency level.

At the multilateral level, the OECD adopted first "Guidelines," then an integrated implementation framework[3] on what it calls "security systems reform." The UN took the issue up again under the Slovak Presidency of the UN Security Council in February 2007 when the Council adopted a "Presidential Resolution"[4] formally introducing the notion of SSR to the United Nations. It led in time to a Report by the UN Secretary General[5], the creation of a dedicated new unit in the Department of Peace Keeping Operations (DPKO)[6] and a set of regional conferences on the subject in Africa, Latin America, and Asia.[7] The European Union started, under the British Presidency, to endow itself with a corresponding strategy at both the Council and the Commission level – which were then linked under the Austrian Presidency into a joint approach. The Economic Community of West African States (ECOWAS) and, more recently, the African Union, have in turn embarked on developing their own strategies and approaches in this area. Other regional and sub-regional organisations are moving in the same direction. Thus, the international community is currently building up the necessary conceptual and strategic frameworks both at the national and international level, discovering in the process the need for greater coordination among the key players as well as the painful absence of structures and procedures to implement those national and international strategies.[8]

DCAF is an intrinsic part of this international effort, contributing directly or indirectly to most major conceptual development steps at the international level – from the UN and the EU to the OECD, ECOWAS and the African Union. At the crucial operational level, DCAF took a key step with the establishment of the "International Security Sector Advisory Team" (ISSAT)[9] as an integral part of DCAF – the first international, highly mobile and fully integrated SSR implementation tool. The Centre, furthermore,

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3 OECD, *OECD-DAC Handbook on Security Systems Reform: Supporting Security and Justice*, Paris; OECD, 2007, 256 p.

4 S/PRST/2007/3

5 A/62/659-S/2008/39

6 UN DPKO Security Sector Reform (SSR) Unit (http://www.un.org./en/peacekeeping/orolsi.shtm#ssr)

7 Africa: International Workshop *„Enhancing United Nations Support for Security Sector Reform in Africa: Towards an African Perspective"*, Cape Town, November 2007: Latin America: *„Contributing to the UN Approach to SSR: Insights from Latin America and the Caribbean"*, Buenos Aires, 28-29 September 2009; Asia: International Workshop *„The Role of the United Nations in Peacekeeping and Post-Conflict Peacebuilding: Towards an ASEAN Perspective"*, to be held in Jakarta during the first half of 2010.

8 *cf.* David M. Law, ed., *Intergovernmental Organisations and Security Sector Reform* (Geneva: LIT Verlag / DCAF, 2007), 291

9 *cf.* http://www.dcaf.ch/issat/

contributes to the development of national capabilities[10] and the coordination of international efforts[11] along the lines of the Paris Declaration[12] and the Accra Plan of Action.[13] "Horizon 2015" seeks to push this work another step further by adding to the analytical and conceptual framework.

A more cohesive approach to, and further development of, SSR / SSG are indeed much called for. In order to permit this new approach to succeed both its deepening and widening seem necessary.

There is, first, a need to render the concept more broadly accepted. This is true at the national level (where government agencies often show reluctance to accept a common and fully integrated SSR / SSG approach), at the international level (where many countries are hesitant to opt in favour of truly coordinated international strategies and, at the heart of their hearts, would prefer to give their SSR / SSG strategies a national "twist" that – in a politically visible form – differentiates them from those of their neighbours and allies). It is also true at the level of key actors (where the policy approaches of the United Nations and the European Union, though gradually converging, are still not identical, and where those of the United States continue to be only in the vaguest way connected with those of the rest of the world). Finally, it is true at the global level where the BRIC countries (Brazil, Russia, China, India) have not yet truly warmed to the concept (which opens up the risk that it is reduced to an OECD only approach).

There is, secondly, the need to understand that SSR and SSG are not only pertinent in the context of the security / development / rule of law triangle. They are also relevant – and indeed crucial – components of the entire conflict spectrum – from conflict prevention through conflict management to post-conflict reconstruction.[14]

Thirdly, it must be realised that SSR is very much context specific. There is not one size that fits all. For SSR to succeed, and for an efficient system of SSG be established, local ownership is crucial.[15] This requires, on the one hand, capacity building and thus local enabling and empowerment, on the other hand a strong sensitivity towards regional, sub-regional and national specific contexts and requirements. This is by now widely recognised – yet its implications are still not fully grasped.

Fourthly, the picture is not a static one. Change, particular change caused by an earthquake like globalisation, continuously impacts on, and transforms, the challenges we face. Yesterday's answers are not good enough for today's, let alone tomorrow's problems. The dynamics, inter-linkage, and constantly evolving nature of the challenge must be understood as a key characteristic of the SSR / SSG issue. There is, not least of

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10 Thus, ISSAT has conducted "whole of government" seminars to numerous DCAF member states, including Austria, Canada, the Netherlands, the Nordic Countries, Norway, Sweden, Switzerland, and the United Kingdom.

11 ISSAT seminars in favour of the United Nations and the European Union; support, under a mandate of the Czech Republic, to the organisation of a seminar *„Enhancing EU-UN Co-operation in Crisis Management: Focus on Security Sector Reform (SSR)"* hosted in New York on 21 May 2009

12 The Paris Declaration, endorsed on 2 March 2005, is an international agreement to which over one hundred Ministers, Heads of Agencies and other Senior Officials adhered and committed their countries and organisations to continue to increase efforts in the harmonisation, alignment and managing aid for results with a set of monitorable actions and indicators.

13 The Accra Agenda for Action (AAA) was drawn up in 2008 and builds on the commitments agreed upon in the Paris Declaration.

14 *cf.* Alan Bryden and Heiner Hänggi, eds., *Security Governance in Post-Conflict Peacebuilding* (Geneva: LIT Verlag / DCAF, 2005), 290.

15 *cf.* Timothy Donais, ed., *Local Ownership and Security Sector Reform* (Geneva: LIT Verlag / DCAF, 2008), 292

all, the danger that the security and development nexus, as genuine as it is, may be blocking our view that, in a continuously changing world and threat reality, SSR is not only an issue for the "South", but no less – if not even more so – for the OECD world itself. "Trends and Challenges in International Security" underlines the fact that SSR and SSG are in a world marked by shifting face of violence[16] indeed of global relevance – including for established democracies.

In a world that is changing dramatically and ever more quickly, the concept of SSR and SSG will have – while staying true to the key principles of democratic governance – to evolve in turn, if it means to remain relevant. This is particularly the case, if the ongoing revolution in technology (including cyberspace) and the accelerating globalisation are taken into account.

The need for a further development of the SSR / SSG concept is recognised:

In Africa, the trend is to move from security sector *reform* towards security sector *transformation* (SST). Many on the continent argue that SSR was essentially developed within a South Eastern and Eastern European context (i.e., for countries in transition and, most often, with European integration as their goal). This approach would, it is argued, be both too slow and too shallow for the realities of a continent like Africa. Here, what would be needed would not be gradual, but rather much more fundamental change aimed at eliminating the deep rooted schism between the state, the security sector, and the citizen. In short, the recipe needs to be adapted to local context – and not vice versa.

The three "C"s approach, well received by the international community, recognises implicitly that a further widening of the approach is needed by including justice and the financial dimension. Few countries have, so far, however already broadened their respective inter-ministerial SSR / SSG structures.[17]

Similarly, there is a nascent recognition that specific parts of the private sector need to be included into the conceptual approach. Work done so far applies mainly to Private Military and Security Companies (PMSCs) – and then only to parts of that issue[18].

"Horizon 2015" wants to contribute to that process of further development of the SSR / SSG process. Two issues merit, in this context, particular attention: (1) Improved international coordination and cooperation; (2) new forms of private-public partnerships that may lead to an extension of our current definition of the security sector.

With respect to the former issue, the need for steady improvement of UN-EU coordination must be foremost on the agenda –not only because of the trend towards ever closer cooperation between the two organisations in the field (where the EU, takes increasingly over UN integrated field missions). Similarly, the harmonization of the emerging UN/EU approach with those being developed by regional organisations (most notably the African Union) and sub-regional ones (for example, ECOWAS and perhaps soon SADC) remains eminently desirable. A longer term objective must be the attempt to convince the United States of the advantages of multilateral approaches based

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16 *cf.* Alyson J.K. Bailes, Keith Krause and Theodor H. Winkler, "The Shifting Face of Violence," (Geneva: DCAF Policy Paper No. 18, DCAF, 2007), 39

17 DCAF's ISSAT team has, however, as a result been strengthen through the addition of experts in Justice.

18 DCAF is mandated to support both the Swiss "Montreux Initiative", reconfirming and deepening the application of international law to PMSCs and to assist the industry's professional associations to develop a "Code of Conduct".

essentially on civilian components – particularly in SSR / SSG. The most urgent task may, however, be to better coordinate international crisis response mechanisms of the key international actors and to assure that the SSR / SSG implementation mechanisms that are in the early stages of development (or at least on the drawing board) are not only mutually compatible, but promise to enable broad cooperation. This issue will be looked at in one of the forthcoming "Horizon 2015" studies. Similarly, there is an evident need for improving cooperation between multilateral and national actors and the expanding NGO community – both conceptually and on the ground. Again, a "Horizon 2015" study may look at the issue.

With respect to the need for new forms of private-public partnerships, the urgency of the issue is evident. The PMSC problem is fairly and squarely on the table – its most troublesome aspects being embodied in the multiple issues raised by companies like "Blackwater". The landscape is moving – from the Montreux Convention to the strong interest the PMSC community shows in adopting a quite stringent "Code of Conduct" for its members. Much remains, however, still to be addressed – most notably the question of what cannot /should not be outsourced to private companies?

"Horizon 2015" will argue that PMSCs are only the first example of new private-public partnerships in the security domain and that there is a genuine – and quite urgent – need to have a deeper look at that dimension of the problem. Perhaps the best examples are the challenges posed by the revolution in information technologies and in what is commonly called "cyber security." The time when the threat in this area was defined by hackers, "I love you" bugs and worms are gone. The trend is today towards the ability to covertly take over large numbers of servers and computers, link them into powerful networks and to use them clandestinely for sinister purposes – be they of a criminal,[19] disruptive[20] or aggressive nature.[21] No government is, left exclusively to its own devices, able to cope with this sort of threat. New forms of private-public partnerships will be needed simply in order to understand what is going on, where future vulnerabilities lie, and what counter-measures may be required. The issue is, however, even broader: who should, at the governmental level, be in charge (and accountable)? What parliamentary body should exercise political oversight and control? What form should this control take? How can an expanding state interest in oversight and control be prevented from creating the basis for censorship and authoritarian domination of a vibrant (and essentially democratic) medium? How is all of this to be done in practice when the revolution in information technologies is exponential and leads to the fusion of technologies at breath-taking speed while the adoption of a law or new public policies may take years? There are indeed a host of questions on the future, and evolving nature, of private-public partnerships in an SSR / SSG context. The next "Horizon 2015" study will, therefore, address and lay out the multiple problems linked to cybersecurity.

There are other new forms of private-public partnership that may become of potential significance in an SSR / SSG context. Most prominently among them figures the health sector – where the real threat of pandemics and the growing risk of designer made biological weapons may lead to the need for private-public partnership of a new kind between the state (if not the international community) and the pharmaceutical industry.

[19] For example, the taking over of the servers of an unsuspecting company by a paedophile ring (as happened in Switzerland in the summer of 2009).
[20] For example, the cyber-attack on Estonia in 2007.
[21] For example, the cyber-attack on Georgia during the Georgian/Russian conflict in 2008.

In short, we will be obliged in the years to come to broaden our analytical horizon way beyond the current SSR / SSG approach. There is a growing urgency to move beyond the first revolution in this area that led to the "whole of government" approach towards a second revolution: a fully integrated security sector approach that reaches beyond established state structures to include select private companies – and thus permit a "whole of issues" approach.

We must be willing to think not only "out of the box" but accept that the box may actually have a different shape than we thought.

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Trends and Challenges in International Security: An Inventory

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1. The big issues: The backdrop that needs to be addressed but that cannot be changed within the next few years

1.1 Demographics

21st century international security will be affected by four major demographic trends: (1) the relative demographic weight of the world's developed countries will drop by nearly 25 percent, shifting economic power towards developing nations; (2) developed countries' labour forces will age and decline, constraining economic growth in the developed world and raising demand for immigrant workers; (3) the populations of the poorest and youngest countries are growing the most; and (4) for the first time in history, the world is becoming more urban than rural, with the largest urban centres being in the world's poorest countries.

The world's population – 1.6 billion at the beginning of the 20th century – will reach 7 billion in 2012, 8 billion by 2030, and top 9 billion in 2050.[22] The world's population currently increases by 203,800 people every day.[23] The population of the forty-nine least developed countries is the fastest growing in the world at 2.3 percent per year. Africa could double in population to 1.9 billion by 2050. These growth rates hold despite the world's highest rates of AIDS infection, and civil wars, famines and other factors. Despite strife in the Democratic Republic of the Congo (DRC), its population could triple to 181 million by 2050, while Nigeria's population could double to 307 million. Pakistan may grow to 349 million, up 134 percent in 2050. Today, there are an estimated 28 million Afghans; by 2025, there will be 45 million; and by 2050, there will be close to 75 million. Triple-digit growth rates are also forecast for Iraq and Nepal.

China's population will grow by 170 million over the next quarter century, but it will also age significantly because of strict enforcement of the national edict of one child per family. The choice of many families to satisfy that limitation with a male child is another demographic factor that may impact on Chinese behaviour. How the resulting imbalance between young males and females will play out by 2030 in China's external and internal politics is difficult to predict because there are few historical analogues. Nevertheless, there are some indications of an increasing predilection to violence among Chinese youth.[24]

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22 Hania Zlotnick, Director of the UN Population Division of the Department of Economic and Social Affairs DESA on the latest findings of the 2008 Revision of the World Population Prospects, 12 March 2009.

23 CIA, *The World Factbook* (Washington DC: Central Intelligence Agency, 2006).

24 United States Joint Forces Command, *The Joint Operating Environment – JOE 2008* (Washington DC: US JFC, 2008), 10–12.

India's population will grow by 230 million during the next quarter century and reach 1.6 billion by 2050, when it will surpass China as the world's most populous country. The tensions that arise from a growing divide between rich and poor in a nation already driven by a multiplicity of races, religions, and castes could seriously impact on its potential for further economic growth. The divide between the subcontinent's huge middle class and those in the villages mired in poverty and the divide between Muslims and Hindus will exacerbate these tensions. Nonetheless, India's democratic system may provide some latitude for political changes to accommodate society's poor.

The US population will grow by more than 50 million to a total of approximately 355 million by 2030, this despite the growing toll of early death obesity. This climb will result not only from births in current American families, but also from continued immigration, especially from Mexico and the Caribbean, which will lead to major increases in America's Hispanic population. At least 15 percent of the population of every state will be Hispanic in origin by 2030, in some states reaching upwards of 50 percent. How effective Americans prove in assimilating these new immigrants into the nation's politics and culture will play a major role in America's prospects. But the historical ability of the US to assimilate immigrants gives it a distinct advantage over most other nations, who display less willingness to incorporate immigrant populations into the mainstream of their societies.

In the Muslim world, many economically weak countries will continue to experience dramatic population growth in the decades ahead. As Goldstone notes, in 1950, Bangladesh, Egypt, Indonesia, Nigeria, Pakistan, and Turkey had a combined population of 242 million. By 2009, those six countries were the world's most populous Muslim-majority countries and had a combined population of 886 million. Their populations are continuing to grow and are expected to increase by 475 million between now and 2050. Worldwide, of the 48 fastest-growing countries today – those with annual population growth of 2 percent or more – 28 are majority Muslim or have Muslim minorities of 33 percent or more.[25]

The developed world confronts an opposite problem. During the next quarter century, population growth will likely slow or in some cases decline. Today, eighteen countries have falling populations, which could increase to forty-four countries by 2050. Russia's population is currently declining by 0.5 percent annually and, given Russian health and welfare profile, there is every prospect that decline will continue, barring a drastic shift in social attitudes or public policy. To Russia's west a similar, albeit less disastrous, situation exists. Overall, European nations stopped replacing their losses to deaths in 2007 and, despite efforts to reverse these trends, there is little likelihood that their populations will increase by 2030. This raises concerns about the sustainability of economic growth in the region.[26]

Japan's population will fall from 128 million to some 117 million in the 2030s. But, unlike the case of Russia, this will result not from any inadequacy of Japanese

[25] Jack A. Goldstone, "The New Population Bomb," *Foreign Affairs* 89, no.1 (January/February 2010): 37.
[26] *The Joint Operating Environment – JOE 2008,* op. cit., p. 10.

medical services, which are among the world's best, but from the collapse of Japan's birth rate. Japan is taking serious steps to address its demographic decline, a fact which explains its major research and development efforts in the field of robotics and its shift to a capital-intensive economy.[27]

The developed world is, moreover, confronted with an acute aging problem. The average age of the world's population is increasing at an unprecedented rate. The number of people worldwide age 65 and older was estimated at 506 million in 2008; by 2040, that number will hit 1.3 billion. Thus, in just over 32 years, the proportion of older people will double from 7 to 14 percent of the total world population.[28] There will be sixty-three elderly people for every hundred workers in Japan. Europe will not be far behind with fifty-nine per hundred workers. The US will be slightly better off with forty-four elderly per hundred workers. Even China will see its ratio of elderly double, from twelve to twenty-three per hundred workers, as a result of better diet and improved medical care.

Humanity is on the move around the world. Africans are moving to Europe, ethnic Chinese move into Siberia, Mexicans and other Latin Americans are moving north to the US and Canada, and Filipinos, Indians, and Pakistanis provide the labour and small commercial backbones of the economies of the Gulf States.[29]

Skilled workers (especially doctors and engineers) are leaving the developing world to make a living in the developed world. The net migration from developing to developed countries is projected to average 2.4 million persons annually from 2009 to 2050.[30] Increasingly, these global diasporas connect via modern communications to their home countries. The money they send back to their families' often forms major portions of the local economies in their home communities. Equally important are the migrations occurring in war-torn areas in Africa, such as the Sudan and Somalia. But there, these migrations disrupt patterns of culture, politics and economics and, in most cases, carry with them the potential of further dislocations and troubles.

Everywhere, people are moving to cities. In 1800, only 2 percent of the world's population lived in cities. The figure rose to 30 percent by 1950, to 49 percent in 2003, and is expected to grow to 60 percent by 2030.[31] In 2007, there were 468 cities with a population of more than one million.[32] If the trend continues, the world's urban populations will double every 38 years. The UN forecasts that today's urban population of 3.2 billion will rise to nearly 5 billion by 2030, when three out of five people will live in cities.[33] The increase will be most dramatic in

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27 Idem, p. 10.

28 *An Aging World: 2008*, Washington: US Census Bureau, 21 July 2009, at: www.census.gov/prod/2009pubs/p95-09-1.pdf

29 US JFC, *The Joint Operating Environment*, 13.

30 UN Population Division, *World Population Prospects* (New York: UN Population Division/DESA, 11 March 2009).

31 Alyson J.K. Bailes, Keith Krause & Theodor H. Winkler, "The Shifting Face of Violence," (Geneva: Geneva Centre for the Democratic Control of Armed Forces, DCAF, Policy Paper No. 18, 2007), 25.

32 City Population, "Principal Agglomerations of the World," City Population, http://www.citypopulation.de/world/Agglomerations.html

33 Cynthia G. Wagner, "Megacities of the Future," *The Futurist*, (1 November 2001); Frauke Kraas, "Megacities our global urban future," *Eucommerz* (4 September 2008).

the least-urbanized continents, Asia and Africa. By 2015, there may be thirty-three megacities, twenty-seven of them in the developing world.[34]

One billion people, one-sixth of the world's population, now live in shanty towns. The slum population is growing more rapidly than the overall urban population.[35] Slums are seen as breeding grounds for social problems, such as crime, drug addiction, alcoholism, poverty and unemployment. In many poor countries over-populated slums exhibit high rates of disease due to unsanitary conditions, malnutrition and lack of health care. In cities like Rio de Janeiro, for example, slum dwellers are confronted with stark contrasts in wealth, little prospects except very low-paid jobs, and a depressing choice between occasional jobs, begging, drugs, prostitution, and crime. Urban violence is, as a result, surging in many parts of the world.[36]

The continued population growth across the Middle East and Sub-Saharan Africa has only recently begun abating, but not fast enough to forestall a demographic crisis, where economic growth fails to keep pace with population growth. Where economic growth fuels but does not satisfy expectations, the potential for revolution or war, including civil war, will be significant. In regions where the youth bulge will reach over 50 percent of the population, there may also be fewer inhibitions about engaging in conflict. Here, the performance of the global economy will be key in either dampening down or inflaming ethnic or religious-based violent movements.[37]

1.2 Economics

The world today is in the midst of the worst economic and financial crisis since the Great Depression of the 1930s. The crisis is the result of weaknesses in the neo-liberal model that has been shaping global economic policies for the past three decades – weaknesses that have been magnified by policy failures and lax regulation in many advanced countries. The cost in terms of bailouts and recapitalization of banks has already reached unprecedented levels. However, the adverse impact on the real economy and the cost in terms of lost output and employment are now the great concern. And there is the growing problem of over-indebtedness among quite a number of developed countries.[38]

While the final resolution is not yet in sight, the measures taken by most governments – adding huge amounts of liquidity, recapitalising the financial system, and purchasing bad assets – will help to avoid a global economic meltdown. Yet most advanced economies are in recession and emerging markets

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[34] A megacity is usually defined as a metropolitan area with a total population in excess of 10 million people. Anonymous, "How Big Can Cities Get?" *New Scientist Magazine*, 17 June 2006, 41.

[35] "Slum Estimates Data," *Compendium of Human Settlement Statistics; Statistical Annex to the Global Report and the State of the World's Cities Report 2001*.

[36] Bailes, Krause & Winkler, "The Shifting Face of Violence," 26.

[37] US JFC, *The Joint Operating Environment – JOE 2008,* 12.

[38] Louis Kasekende, *Public Policy and Economic Development in Africa* (Cape Town: African Development Bank Group, 65th Congress of the International Institute of Public Finance, 13 August 2009).

are undergoing significant slowdowns of indeterminate length. Recessions, while painful, are part of the natural business cycle and are unlikely to have a major impact on the trends outlined here. But the least developed countries are likely to be particularly hard hit in the coming period. Because they are deeply integrated into the global economy, they are highly exposed to external shock. Moreover, many are still suffering from the adverse impact of recent energy and food crises and they have the least capacity to cope with yet another major economic disruption. The combination of high exposure to shocks as well as weak resilience to those shocks is likely to mean that the least developed countries, which already face chronic development challenges, will be harder hit than most other developing countries.[39]

The long-term strategic consequences of the current financial crisis are significant. Over the next several years a new international financial order should be established that redefines the rules and institutions that underpin the functioning, order and stability of the global economy. Inter-connectedness will continue to define the global environment of the future. But until a new structure emerges, states and businesses will have to plan to continue in an environment where the global economic picture can change suddenly, and where even minor events can cause a cascading series of unforeseen consequences.[40]

Taking a base line of 2.5 percent growth for the developed world, and 4.5 percent growth for the developing world, including China and India – a figure that understates the present growth trajectory of these two nations – the world economy would double by 2030 from 35 to 72 trillion US dollars (USD), and global trade would triple to 27 trillion. Given these projections, those living in extreme poverty would fall from 1.1 billion to 550 million.[41]

The pace of change is even more impressive when considering the respective contributions of different countries to the creation of global wealth over the medium to long-term. Brazil, Russia, India, and China – the BRICs – are expected to generate well over 40 percent of global economic growth between 2005 and 2020. China alone will contribute 26 percent of global growth and India 12 percent. While the financial crisis will slow down global economic growth for years, the relatively greater impact of the crisis on Western economies will mean that the contribution of emerging countries to growth will be even larger – assuming that countries like China or Russia will not enter a phase of severe social turmoil due to lower growth rates. The broader point, however, is that in a world where three of the five largest economies are Asian – China, Japan, and India – that world will be a different place.[42]

In terms of military might, US resources far outstrip those of any potential contender, or even a coalition of contenders. The US budget has grown from 333

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[39] Secretary-General of UNCTAD, *The Least Developed Countries Report 2009* (New York and Geneva: United Nations, 2009).

[40] US JFC, *The Joint Operating Environment – JOE 2008,* 15.

[41] Ibid., 14.

[42] Giovanni Grevi, "The Interpolar World: A New Scenario," (European Union Institute for Security Studies, Occasional Paper No. 79, June 2009), 14.

billion USD in 2001 to more than 660 billion USD in 2009. US military spending in 2008 accounted for around 48 percent of the world total, with the combined spending of the EU ranking second at 20 percent or 280 billion USD of global expenditure. China and Russia follow with 8 and 5 percent, or 120 and 170 billion USD respectively. China's economic power has been fuelled by unparalleled growth, averaging 9.5 percent over the past three decades. As a result, China has increased its defence expenditure by 17 percent in each of the last four years.[43] China continues to have the world's largest armed forces at more than 2.25 million personnel. Currently, only six countries possess populations of over 100 million people and a GDP of at least 100 billion USD: China, Russia, India, Indonesia, Brazil, and Mexico. By 2030, Bangladesh, Nigeria, Pakistan, the Philippines, and Vietnam may have joined that group. Thus, there would be eleven states with the population and the economic strength to build military forces possessing the ability to project significant military power in their region.

Knowledge, scientific advances and technological innovation are crucial to the economic prosperity and political attractiveness of any country. To the extent that technological innovation is applied to the defence sector, they are also the ultimate platform of superiority in military affairs. The US, EU member states, and other developed countries maintain a strong position by all measures of research and development (R&D) investment and innovation, but new trends are unmistakable. In 2006, the combined OECD investment in R&D amounted to 818 billion USD, of which the US alone accounted for 330 billion USD; China's investment amounted to almost 90 billion USD, India's to 24 billion USD, and Russia's to 20 billion USD. By share of global R&D expenditure, the US ranks by far first with about a third, the EU follows with 24 percent, and Japan comes third with 14 percent.[44] The share of non-OECD economies has grown from 11 percent in 1996 to about 18 percent in 2005. In particular, China's R&D expenditure has been growing at a staggering annual rate of 18 percent between 2000 and 2006, approaching the EU level of R&D intensity – the ratio of expenditure to GDP. China's targets for R&D intensity are 2 percent in 2010 and are likely to reach 2.5 percent in 2020. Were these targets to be met, China would become by far the second largest R&D spender in the world after the US. The picture and the pattern look similar when considering the respective shares and growth rates of scientific publications and patent applications.

China is actively participating in various multilateral development mechanisms and has become the third biggest provider of overseas assistance, after the EU and the US. By the end of 2005, Beijing had given economic and technical assistance to fifty-three African countries alone, completing 769 projects. At the China-Africa summit of November 2009, China pledged 10 billion USD in low interest loans to African nations over the next three years, announced that it would cancel the

[43] Wang Di & Ron Matthews, *China's 60th Anniversary: Celebrating Beijing's Peaceful Rise* (Singapore: S. Rajaratnam School of International Studies, October 2009).
[44] OECD, *OECD Science, Technology and Industry Outlook 2008* (Paris: OECD, 2008).

government debts of some of the poorest of those countries, and would build one hundred new clean energy projects for Africa over the same period.[45]

China has four strategic imperatives in Africa: gaining access to resources, increasing its political influence, developing outlets for Chinese labourers and acquiring preferential access to markets. China has also started two major programmes to globally expand its soft power. One is Beijing's ambition to spread China's cultural influence throughout the world, with a notable aspect of this effort being the establishment of an international network of Confucius Institutes, of which some 326 have been established in eighty-one countries. China's other big cultural outreach programme is the launch of what has been described as a "media aircraft carrier", aimed at winning the "hearts and minds" of a global audience. It has invested 6.2 billion USD into supporting four key state-run news organisations (China National Radio, China Central Television, People's Daily, and Xinhua News Agency) in order to expand through them its international influence. There are also plans to launch an international news channel, a sort of Chinese version of Al-Jazeera.[46]

Continued economic growth is also necessary for augmenting employment rates. As more young enter the work force, the developing world will need to increase employment by nearly 50 million jobs per year. China and India alone need to create 8 to 10 million jobs annually to keep pace with the numbers entering the workforce every year. If economic growth suffices to provide such employment, it would go far towards reducing international tensions and the endemic troubles inherent in youth bulges. While poverty has rarely been a driving force for revolutionary movements and wars, rising expectations often have. And in a world covered by media reports from around the globe, rising expectations will increasingly be a driving force of politics, war and peace, however well individual economies may perform.

However, real catastrophes may occur if economic growth slows or reverses either on a global scale or within an emerging power. Growing economies and economic hopes disguise a number of social ills and fractures. The results of a dramatic slowdown in China's growth, for example, are unpredictable, and could lead to internal difficulties or aggressive behaviour externally.[47]

Even within the most optimistic economic scenarios, there will be major areas of the world left behind: the bottom billion. Sub-Saharan Africa will remain the region most vulnerable to economic disruption, population stresses, conflict, and political instability. Despite increased global demand for commodities for which Sub-Saharan Africa will be a major supplier, local populations are unlikely to experience significant economic gain. Windfall profits arising from sustained increases in commodity prices might further entrench corrupt or otherwise ill-

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45 Tarek El-Tablawy, "Chinese Premier Pledges Funds, Aid to Africa," *AP*, 8 November 2009. See also: Thomas Lum et. al., *China's Foreign Aid Activities in Africa, Latin America, and Southeast Asia* (Washington DC: Congressional Research Service, CRS Report for Congress, 7-5700, R40361, 25 February 2009).

46 Di & Matthews, *China's 60th Anniversary*.

47 US JFC, *The Joint Operating Environment – JOE 2008,* 15.

equipped governments in several regions, diminishing the prospects for democratic and market-based reforms.

While many major countries of Latin America will have become middle income powers by 2030, others will lag behind, particularly those that have embraced populist policies for a protracted period, such as Venezuela and Bolivia. And others, such as Haiti, which suffered a devastating earthquake, will have become poorer and less governable. Overall, Latin America will continue to lag behind Asia and other fast-growing areas in economic competitiveness.[48]

Between now and 2030, many of the economic problem areas will likely lie in Sub-Saharan Africa and, apart from the oil boom counties, in the Middle East. Although both regions have maintained impressive growth rates over the past several years, those rates have not been sufficient to decrease unemployment. If economic stability and growth continue unabated up to 2030, there would be sufficient global resources to provide support for failing or failed states – provided the political will is there. A broken economy is usually a harbinger of social collapse and anarchy, or ruthless despotism. Neither is attractive.

1.3 Energy

The World Energy Outlook 2008 states that the world's energy system is at crossroads.[49] Because current global trends in energy supply and consumption are unsustainable, the future of human prosperity depends on how successfully the two central energy challenges will be solved: securing the supply of reliable and affordable energy; and effecting a rapid transformation to low-carbon, efficient and environmentally benign system of energy supply.

Oil is the world's vital source of energy and will remain so for the years to come, even under the most optimistic of assumptions about the pace of development and deployment of alternative technology. But, as the International Energy Agency notes, the sources of oil to meet rising demand, the cost of producing it, and the prices that consumers will need to pay for it, will remain highly uncertain. The surge in prices in recent years, culminating in the price spike of 2008, coupled with much greater short-term price volatility, have highlighted just how sensitive prices are to short-term market imbalances. They have also alerted the world to the ultimately finite nature of oil and natural gas resources.[50]

About half the world's oil production comes from 116 giant fields which each produce more than 100,000 barrels a day of oil. The other half of the world's oil comes from more than 4,000 smaller oilfields. The current energy economy (oil wells, pipelines, tankers, refineries, power plants, transmission lines, et cetera) is worth an estimated 10 trillion USD. Physical infrastructure security and

[48] National Intelligence Council, *Global Trends 2025: A Transformed World* (Washington DC: US Government Printing Office, November 2008), vii.
[49] IEA, *World Energy Outlook 2009* (Paris: OECD/IEA, 2009).
[50] Ibid.

transportation security are but the two most concrete elements of the broader complex of energy security. The strategic elements of energy security also involve the long-term supply security of oil and other energy carriers and the concomitant financial market security. Energy security therefore also refers to a complex set of interrelated political and market-related issues that impact on the day-to-day global economic and political operating environments.

The relationship between economic prowess and energy endowments is a telling indicator of the tensions built into the new international system. The twelve most energy-rich countries, while producing only 6.5 percent of global GDP, control over 80 percent of the world's proven oil and gas reserves, whereas all OECD countries combined plus China and India, accounting for over 75 percent of global wealth, control only 10 percent.[51] In other words, the largest and fastest growing world economies are exposed to severe dependency on resources held by a relatively limited number of countries whose political influence is thereby multiplied. This will remain a defining feature of future international relations.

The US, with less than 5 percent of the world's population, uses almost 25 percent of the world's total energy. US lifestyles are twice as energy-intensive as those in Europe and Japan, and almost ten times the global average. From the G-8 states, Russia has 27 percent of the world gas reserves and 6 percent of proven oil reserves. The remaining G-7 have only 4 percent of gas reserves and 9 percent of the oil.

Global energy use is set to fall in 2009, for the first time since 1981 on any significant scale, as a result of the financial and economic crisis, but demand is set to resume its long-term upward trend once the economic recovery gathers pace. By 2030, the International Energy Agency's Reference Scenario sees world primary energy demand a dramatic 40 percent higher than in 2007.[52]

According to the World Energy Outlook 2009, non-OECD countries collectively account for over 90 percent of the increase. Their share of global primary energy demand will rise from 52 to 63 percent, with China and India accounting for over 53 percent of incremental demand to 2030. Moreover, the energy intensity of non-OECD nations is much higher than that of the OECD countries, meaning that the amount of energy needed to produce a certain amount of goods and services is 3.4 to 1 in non-OECD countries compared to 1.1 to 1 in the OECD countries. Unless there is a drive for much greater efficiency among the non-OECD countries, their relentless rates of growth will multiply the energy required to move their economies. Coupled with strong growth from ASEAN, this is contributing to a refocusing of the global energy landscape towards Asia. Outside of Asia, the Middle East sees the fastest rate of increase, contributing 10 percent to incremental demand.[53]

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[51] Vladimir Milov, Russia and the West: the Energy Factor (Paris: Institut français des relations internationales, Center for Strategic and International Studies, July 2008), 1.

[52] IEA/OECD, *World Energy Outlook 2009 Fact Sheet* (Paris: OECD/International Energy Agency, 2009).

[53] IEA/OECD, *World Energy Outlook 2009*.

Fossil fuels remain the dominant source of energy worldwide, accounting for 77 percent of the demand increase in 2007–30. Although oil demand is expected to drop by 2.2 percent in 2009 as a whole, following a drop of 0.2 percent in 2008, it is projected to recover from 2010 as the world economy pulls out of recession, rising from around 85 million barrels per day (MBD) in 2008 to 105 MBD in 2030, an increase of around 24 percent. Non-fossil energy use is likely to grow rapidly, but fossil fuels still provide 78 percent of total US energy use in 2035.[54] In 2007–30, demand for coal grows by 53 percent and demand for natural gas by 42 percent.

Electricity demand is projected to grow by 76 percent in 2007–30, requiring 4,800 gigawatts (GW) of capacity additions – almost five times the existing capacity of the US Coal should remain the dominant fuel of the power sector, its share of the global power generation mix rising by 2 percentage points to 44 percent in 2030. But higher fossil-fuel prices, as well as increasing concerns over energy security and climate change, will probably boost the share of renewable-based electricity generation from 18 percent in 2007 to 22 percent in 2030.[55]

World primary energy demand is estimated to grow by 1.5 percent per year up to 2030, from just over 12,000 million tons of oil equivalent (Mtoe) to 16,800 Mtoe, an overall increase of 40 percent. In absolute terms, coal sees by far the biggest increase in demand over the projected period, followed by gas and oil. Yet oil remains the single largest fuel in the primary fuel mix in 2030, even though its share drops, from 34 percent now to 30 percent. Global demand for natural gas will grow more quickly, by 1.8 percent per year, with its share in total energy demand rising marginally to 22 percent. Most of the growth in gas use will come from the power-generation sector. World demand for coal will advance by 2 percent a year on average, its share in global energy demand climbing from now 26 percent to 29 percent in 2030. Although the use of coal may decline in the OECD countries, it will more than double in developing nations. Some 85 percent of the increase in global coal consumption will come from the power sector in China and India. China is now using more coal than the US, EU, and Japan combined.

The share of the world's energy consumed in cities is estimated to grow from two-thirds to almost three quarters in 2030. Due to continuing strong economic growth, China and India will account for just over half of the increase in world primary energy demand between now and 2030. Middle East countries should strengthen their position as an important demand centre, contributing a further 11 percent to incremental world demand. Collectively, non-OECD countries account for 90 percent of the increase. Their energy consumption has overtaken that of the OECD already in 2005.

To meet that demand, even assuming more effective conservation measures, the world would need to add roughly the equivalent of Saudi Arabia's current energy

[54] Richard Newell, *Annual Energy Outlook 2010* (Washington DC: US Energy Information Administration, 14 December 2009).
[55] IEA/OECD, *World Energy Outlook 2009.*

production every six years. Saudi Arabia possesses some 265 billion barrel of oil in its subsoil – a quarter or more of the world's proven crude reserves.[56] Thus, the world may soon be running out of oil, and the consequences will be profound. Out of forty-eight significant oil producing countries, thirty-three are experiencing declining production. Peak year of new oil discoveries was 1960; it has been downhill ever since. Within three decades, the production level may peak, then plateau, and then fall. The decline is projected to be fast rather than gradual, as more financial and energy resources have to be spent to extract oil from fields that are not as accessible or as productive as previous ones. Some countries are already involved in the scramble over oil resources in the Arctic, in Central Asia, Africa, and the Middle East. Since some wars have already been fought over the control of oil, more may be fought as it becomes scarcer.[57] But here, the future might likely see more proxy wars.

Oil and coal will continue to drive the energy train in the coming years, unless there is a major change in the relative reliance on alternative energy sources, which requires vast insertions of capital, dramatic changes in technology, and altered political attitudes toward nuclear energy. For the next decade, the central problem will not be a lack of petroleum reserves, but rather the shortage of drilling platforms, engineers, and refining capacities. Even if a concerted effort were begun today to repair that shortage, it would take 10 years before production could catch up with expected demand. The key determinant here is the degree of commitment the US, the EU, China, India, and others are able to display in addressing the dangerous vulnerabilities posed by the growing energy crisis.[58]

Modern renewable technologies are set to grow most rapidly, overtaking gas to become the second-largest source of electricity, behind coal. Falling costs as renewable technologies mature, assumed higher fossil-fuel prices and strong policy support, provide an opportunity for the renewable industry to eliminate its reliance on subsidies and to bring emerging technologies into the mainstream. Excluding biomass, non-hydro renewable energy sources – wind, solarthermal, geothermal, tide and wave energy – will together grow faster than any other source worldwide. Most of the increase occurs in the power sector. The share of non-hydro renewables in total power generation is estimated to grow from 2.5 percent in 2007 to 8.6 percent in 2030, with wind power seeing the biggest absolute increase. The consumption of biofuels for transport also rises strongly. The share of hydropower, by contrast, drops from 16 to 14 percent.[59]

In the OECD, the increase in renewables-based power generation is exceeding that in fossil-based and nuclear power generation combined. During 2008 the majority of the increase in US and EU electrical production came from renewable sources. New investment in renewable energy reached $120 billion, up 16 percent

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[56] Bhushan Bahree & Jeffrey Ball, "Oil producers see plenty of supply to meet needs," *The Wall Street Journal*, 14 September 2006, 2.

[57] See also: Michael L. Ross, "Blood Barrels: Why Oil Wealth Fuels Conflict," *Foreign Affairs* 87, no.3,(2008): 2-8 and James E. McGinley, "Oil and Conflict: Fatal Attraction? A Correlational Examination of Oil Resources and Armed Conflict," *Strategic Insights* VIII, no.5 (December 2009).

[58] US JFC, *The Joint Operating Environment – JOE 2008,* 17-19.

[59] IEA/OECD, *World Energy Outlook 2009*, 4.

over the previous year despite the credit crunch. Japan claimed that it will have a solar power satellite system wirelessly transmitting energy to its electric grids on earth by 2030. Electricity was wirelessly transmitted 148 km between two Hawaiian Islands by a US firm in 2008.[60]

The eight potential sources of future energy supplies nearly all present their own difficulties and vulnerabilities: (1) New sources of non-OPEC oil – Caspian Sea, Brazil, Colombia, and new portions of Alaska and the Continental shelf – could offset declining production in mature fields over the course of the next quarter century. But without drilling in currently excluded areas, they will add little additional capacity. (2) Production from oil sands and shale could increase from 1 MBD to over four MBD, but toxic waste, legal, and other constraints discourage larger investments. (3) Natural gas production could increase to the equivalent of two MBD, with half coming from OPEC countries. (4) Biofuel production could increase to approximately three MBD-equivalent, but starting from a small base, biofuels are unlikely to contribute more than a few percents of global energy requirements by 2030. Moreover, even that modest achievement could curtail the supply of foodstuffs to the world's growing population, which would add other national security challenges. (5) Wind and solar combined are unlikely to account for more than very few percents of global energy by 2030. That assumes the energy from such sources will more than triple, which alone would require major investments. Moreover, if generation of electricity via wind or photovoltaics is to become a major component of the energy portfolio, it will be essential to develop efficient methods to convert electricity into stored energy that can be used on demand. (6) Nuclear energy obviously offers one of the more promising technological possibilities, given significant advances in safety since the 1970s. In particular, it could play a major role in replacing coal-fired plants, and a greater supply of cheap electricity could encourage electric-powered transportation. But expanding nuclear plants still confronts considerable opposition because of public fears, and because safe disposal of nuclear waste is still unsolved. Also, some nuclear technologies show similar shortages as refining to oil production. (7) To meet climbing global requirements, OPEC will have to increase its output from thirty MBD to at least fifty MBD. However, these nations may have a vested interest in stymieing production increases, both to conserve finite supplies and to keep prices high. Significantly, no OPEC nation, except perhaps Saudi Arabia, is investing sufficient sums in new technologies and recovery methods to achieve such growth. Some, like Venezuela and Russia, are actually exhausting their fields to cash in on the bonanza created by rising oil prices. (8) Eventually, geothermal, algae, biomass, or later hydrogen-based systems, may be developed. But at current rates of development, none of these alternatives will be available on a large enough scale when oil products become scarce.

None of these developments and trends provides much reason for optimism. The implications for future conflict are ominous. If the major developed and developing nations do not undertake a massive expansion of oil production and refining capabilities, a severe energy crunch is inevitable. Although it is difficult to

[60] Wikipedia, "Wireless energy transfer," Wikipedia, http://en.wikipedia.org/wiki/Wireless_energy_transfer

predict precisely what economic, political, and strategic effects such a shortfall might produce, it certainly would reduce the growth prospects for both developing and developed countries. An economic slowdown would, moreover, exacerbate other unsolved tensions, push fragile or failing states further down the path toward collapse, and may have a serious economic impact on both China and India. At best, it would lead to a period of harsh economic adjustment. To what extent conservation measures and investments in alternative energy production from tar sands, shale, and algae would mitigate such a period of adjustment is difficult to predict.[61]

1.4 Food

Theoretically, there is enough food to feed the world – despite the fact that in 6 of the past 9 years world grain production has fallen short of consumption, forcing a steady drawdown in stocks. World carryover stocks of grain have dropped to only 62 days of consumption, and wheat inventories have reached a 30-year low. In one year, inventories in the EU have plummeted from 14 million tons to one million. Meanwhile wheat, rice and soybean prices have reached all-time highs, and corn prices have jumped to a 12-year high.[62]

Two major factors drive food requirements: a growing global population, and prosperity that expands dietary preferences. Demand for grain continues to increase, adding upward pressure on the price of agricultural products. The number of hungry people, which was declining for several decades, bottomed out in the mid-1990s at 825 million. It then climbed to 915 million and jumped to over 1 billion in 2009. With world food prices projected to continue rising, so too will the number hungry people. As demand for food rises faster than supplies are growing, the resulting food-price inflation puts severe stress on governments of countries already teetering on the edge of chaos. Unable to buy grain or grow their own, hungry people take to the streets. And the number of failing states will expand. Many of their problems stem from a failure to slow the growth of their populations. But if the food situation continues to deteriorate, more nations will break down at an increasing rate: when governments lose their monopoly on power, and law and order begin to disintegrate because they can no longer provide food security, personal security, and basic social services such as education and health care.

According to the UN Food and Agriculture Organisation, FAO, world food production must increase by 70 percent until 2050 to nourish a human population then likely to be more than 9 billion. Cereal production will have to increase by almost a billion tons from 2.1 billion today, and meat production will have to grow by more than 200 million tons to reach a total of 270 million tons in 2050. More land will be needed for crops, despite the fact that 90 percent of the growth

[61] US JFC, *The Joint Operating Environment – JOE 2008,* 17–19.

[62] Lester R. Brown, "Could Food Shortages Bring Down Civilization?" *Scientific American Magazine*, 22 April 2009, 50–52. See also: Paul Roberts, *The End of Food* (Boston & New York: Mariners Books, Houghton Mifflin Harcourt, 2009).

in crop production is projected to come from higher yields and increased cropping intensity.[63]

Increased animal protein use in countries with rapidly rising income levels is placing considerable pressure on the world's food supply, because animal production requires much greater input for calories produced. 7 to 16 kilograms of grain or soybeans are needed to produce 1 kilogram of meat. This can easily be defined as one of the most effective ways to waste foodstuffs. The artificial extension of the food chain due to the transformation of grain into meat causes a huge loss of nutrients, including 90 percent of protein, 99 percent of carbohydrates, and 100 percent of fibre, among other things. In addition to this, only a small portion of the body of a slaughtered animal consists of meat – 35 percent of the weight of a cow or 39 percent of a calf, excluding bones. On the same amount of land needed to produce 1 kilogram of meat, 200 kilograms of tomatoes or 160 kilograms of potatoes could be harvested. 6,000 kilograms of carrots, 4,000 kilograms of apples, and 1,000 kilograms of cherries can be produced on the same amount of land needed to produce 50 kilograms of meat. In the US, 230,000 km^2 of land are taken up with the production of hay for farm animals, and only 16,000 km^2 are used for growing plant foods for humans. The enormous amounts of land required for meat production also damages rainforests: 40 percent of all rainforests in Central America have been cleared or burned down within the last 40 years, mainly to gain land for grazing and the cultivation of fodder.[64]

Industrial meat production, moreover, uses large quantities of oil. Some is used for transporting food across countries. More oil is used to fuel farm machinery. But the greatest amount of fossil fuels is actually used in the production of fertilizers and pesticides. A University of Michigan report found that up to 40 percent of the energy used in the food system goes toward the production of artificial fertilizers and chemical pesticides used in industrial or conventional food production. In addition, approximately 23 percent of the energy used in food production is from processing and packaging food, mainly in order to ship it long distances.

However, the main pressures on sufficient food supplies will remain in countries with persistently high population growth and a lack of arable land, in most cases exacerbated by desertification and shortages in rainfall. Some 300 million Africans currently suffer from hunger, since the continent has gone from a net food exporter in the 1980s to a net food importer. The conditions that created the 2008 food crisis are still present, and the causes have yet to be addressed. Currently, food systems on the continent are dysfunctional, prices are volatile, and the trading environment keeps African farmers from competing effectively on the world markets. African peasant farmers need adequate inputs such as seeds and fertilizers. And they are increasingly threatened by large-scale farming and agricultural subsidies in other countries.

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[63] Anonymous, "World will need 70 percent more food in 2050: FAO," *AFP*, 23 September 2009.
[64] Vegitarismus, "The Ecological Consequences of Meat Consumption," Vegitarismus, http://www.vegetarismus.ch/info/eoeko.htm

The tripling of world wheat, rice, and corn prices between mid-2006 and 2008 signalled the growing vulnerability to food shortages. It took the worst economic crisis since the Great Depression to lower grain prices. Already during the second half of the 20th century, grain prices rose dramatically several times. In 1972, for instance, the Soviets, recognizing their poor harvest early, quietly cornered the world wheat market. As a result, wheat prices elsewhere more than doubled, pulling rice and corn prices up with them. But these and other price shocks were event driven: drought in the Soviet Union, a monsoon failure in India, and crop-shrinking heat in the US Corn Belt. And the rises were short-lived – prices typically returned to normal with the next harvest. In contrast, the recent surge in world grain prices is trend-driven, making it unlikely to reverse without a reversal in the trends themselves. On the demand side, those trends include the ongoing addition of almost 80 million people a year (the size of Germany's population); a growing number of people wanting to move up the food chain to consume highly grain-intensive livestock products; and the growing diversion of grain to ethanol-fuel distilleries.[65]

As Brown notes: "The extra demand for grain associated with rising affluence varies widely among countries. People in low-income countries where grain supplies 60 percent of calories, such as India, directly consume a bit more than a pound of grain a day. In affluent countries such as the US and Canada, grain consumption per person is nearly four times that much, though perhaps 90 percent of it is consumed indirectly as meat, milk, and eggs from grain-fed animals."[66]

The potential for further grain consumption as incomes rise among low-income consumers is huge. But the potential pales beside the insatiable demand for crop-based automotive fuels. Ethanol is widely used by flex-fuel light vehicles in Brazil, and as an oxygenate to gasoline in the US. Together, both countries were responsible for 89 percent of the world's ethanol fuel production in 2008.[67] While Brazil is mainly converting sugar cane into ethanol, a fourth of the US grain harvest of 2009 will go to fuel cars – enough to feed 125 million Americans or half a billion Indians at current consumption levels. Yet even if the entire US grain harvest were diverted into making ethanol, it would meet at most 18 percent of US automotive fuel needs. The grain required just to fill a 100 litre SUV tank with ethanol could feed one person for a year.

The merging of the food and energy economies implies that if the food value of grain is less than its fuel value, the market will move the grain into energy production – a double demand that is leading to an epic competition between cars and people for the grain supply, and to a political and moral issue of unprecedented dimensions. Thus, in a misguided effort to reduce their

65 Brown, "Could Food Shortages Bring Down Civilization?" 53.
66 Idem.
67 Wikipedia, "Ethanol fuel," Wikipedia, http://www.wikipedia.org/wiki/Ethanol_fuel

dependence on foreign oil by substituting grain-based fuels, the US and some other countries are contributing to global food insecurity.[68]

In addition, there are three environmental developments that are making it increasingly hard to expand the world's grain supply fast enough to keep up with the demand: the growing shortage of freshwater, the loss of topsoil, and the rising temperatures and other effects of global warming. Of those, the spread of water shortages poses the most immediate threat. The biggest challenge here, and the greatest drain on supplies of freshwater, is irrigation, consuming 70 percent of the world's freshwater. Millions of irrigation wells the world over are now pumping water out of under-ground sources faster than rainfall can recharge them, resulting in diminishing water tables in countries populated by half the world's people, among them the three biggest grain producers: China, India, and the US. Normally, aquifers are regularly replenished by rainfall. But some of the most important ones are not: the "fossil" aquifers storing ancient water, which are not recharged by precipitation. Thus, depletion would spell the end of pumping. In arid regions, such a loss could also bring an end to agriculture altogether.[69]

In China, for example, the water table under the North China Plain, an area that produces more than half of the country's wheat and a third of its corn, is falling fast. Over pumping has used up most of the water in a shallow aquifer, forcing well drillers to turn to the region's deep aquifer, which is not replenishable. As water tables have fallen and irrigation wells have gone dry, China's wheat crop, the world's largest, has declined by 8 percent since it peaked at 123 million tons in 1997. In that same period China's rice production dropped 4 percent.[70] Thus, the world's most populous nation may soon be importing massive quantities of grain.

Water shortages in India are even more worrisome, since there the margin between food consumption and survival is more precarious. In almost every state hundreds of thousands of irrigation wells have dropped water tables. As reported in *New Scientist*, half of India's traditional hand-dug wells and many thousands of shallower tube wells have already dried up. In states where half of the electricity is used to pump water from depths of up to a kilometre, electricity blackouts are now reaching epidemic proportions. A World Bank study reports that 15 percent of India's food supply is produced by mining groundwater. That is, 175 million Indians consume grain produced with water from irrigation wells that will soon be exhausted. The continued shrinking of water supplies could result in unmanageable food shortages and social conflict.[71]

Hence, restoring the earth's natural systems and resources is needed. This must incorporate a worldwide initiative to arrest the fall in water tables by raising water productivity: the useful activity that can be wrung from each drop. That implies shifting to more efficient irrigation systems and to more water-efficient crops. In some countries, it implies growing and eating more wheat and less rice, because

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[68] Brown, "Could Food Shortages Bring Down Civilization?" 53.
[69] Science Knowledge, "Water Shortages Mean Food Shortages," Science Knowledge, http://sciencemags.blogspot.com/2009/09/water-shortages-mean-food-shortages.html
[70] Anonymous, "Lack of water endangering NE China's grain production," *Xinhua*, 29 May 2009.
[71] Science Knowledge, "Water Shortages Mean Food Shortages," 2.

rice is a water-intensive crop. And for industries and cities it implies doing what some are doing already, namely, continuously recycling water.

The scope of the second worrying development – the loss of topsoil – is equally problematic, since topsoil is eroding faster than new soil forms on perhaps a third of the world's cropland. This thin layer of essential plant nutrients, constituting the very foundation of civilization, took long stretches of geological time to build up. Yet it is often only some 20 to 30 centimetres deep. Its loss from wind and water erosion already doomed earlier civilizations. Haiti, for example, was largely self-sufficient in grain some 40 years ago. In the years since, it has lost much of its topsoil and nearly all its forests, forcing the country to import more than half of its grain. The same is true in many other countries. In 2002, a UN team assessed the food situation in Lesotho, a small, landlocked country of two million people embedded within South Africa. It found that agriculture in Lesotho faces a catastrophic future. Crop production is declining and could cease altogether over large tracts of the country if steps are not taken to reverse soil erosion, degradation, and the decline in soil fertility. Thus, an effort must be launched to conserve soil, similar to the US response to the Dust Bowl of the 1930s. Among the most important soil conservation measures are: terracing the ground, planting trees as shelterbelts against windblown soil erosion, and practicing minimum tillage – in which the soil is not ploughed, and crop residues are left on the field.[72]

The third and perhaps most pervasive environmental danger to food security – rising surface temperature due to global warming – can affect crop yields everywhere. As Brown notes, in many countries crops are grown at or near their thermal optimum, hence even a minor temperature rise during the growing season can reduce the harvest. And a study published by the US National Academy of Sciences has confirmed a rule of thumb used among crop ecologists: for every rise of one degree Celsius above the norm, wheat, rice and corn yields fall by 10 percent.[73] A two degree Celsius warming above pre-industrial levels could permanently reduce Africa's annual per capita consumption by 4 to 5 percent.[74]

In the past, particularly at the time when the innovations in the use of fertilizer, irrigation, and high-yield varieties of wheat and rice created the "green revolution" of the 1960s and 1970s, the obvious response to the growing demand for food was the application of scientific agriculture: the technological fix.[75] Today, however regrettably, many of the most productive advances in agricultural technology have already been put into practice, thus slowing down the long-term rise in land productivity to a significant degree. While between 1950 and 1990 farmers still could increase the grain yield per acre by more than 2 percent a year, exceeding the growth of population, nowadays the annual growth in yield has

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72 Brown, "Could Food Shortages Bring Down Civilization?" 54-55.
73 Ibid., 55.
74 World Bank, *World Development Report 2010, Development in a Changing Climate* (Washington DC: World Bank, September 2009).
75 See: Syngenta Global, "Access to agricultural technology," Syngenta, http://www.syngenta.com/en/grow-more-from-less/access-technology.html

diminished to one percent. In some countries the yields appear to be even near their practical limits, including rice yields in Japan and China.[76]

It seems that opposition to genetically modified foods is dissipating. As a result, there may be a reasonable chance of sparking a new "green revolution" that would expand crop and protein production sufficiently to meet world requirements. Unfortunately, however, no genetically modified crops have so far led to dramatically higher yields – at least not comparable to the doubling or tripling of wheat and rice yields during the first "green revolution." Nor do they seem likely to soon do so, simply because conventional plant-breeding techniques have already tapped some of the potential for raising crop yields.

Furthermore, natural disease will also have a say in the world's food supply. The Irish potato blight was not an exceptional historic event. As recently as 1954, 40 percent of America's wheat crop failed as a result of black-stem disease. There are reports of a new aggressive strain of this disease, Ug99, which has already destroyed harvests in Uganda, Kenya and Ethiopia is now spreading across the Arabian Peninsula and reaching Pakistan.[77] Blights threatening basic food crops such as potatoes and corn could have destabilising effects on nations close to the subsistence level.

Still more problems are clouding the future. With the unravelling of the world's food security, a dangerous politics of food scarcity is coming into play. It started in 2007, when leading wheat-exporting countries such as Russia and Argentina limited or banned their exports in hopes of increasing locally available food supplies, and to bring down food prices domestically. Vietnam, the world's second-biggest rice exporter after Thailand, banned its exports for several months for the same reason. Acting in their narrowly defined self-interest, these countries are worsening the plight of the many. While such moves may reassure those living in the exporting countries, they are creating panic in importing countries that must rely on what is then left of the world's exportable grain. As grain-exporting countries restrict or ban exports to keep domestic food prices from spiralling out of control, importing countries are losing confidences in the market's ability to supply their needs. In response to these restrictions, the more affluent grain importers such as Saudi Arabia, South Korea, and China are trying to nail down long-term bilateral trade agreements that would lock up future grain supplies. The Philippines, for example, no longer able to count on getting rice from the world market, recently negotiated a three-year deal with Vietnam for a guaranteed delivery of 1.5 million tons of rice each year.[78] Food-import anxiety is spawning new efforts by food-importing countries such as Saudi Arabia and Libya to buy or lease large tracts of farmland in other countries on which to grow food for

[76] Brown, "Could Food Shortages Bring Down Civilization?" 55.

[77] Robin McKie & Xan Rice, "Millions face famine as crop disease rages: Scientists say wheat blight that ravaged Africa is set on a course for Asia," *The Observer*, 22 April 2007.

[78] Anonymous, "Vietnam-Manila Rice Deal Seen at 400,000 T, Corn Eyed," *Reuters, Food Industry News*, 20 August 2009; Anonymous, "Vietnam bags deal on 600,000-MT rice supply," *Hanoi (DPA)*, 16 December 2009; Hong Van, "Vietnam should sell rice to the Philippines," *The Saigon Times*, 18 December 2009.

themselves.[79] Madagascar was poised to sign a 99-year agreement to rent 1.3 million hectares of land to South Korea's Daewoo Logistics Corporation to plant maize and palm oil for export.[80] Among other countries in which large tracts of land are being acquired are Ethiopia, Sudan, Somalia, and Yemen which are already heavily dependent on World Food Program lifelines to stave off famine. In effect, the competition for land and water in the form of land acquisition has crossed national boundaries, opening a new chapter in the history of food security.

In fact, no country is immune to the effects of tightening food supplies. If China turns to the world market for large quantities of grain, as it has recently done for soybeans, it will have to buy from North America. For American consumers, that would mean competing for the US grain harvest with 1.3 billion Chinese consumers with fast-rising incomes. In such circumstances, it would be tempting for the US to restrict exports, as it did, for instance, with grain and soybeans in the 1970s when domestic prices soared. [81] However, this is no longer an option with China today. Chinese investors now hold well over a trillion US dollars, and they have often been the leading international buyers of US Treasury securities issued to finance the US fiscal deficit. Thus, there is no doubt that American consumers will share their grain with Chinese consumers, no matter how high food prices rise.[82]

Access to fish stocks is another important natural resource for the prosperity of nations, particularly because aquaculture is growing more rapidly than all other animal food producing sectors. And fishing is central to the livelihood and food security of more than 200 million people, especially in the developing world. One of five people on this planet depends on fish as the primary source of protein. The Japanese even consume four times more fish than the rest of the world.[83] However, global marine fish stocks are in jeopardy, pressured mainly by overfishing and environmentally destructive fishing methods. In 1998, total global capture peaked at an estimated 93 million tons. Since two thirds of fish stocks are overfished, global capture has diminished to a current total of 82 million tons a year.[84] As fish numbers are steadily decreasing, attention has turned to fish and particularly salmon farms in recent years. But fish food for farmed fish comes from the sea. For every kilogram of farmed fish produced, two kilograms of wild fish are taken from the sea as food. The same applies to other seafood such as crabs and prawns. A variety of chemicals, including antibiotics, pesticides, and fungicides are used on salmon farms. In addition to this wastage, fish populations suffer from the fact that one third of fish catches worldwide are processed into fish-meal, two thirds of which end up in the food troughs of slaughter animals on

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79 Anonymous, "Libya to lease farmland in oil-for-wheat deal in Ukraine," *Business Intelligence Middle East*, 2 February 2010; Anonymous, "TAKE A LOOK – Farmland scramble for food security," *Reuters Africa*, 20 October 2009; Anonymous, "Buying farmland abroad: Outsourcing's third wave," *The Economist*, 21 May 2009.

80 Anonymous, "Land Rental Deal Collapses after Backlash against Colonialism," *Les Afriques – The African Finance Journal*, 31 January 2009.

81 Brown, "Could Food Shortages Bring Down Civilization?" 55.

82 Paul R. La Monica, "China still likes us … for now," *CNNMoney.com*, 16 September 2009; Anonymous, "China's US-dept holdings drop," *China Daily*, 17 October 2009.

83 Jennie Kern, "Japan's role in fish consumption," *The Japan Times*, 7 February 2008.

84 FAO, *FAO Fisheries and Aquaculture Report No. 881* (Rome: FAO, 2008).

land. Depletion of fisheries, and competition over those that remain, have the potential for causing more serious confrontations in the future.

Competition over access to these resources has often resulted in naval confrontations. Three prolonged quarrels have taken place between Britain and Iceland over Cod fishing, the most recent until 1975. There was also the 1995 "Turbot War" between Canada and Spain. A number of fishery disputes occurred between France and Spain. And in 1996, a naval standoff has taken place between Japan and Korea over rocky outcroppings that would establish extended fishing rights in the Sea of Japan. Presently, more than thirty major contested fishing areas are counted worldwide.[85] Overfishing of bigeye and yellowfin tuna is now becoming a growing concern in Asia.

In a world with adequate global supply but localized food shortages, the real problem is how food will be distributed. How quickly the world reacts to temporary food shortages inflicted by natural disasters will also pose challenges. In such cases, armed forces may find themselves increasingly involved in providing lift, logistics, and occasionally security to those charged with relief operations. Food crises have led in the past to famine, internal and external conflicts, and collapse of governing authority, migrations, societal collapse, and social disorder. During the last three years deadly food riots occurred on three continents in countries such as Egypt, Yemen, Cameroon, Haiti, Bangladesh, South Africa, Mexico, and Indonesia. In such cases, many people in the crisis zone may be armed and dangerous, making the task of the forces providing relief more difficult. In a society confronted with starvation, food becomes a weapon as important as ammunition.[86]

1.5 Water

Water is essential for socio-economic development and for maintaining healthy ecosystems. The world's total water supply is 1,386 million cubic kilometres. Over 96 percent of water on the earth is salt water, leaving only 3 percent as freshwater of which slightly over two thirds is frozen in glaciers and polar ice caps.[87] The remaining unfrozen freshwater is mainly found as groundwater, with only a small fraction present above ground or in the air.[88] Surface-water sources such as rivers only constitute about 93,100 cubic kilometres, about 0.0067 percent of total water, yet rivers are the source of most of the water people use. Freshwater is a renewable resource, but the world's supply of clean, fresh water is steadily decreasing. Water demand already exceeds supply in many parts of the world. As population increases, and development calls for increased allocation of groundwater and surface water for the domestic, agriculture and industrial sectors, the pressure on water resources intensifies, leading to tensions, conflict among

[85] FAO, *FAO map of major fishing areas of the world* (Rome: FISHONLINE, 2008).
[86] US JFC, *The Joint Operating Environment – JOE 2008,* 19–20.
[87] USGS, *Earth's water distribution* (Washington DC: United States Geological Survey, US Department of the Interior)
[88] GreenFacts, "Scientific Facts on Water: State of the Resource," GreenFacts, www.greenfacts.com

users and excessive pressure on the environment. The increasing stress on freshwater resources brought about by ever rising demand and profligate use, as well as by growing pollution worldwide, is of serious concern.[89] The FAO expects water withdrawals for irrigated agriculture to grow by almost 11 percent by 2050.[90]

Freshwater is a finite resource over which competing interests are condemned to squabble. And in an unfair world, its beneficence is distributed unevenly. The significance of water scarcity for the Millennium Development Goals – reducing hunger and poverty by half by 2015 – is that poor people tend to lose out in competition for scarce resources, typically through pricing mechanisms. Those who applaud the world's achievement of expanding food production exponentially over the last generation tend to forget the parallel demands placed on water resources which themselves are finite. Meat consumption generates much greater demand for water as grain-fed beef requires 35 calories of energy for each calorie of beef produced. Even worse is the new enthusiasm for biofuels: one litre of ethanol is produced from an amount of corn which is variously estimated to consume 1,500 to 4,000 litres of water. The concept of "virtual water" has been developed to rationalise this hidden consumption within everyday products and crops such as cotton, rice, coffee and sugar. For example, it takes 140 litres of freshwater to produce one cup of coffee, which takes into account not only the water content of the drink itself, but the freshwater needed to grow, process, package and ship the coffee.[91] A glass of wine requires 120 litres, a hamburger 2,400 litres, a cotton shirt 4,000 litres and a pair of shoes made out of cows' leather 8,000 litres of water.[92]

The world's water consumption rate is doubling every 20 years, outpacing by two times the rate of population growth. Although there is no global water scarcity as such, an increasing number of regions are chronically short of water. Worldwide, more than one billion people live without access to safe water, and up to 4 million people – mostly children – die every year from water-related diseases. One in five people in the developing world lacks access to sufficient clean water – a minimum of 20 litres a day – while average water use in Europe and North America ranges between 200 and 600 litres per person a day. By 2025, 1.8 billion people may be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under stress conditions. And it is in the arid and semiarid regions affected by droughts and wide climate variability, combined with population growth and economic development, that the problems of water scarcity are most acute.

Dry and densely populated regions often lack the necessary water resources and the infrastructure to ensure the vital amount of freshwater needed. The problem is that some countries get a lot more water than others. The Himalayas are the

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[89] FAO, "Hot Issues: Water Scarcity" (Rome: Food and Agricultural Organisation, FAO Water Unit, Water News: water scarcity, 2009), http://www.fao.org/nr/water/issues/scarcity.html

[90] Anonymous, "World will need 70 percent more food in 2050: FAO," AFP, 23 September 2009.

[91] Global Envision, "How much water do you really use?" Global Envision, http://www.globalenvision.org/2008/08/24/how-much-water-do-you-really-use

[92] Lenntech, "Use of water in food and agriculture," Lenntech, http://www.lenntech.com/water-food-agriculture.htm

greatest area of glaciers and permafrost outside of the poles. Ten of Asia's largest rivers flow from there, and more than one billion people's livelihoods depend on them. With 31 percent of global freshwater resources, Latin America has twelve times more water per person than South Asia. However, Mexico City, with a population that exceeds 19 million, is facing an alarming water crisis. Some countries, such as Brazil, Russia, and Canada get far more water than they can use; others, such as countries in the Middle East, get much less than they need. By 2025, the annual per capita water supply in the Near East and in North Africa will be around 500 cubic meters, or 15 percent of what it used to be in 1960 when it stood at 3,300 cubic meters.[93] This is not an encouraging scenario as 5 percent of the world's population live in Arab countries – a region having less than one percent of global water resources.

Water demand management is the opposite side of the water scarcity coin. Nowhere is the need for demand management more acute than in the Middle East. In addition to educational programmes for raising awareness of water conservation, wise and efficient water-use measures embrace water pricing, pollution prevention, and the recycling of wastewater. The ultimate irony of water management in the 21st century is the increasing interest in restoration of traditional storage technologies, many of them dating from antiquity. A number of Indian states now insist that new buildings be fitted with rainwater harvesting equipment.

Agriculture will likely remain the source of greatest demand for water worldwide, accounting for 70 percent of total water usage. In comparison, industry accounts for only 20 percent, while domestic usage is likely to remain steady at 10 percent. Per unit harvest yield, developed nations are more efficient than developing nations in using available water supplies for agricultural irrigation, and use far less than the 70 percent average. Improved agricultural techniques could further increase the amount of land under irrigation and increase yields per unit of water used. The Near East and North Africa use far more than the global average of 70 percent of available water dedicated to irrigation. By 2030, at least thirty developing nations could use even more of their water for irrigation. Here, remedies could be: drip-irrigation replacing flood irrigation, new, less water-intensive, crops, and building relatively low-cost reservoirs that can tap rain and floodwater.

In recent times, the increasing unreliability of an assured supply of rainwater has forced farmers to turn more to groundwater in many areas. As a result, aquifer levels are declining at rates of between 1 to 3 meters per year. The impact of such declines on agricultural production could be profound, especially since aquifers, once drained, may not refill for centuries. Hence, within a quarter century, water scarcity could affect approximately two billion people.

Tensions have mostly arisen from competing interstate water needs in transboundary lakes and river basins. Over 261 river basins covering 45.3 percent

[93] Nour Abuzant, "Region heading towards severe water scarcity," *Gulf Times*, 29 September 2009.

of the total land area (excluding Antarctica), are shared by two or more countries, making transboundary water resource management one of the most important water issues today.[94] Access to water has been a source of dispute and contention, and major water development projects – for example dam construction – have led to violence and civil strife. One of the most prominent cases is the conflict between the water-scarce riparian countries of Israel, Syria, Jordan and Palestine over the Jordan River. In 1967, Jordanian and Syrian efforts to dam the Jordan River were a contributing cause of the Six Day War between Israel and its neighbours.

Another noteworthy dispute in the region has emerged from the Great Anatolian Project started by Turkey in the 1980s, involving twenty-two dams, nineteen hydropower stations and irrigation plants on the upper Euphrates and Tigris rivers, the source of water for the Mesopotamian basin, which poses problems for Syria and Iraq. In South Asia, India has been at odds over the Ganges with Bangladesh, and over the Indus with Pakistan, where water supply fell by nearly 80 percent between 1951 and 2005.[95] And in Africa, Egypt, Ethiopia, and Sudan are considered to be at high risk of war over shared water resources in the Nile River basin. Even though localised, conflicts sparked by water scarcity could easily destabilise whole regions. The continuing crisis in Sudan's Darfur region, spreading to Chad, is an example of what could happen on a wider scale between now and 2030. Indeed, it is precisely along other potential conflict fault lines that potential crises involving water scarcity are most likely.

Conflict over water may, indeed, become endemic to the world, whether as the spark or the underlying cause of conflicts among various racial, tribal, or political groups.[96] Violence has been involved in a number of cross-border tensions. One such case is the communal conflict at the border between Mauritania and Mali along the Senegal watershed in which people died in 1999. In Cochabamba, Bolivia, privatising the water system in 1999 sparked fierce riots prompting the declaration of a state emergency. Water resources management in the Central Asia region also faces formidable challenges. There, 50 million inhabitants across two upstream and three downstream countries are dependent on the Syr Darya and the Amu Darya delivering less and less water into the Aral Sea. After the central management of Soviet times broke down, quarrels have become frequent as hydropower use upstream and agricultural uses downstream have conflicting interests. The EU has entered the framework as expert mediator and arbiter, and is now facilitating renewed cooperation. The Central Asian neighbours could be convinced that via negotiations and joint projects, agricultural yields can be secured, salination can be halted, and via a grid that reaches as far as Russia and Pakistan a larger and more stable electricity supply can be achieved together.

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94 Peter H. Gleick, *The World's Water: 2000–2001* (Washington DC: Island Press, 2000).

95 Raja Zulqarnain Khan, "Water Conservation," *Dawn Editorial*, Pakistan: DawnCom, 8 October 2009.

96 The only known example of an interstate conflict over water took place between 2500 and 2350 BC between the Sumerian states of Lagash and Umma. Yet, despite the lack of evidence of international wars being fought over water alone, water has been the source of various conflicts throughout history. See: Karen A. Rasler & W. R. Thompson, "Contested Territory, Strategic Rivalries, and Conflict Escalation," *International Studies Quarterly* 50, no.1 (2006): 145–168.

Water scarcity is becoming an increasingly critical issue in Europe as well. A communication from the European Commission released in 2007 estimated that 11 percent of Europe's population and 17 percent of the territory has been affected by water scarcity.[97] In 60 percent of European cities with more than 100,000 people, groundwater is being used at a faster rate than it can be replenished.[98] Even if some water remains available, it costs more and more to capture it. Over-abstraction, droughts, and lowered lake and groundwater levels have upset the equilibrium between demand and supply, particularly in the south of Europe. Cyprus has experienced severe water distress in recent years. On average, it exploits 45 percent of its annual renewable resources, which is well above the 20 percent threshold indicating shortage. Greece is not much better off. In 2008, the Water Office on Crete made an alarming discovery: underground reserves had declined by 15 meters since 2005. The Vocha plain has experienced a 65 percent increase in population since 1970s. As a result of excessive abstraction and over-exploitation of the aquifer, the groundwater level has rapidly declined. Water demand in the Greater Athens region has been growing at an unsustainable rate of 6 percent annually.[99]

Similar problems exist in Spain, when the reservoirs supplying Barcelona declined to such an extent that water was planned to be sourced from southern Catalonia, Marseille, and Almeria in April 2008. Rains in May finally averted the €22 million water shipments. On average, Spain exploits 34 percent of its annual renewable freshwater resources; the regions Andalusia and Segura break ranks by reaching 164 and 127 percent, respectively.

The severe water shortage resulting from global warming and global drought, the difficult and expensive water transportation by ships, and the continuous evidence regarding polluted water, forced some Greek authorities to seek new and innovative options to resolve the problem of water shortage. They found a novel method in the extraction of water from air (EWA). One cubic kilometre of atmospheric air routinely contains (in most regions around the globe) 10,000 to 30,000 cubic meters of pure water. Water from air humidity is thus an unlimited resource available to all. The technology extracts the humidity in the air by a three stage process: absorption of humidity on a solid desiccant, desorption of the water to vapour at a moderate heat of 65–85°C, and condensation with passive condenser connected to a heat pump. The moderate heating enables the utilization of environmentally friendly and low cost heat energy, such as solar or waste heat, and the technology can produce 1,000 cubic meter of water a day.[100]

Water shortages in the least developed countries necessitate the import of food, since domestic production is often not sufficient. Were armed forces called on to intervene in a catastrophic water crisis, they might well confront chaos, with

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97 EU, *Communication from the Commission to the European Parliament and the Council – Addressing the challenge of water scarcity and drought in the European Union,* {SEC(2007)993} {SEC(2007)996} /COM/2007/0414 final.

98 EEA, "Europe's Environment: The Dobris Assessment," EEA, www.reports.eea.europe.eu

99 EEA, "Water resources across Europe – confronting water scarcity and drought" (Copenhagen: European Environment Agency, EEA Report No. 2, 2009).

100 Anonymous, "Extraction of water from air – an alternative solution for water supply," *ScienceDirect*, June 2004.

collapsing or impotent social networks and governmental services. Anarchy could prevail, with armed groups controlling or warring over remaining water, while the spectre of disease resulting from unsanitary conditions would hover in the background.

The latter is only one manifestation of a larger problem. Beyond the problems of scarcity are those of water pollution, whether from uncontrolled industrialization, as in China, or from the sewage expelled by the megacities and slums of the world. Dumping vast amounts of waste into rivers and oceans does not only harm the ecosystem, it also threatens the health and welfare of large portions of the human race. While armed forces rarely will have to address pollution problems directly, any operations in polluted urban areas will carry considerable risk of disease. It is precisely in such areas that new and deadly pathogens are most likely to arise.[101]

A lack of water has driven up the use of wastewater for agricultural production in poor urban and rural communities. More than 10 percent of people worldwide consume foods irrigated by wastewater that can contain chemicals or disease-causing organisms. Lack of adequate clean water has serious health implications, including the prevalence of water-borne diseases such as cholera, typhoid, hepatitis A and E, and diarrhoea. Globally, diarrhoea is the leading cause of illness and death, and 88 percent of those deaths are due to inadequate sanitation and lack of clean water. Good water management reduces breeding sites for insects like mosquitoes that can transmit diseases, while water scarcity can lead to diseases such as trachoma, an eye infection that can lead to blindness, plague and typhus, and schistosomiasis – another severe illness.[102]

There is an alternative: freshwater suitable for human consumption or irrigation can also be gained by desalination. Desalination is a process that removes dissolved minerals, including salt, from seawater, brackish water, or treated wastewater. A number of technologies have been developed for desalination, including reverse osmosis, distillation, electro-dialysis, vacuum freezing, and geothermal desalination. Desalination is costly, but there are technological advances that can make it more affordable. For example, a "capacitive deionization" technique produces clean water at half the cost of the conventional reverse osmosis technique. Nanotechnology is being used to create filters that block bacteria and viruses. "Rapid spray evaporation" technology cleans water cheaply and produces no brine byproducts. And nuclear reactors can be used to produce large amounts of potable water.[103]

The cost, energy requirements, and the amount of pure water that can be obtained vary widely for different technologies. Overall, desalination costs have dropped from 20 USD per gallon in 1950 to now 0.46 USD per cubic meter in California,[104] 0.49 USD in Singapore and 0.53 USD in Israel. Ovation Products

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[101] US JFC, *The Joint Operating Environment – JOE 2008,* 21.

[102] See: Annette Prüss-Üstün, Robert Bos, Fiona Gore & Jamie Bartram, *Safer Water, Better Health* (Geneva: World Health Organization, 2008).

[103] APEC, "Can you make seawater drinkable?" APEC, http://www.freedrinkingwater.com/water_quality/quality1/1-make-seawater-drinkable

[104] Anonymous, "Hydro-Alchemy," *Forbes*, 9 May 2008.

claims it can distil water contaminated with anything into pure drinking water for 1 cent per gallon. The French firms Vivendi and Suez are the largest water treatment companies in the world and are growing rapidly. According to these trends, desalination may soon be expected to enter into mainstream use. Although the price will likely decrease with future research, it is unlikely that desalination will be the ultimate solution to water scarcity problems, particularly in the developing world. However, it will certainly continue to play an important role in affluent yet water scarce countries with large coastal populations.

Of the more than 14,000 desalination plants in operation worldwide, which produce more than 12 billion gallons of water a day according to the International Desalination Association,[105] 60 percent are located in the Middle East. The world's largest plant is in the United Arab Emirates: a dual-purpose facility that uses multi-stage flash distillation capable of producing 300 million cubic meters of water. Another large one in Saudi Arabia produces 128 million gallons per day of desalted water, providing together with other 26 desalination plants 70 percent of the country's drinking water. In contrast, 15 percent of the world's capacity is produced in the Americas, with most plants located in the Caribbean and in Florida. Nuclear reactors are in use in a number of countries, from India to Japan and Russia; eight nuclear reactors coupled to desalination plants are operating in Japan alone. And a typical US aircraft carrier uses nuclear power to desalinate 400,000 gallons or 1,514 cubic meters of water per day.[106]

Desertification, land degradation, and drought deprive people of water and food and force millions to leave their homes. Desertification refers to the creation of new deserts through the degradation of drylands, which cover 40 percent of the world's land surface. Land degradation, caused by over-cultivation, over-grazing, deforestation and inefficient irrigation, affects roughly 20 percent of Earth's drylands. Since dryland desertification can be remedied or even reversed by using appropriate management techniques, scientists have developed methods for monitoring the areas most at risk to support water and land management decisions. The monitoring requires the continuous evaluation of a complex set of parameters and indicators, some of which can be retrieved with satellite earth observation technologies and state-of-the-art geospatial applications.

In 2004, the European Space Agency, ESA, launched a large pilot project called DesertWatch to develop a set of land degradation indicators for the countries that are members of the UN Convention to Combat Desertification, which are mandated to report on it.[107] These indicators were developed with the support of Italy, Portugal, and Turkey – three of the European countries mostly affected by desertification. The methodology was later applied to arid and semi-arid areas in Portugal, Brazil, and Mozambique. This seems to have inspired others. The Ash Institute for Democratic Governance and Innovation at the John F. Kennedy School of Government at Harvard University announced in September 2009 Idaho's Mapping Evapotranspiration program as a 2009 Innovations in American

[105] Kathryn Kranhold, "Water, Water, Everywhere…" *The Wall Street Journal*, 17 January 2008.
[106] Tom Harris, "How Aircraft Carriers Work," *HowStuffWorks.com*, 29 August 2002.
[107] Anonymous, "Satellite Data Instrumental in Combating Desertification," *ESA News*, 9 October 2009.

Government Award Winner.[108] Because over 90 percent of Idaho's water is used for irrigating agriculture, and rainfall amounts remain low, regional water supply disputes continue to grow. In collaboration with the University of Idaho, Idaho's Department of Water Resources was the first government agency in the US to develop and use satellite-based evapotranspiration imagery to enhance the understanding of agricultural water usage in the state. Such data is integral to settling water demand conflicts and offers more accurate and detailed mapping than previous estimates.

Evapotranspiration is defined as the water evaporated from soil and transpired from vegetation. Landsat satellites provide visual and thermal images that are processed to determine the state's irrigated agricultural evapotranspiration. Such data is calculated on a daily, monthly, or seasonal basis and utilizes weather information to provide more precise imagery. The process is much more efficient to calculate than former methods. Individual Landsat images use 30 million pixels to map water usage from areas as large as 10,000 square miles to as small as a single 40-acre field. Mapping is important because it shows the amount of water used to irrigate crops – over 90 percent of all water consumed in Idaho. It is also used for other purposes, not only for avoiding litigation, but for determining water shortages, and for more cost-effective monitoring of ground water pumped out of aquifers for irrigation wells. Water Resources staff uses such data in collaboration with farmers; the US Bureau of Reclamation; and wildlife professionals to implement stream flow restoration projects that ensure salmon and steelhead retain sufficient habitat. And the US Fish and Wildlife, and the National Marine Fisheries Services use such data to determine the amount of water available for endangered species programs. Moreover, it supports more accurate planning and encourages water irrigation conservation.[109]

Addressing water scarcity requires action at local, national, and river basin levels. It also calls for actions at global and international levels, leading to increased collaboration between nations on shared management of water resources – rivers, lakes, and aquifers. It requires an intersectoral and multidisciplinary approach to managing water resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital eco-systems. Protecting and restoring the ecosystems that naturally capture, filter, store, and release water, such as rivers, wetlands, forests, and soils, is crucial to increasing the availability of water of good quality.[110]

Water scarcity is not only a question of natural resource availability, but often results from a lack of investment in infrastructure and institutions which constitute the necessary water network. The World Water Council calculated that investment in water systems needs to double to reach 180 billion USD per year in

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[108] Anonymous, "Mapping Evapotranspiration Wins Innovations in American Government Award," *Reuters*, 15 September 2009.

[109] A NASA-produced video describing the Mapping Evapotranspiration programme is available at: http://www.nasa.gov/topics/earth/features/landsat_water.html

[110] Mariam Akhtar-Schuster, Harriet Bigas & Richard Thomas, eds., "Monitoring and Assessment of Desertification, Land Degradation and Drought: Knowledge Management, Institutions and Economics," (White Paper of the DSD Working Group 3, Association of DesertNet International, United Nations University, 5 February 2010).

order to address the problem. The OECD, the European Commission, and the European Environment Agency advocate demand-led water resource management, focusing on conserving water and using it more efficiently instead of continuously increasing supply. The EU Water Framework Directive equally aims at promoting sustainable water use based on long-term protection of available water resources.[111]

In terms of international politics, existing UN framework agreements and regional treaties present best practices of how to deal with issues of water. Approximately 295 international and even more bilateral water agreements have been signed since 1948 – which shows that water is such an essential resource that parties would rather create win-win situations by cooperation than gain by antagonizing their neighbours. Countries cannot manage water as a stock, but have to treat it as a flux. The behaviour of up and downstream neighbours can have a great impact on their own water quality and availability, so they have a vested interest in cooperation. The International Commission for the Protection of the Danube is one such example.[112] There is the possibility of conflict between countries along the Danube, but cooperation is far more efficient.

1.6 Climate change and natural disasters

Global warming has become a reality, and so has climate change. Global warming refers to the documented warming of the earth's surface based upon worldwide temperature records, while climate change is a heterogeneous phenomenon that produces different outcomes in different places. The Intergovernmental Panel on Climate Change assesses climate change by measuring changing temperatures and precipitation. Since trends in temperature often drive trends in precipitation scientists consider temperature a more robust and stable measure of climate change, which is the long-term change in the patterns of these two meteorological characteristics. There is compelling evidence indicating that the atmosphere will continue to warm at an unprecedented rate throughout the 21st century. A scientific consensus holds that a large part of this warming is attributable to anthropogenic causes – by human activities contributing to the "greenhouse effect."

Many greenhouse gases occur naturally and are needed to create the greenhouse effect that keeps the earth warm enough to support life. However, human use of fossil fuels is the main source of excess greenhouse gases, which in the atmosphere act like a mirror and reflect back to the earth a part of the sun's heat radiation. The higher the concentration of greenhouse gases – like water vapour, carbon dioxide, methane, and ozone in the atmosphere [113] – the more heat energy

[111] ISN, *World: Thirst for Water*, International Relations and Security Network (Zurich: ISN, 9 September 2009); EC, *The EU Water Framework Directive – integrated river basin management for Europe* (Directive 2000/60/EC, Official Journal (OJ L 327), 22 December 2000).

[112] Danube Commission, at: http://www.danubecom-intern.org/ENGLISH/SUMMARY.htm

[113] Other greenhouse gases include, but are not limited to, nitrous oxide, sulfur hexafluoride, hydro fluorocarbons, per fluorocarbons, and chlorofluorocarbons.

is being reflected back to earth. Carbon dioxide, the second most important greenhouse gas behind water vapour, is contributing with 72 percent to warming. While methane with 18 percent and ozone with 9 percent are more efficient because they trap more heat per molecule, they have less effect on climate change due to their smaller atmospheric concentration. As far as the emissions of greenhouse gases by sectors is concerned: power stations contribute 21.3 percent, industrial processes 16.8 percent, transportation fuels 14 percent, agricultural byproducts 12.5 percent, fossil fuel retrieval, processing, and distribution 11.3 percent, residential, commercial and other sources 10.3 percent, land use and biomass burning 10 percent, and waste disposal and treatment 3.4 percent.[114]

Until recently, traffic and industry have been held almost exclusively responsible for the greenhouse. However, methane, carbon dioxide, and nitrous oxide also originate through animal husbandry on a large scale. Some microbes respire in the cattle gut by an anaerobic process known as methanogenesis. Thus, cattle emit a large volume of methane, 95 percent of it through eructation or burping, not flatulence. Some 1.3 billion cattle kept worldwide alone are responsible for 12 percent of annual methane gas emissions, or 18 percent of greenhouse gases. Breeding livestock creates 115 million tons of methane gas per year. This becomes even more critical when one considers that one molecule of methane contributes 25 times more to the greenhouse effect than one molecule of carbon dioxide.[115] Hence, the contribution of cattle breeding to the greenhouse effect is about the same as that of all automobile traffic, if we take into consideration the clearing of forests for cattle and fodder production.[116] Moreover, the production of cattle to feed and clothe humans stresses ecosystems also due to the 85 percent of nitrogen in the form of ammonia that is caused by livestock emissions. Ammonia from animal faeces does not only play a damaging role in acid rain. Secondary aerosols form in the atmosphere through ammonia, endangering human health in the form of particulate matter or fine dust.

Climate change will be intensified and accelerated by the diminution of natural carbon-capture processes, such as forests and marine life, and the reduction of the polar ice-caps and glaciers. Uncertainty remains as to the precise rate and character of expected changes. Climate science is complex, with linear cause and effect relationships not yet readily apparent. Therefore, the consequences of climate change will vary in their impact in time, incidence, and geographical extent. It may be a very unstable and unpredictable process, involving both progressive evolution and sudden instabilities.[117]

Major impacts are expected to include further global warming, melting ice-caps and glaciers, continued sea level rise, thermal expansion of the oceans, and changes to ocean currents and flows, with seawater becoming more acidic as CO_2

[114] US EPA, *Greenhouse Gas Emissions* (Washington DC: US Environmental Protection Agency, 2009).
[115] Jeremy Rifkin, "Zeitbombe Viehwirtschaft/Taking Stock: Animal Farming and the Environment (Campus: Verlag, 1992).
[116] Vegitarismus, "The Ecological Consequences of Meat Consumption," Vegitarismus, http://www.vegetarismus.ch/info/eoeko.htm
[117] John Borton, *Future of the Humanitarian System: Impacts of Internal Changes* (Berkenhamsted: Tufts University, Humanitarian Futures, King's College & Feinstein International Center, November 2009).

transfers from the atmosphere. Greater rainfall intensity, more serious and pervasive droughts, and enhanced heat-stress episodes can be expected. On land, some regions will experience desertification, others will experience permanent inundation, and tundra and permafrost are likely to melt and release methane, possibly in large amounts. Global climate change will reduce land for habitation and will result in changing patterns of agriculture and fertility, while tropical diseases, like malaria, are likely to move north and into temperate zones.[118]

Climate change is arguably the single biggest threat of this century. It is a threat multiplier in some of the most volatile regions of the world, and an "accelerant" of state failure, humanitarian crises, and other tensions that could lead to conflict. It will likely have dramatic and long lasting consequences with profound security implications. The security implications will be most pronounced in places where the effects of climate change are greatest, particularly affecting weak states already especially vulnerable to environmental destabilisation.

Climate change is the main driver of a massive increase in the frequency of occurrence of natural disasters such as droughts, forest fires, floods, typhoons, hurricanes, tornados, blizzards, ice and glacier melting and glacier-lake bursting, leading to rising sea levels and loss of biodiversity. Weather-related disasters have quadrupled over the last two decades, and the number of persons affected by natural disaster has tripled in the last decade.[119] These phenomena, set against a backdrop of population growth, may lead to large-scale displacement of peoples, unsustainable rural-to-urban migration, chronic hunger and malnutrition across much of the developing world. Competition may ensue over scarce resources. Some states will fail; others will aggressively exploit dwindling resources. Both routes may eventually spawn conflict.[120]

Preparing for and responding to the security challenges of climate change must be part of a whole-of-government approach toward sustainable development and security. Sustainable security is a blend of national security, collective security, human security, and environmental security. It expands the traditional, inwardly-focused concept of state self-preservation, espousing a global perspective on transnational threats insidious to an ever more globalised international system. To be sustainable, security must be proactive and preventative, combining diplomacy and development with defence. Integrating climate change adaptation into national policies, strategies, programs, and budgets related to agriculture, forestry, and fisheries should become a major priority. However, the scope of the problem, and the many and various national interests at stake, make this issue one that no individual nation can address alone. What is needed to address the problem is a global framework and global cooperation. Climate change is the *ultimate collective-*

[118] VOX TV, *Die grosse Samstags-Dokumentation: Naturgewalt Wetter*, 10 Oktober 2009, 2015-2350.
[119] Jerome C. Glenn & Theodore J. Gordon, *2007 State of the Future* (Washington DC: World Federation of the United Nations Associations and American Council for the United Nations University, 2007), 2.
[120] Henrik Urdal, "Demographic Aspects of Climate Change, Environmental Degradation and Armed Conflict," 16 January 2008, www.un.org/esa/population/meetings/EGM_PopDist/P18_Urdal.pdf

action problem. The Kyoto Protocol, which ends in 2012, is a crucial first step, but far more needs to be done.[121]

Mitigation of global warming involves actions to reduce greenhouse gas emissions and to enhance sinks aimed at reducing the extent of global warming. The British Stern Review identifies several ways of mitigating climate change. These include reducing emission-intensive goods and services, increasing efficiency gains, increasing use and development of low-carbon technologies, and reducing non-fossil fuel emissions.[122]

At the core of most proposals is the reduction of greenhouse gas emissions through reducing energy use and switching to cleaner energy sources. Frequently discussed energy conservation methods include increasing the fuel efficiency of vehicles, often through hybrid, plug-in hybrid, electric cars, and improving conventional automobiles, individual-lifestyle changes, and changing business practices. Newly developed and currently available technologies include renewable energy, such as solar power, tidal and ocean energy, geothermal power, and wind power, the more controversial nuclear power, and use of sinks, carbon credits, and taxation aimed at countering continued greenhouse gas emissions.[123]

More radical proposals can be grouped with geoengineering techniques for mitigation. These include nutrient fertilization of the oceans with iron to encourage growth of plankton; cloud seeding; sunshades or deflection of sunlight from the earth through use of giant space mirrors; carbon sequestration projects such as carbon dioxide air capture; petrification or underground storage of carbon dioxide, for example, in sandstone; solar radiation management schemes such as the creation of stratospheric aerosols by shooting sulphur particles into the upper atmosphere, basically mimicking the effect of volcanoes in screening out incoming sunlight; and ocean pipes for injecting water vapour above the oceans. Stratospheric aerosol injections and sunshades in space may have the greatest potential to cool the climate by 2050, but may also carry the greatest risk.[124] However, research to date has not determined whether there are large-scale geo-engineering approaches that would produce significant benefits, or whether these benefits would substantially outweigh the detriments. Geoengineering must be viewed with caution because manipulating the Earth system has considerable potential to trigger adverse and unpredictable unintended consequences. Moreover, the increasing population, and the growth of national GDPs based on current technologies, are counter-productive to most of these proposals.[125]

There are more concrete proposals to reduce CO_2 emissions by 1 billion metric tons per year. The proposed fifteen different programs – any seven of which

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[121] Rymn J. Parsons, "Taking Up the Security Challenge of Climate Change," (Carlisle: Strategic Studies Institute, US Army War College, Carlisle Papers, 6 August 2009).

[122] Stephen Pacala & Robert H. Socolow, "Stabilization Wedges: Solving the Climate Problem for the next 50 Years with Current Technologies," *Science* (2004): 968–972.

[123] Wikipedia, "Climate Change Mitigation," Wikipedia, http://en.wikipedia.org/wiki/Climate_change_mitigation

[124] Tim Lenton & N.E. Vaughan, "The Radiative Forcing Potential of Different Climate Geo-engineering Options," *Atmospheric Chemistry and Physics* (28 January 2009).

[125] LiveScience, "Should We Geoengineer the Climate?" *LiveScience* (21 July 2009), http://www.livescience.com/environment/090721-geoengineering-climate.htlm

could achieve the goal[126]– are: (1) More efficient vehicles by increased fuel economy from 7.8 to 3.9 litres per 100 km for 2 billion vehicles; (2) Reduced use of vehicles by improving urban design to reduce driving from 16,000 to 8,000 km per year for 2 billion vehicles; (3) More efficient buildings that reduce energy consumption by 25 percent; (4) Improved efficiency of coal plants from today's 40 to 60 percent; (5) Replacing 1,400 Gigawatts (GW) of coal power plants with natural gas; (6) Capturing and storing carbon emitted from 800 GW of new coal plants; (7) Capturing and reusing hydrogen created by coal plants; (8) Capturing and storing carbon from coal for synthetic fuels conversion at 4,800,000 m^3/day; (9) Displacing 700 GW of coal power with nuclear; (10) Adding 2 million 1 MW wind turbines (50 times current capacity); (11) Displacing 700 GW of coal with 2,000 GW solar power (700 times current capacity); (12) Producing hydrogen fuel from 4 million 1 MW wind turbines; (13) Use of biomass to make fuel to displace oil (100 times current capacity); (14) Stop deforestation and re-establish 300 million hectares of new tree plantations; and (15) Conservation tillage applied to all crop land (10 times current usage).

Combating climate change may, moreover, require the expanded use of nuclear energy. As the UK White Paper on nuclear energy demonstrates, nuclear energy is currently one of the cheapest, low carbon electricity generation technologies.[127] The complete life cycle emissions from nuclear power, from uranium mining to waste management, are between 2 and 6 percent of those from gas for every unit of electricity generated. But nuclear power is controversial for reasons of capital cost, possible environmental impact, and the unsolved problem of nuclear waste disposal.

The International Energy Agency IEA estimates the world will need to build thirty-two new reactors each year in order to halve global carbon dioxide emissions by mid-century. It also estimates that global energy demand will increase by more than 40 percent between 2006 and 2030. At present, nuclear power accounts for around 15 percent of global energy supply. There are currently some 440 nuclear power plants across thirty nations with a total capacity of over 370 GW.[128] Over the next 10 years a further twenty countries can be expected to pursue civil nuclear programmes to meet their energy needs. There may be a global build rate of up to twelve nuclear reactors per year between 2007 and 2030, and this is expected to rise to between twenty-three and fifty-four reactors a year between 2030 and 2050.[129] Though there is the danger of proliferation, nuclear power is a proven technology that is low carbon, affordable, dependable, relatively safe, and capable of increasing diversity of energy supply. So it is not only key to tackling climate change and energy security, but also central to reducing the potential for competition for energy resources to act as a driver of instability and insecurity across the world.

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[126] Nicholas Stern, *Stern Review on the Economics of Climate Change: Part III: The Economics of Stabilisation* (London: HM Treasury, 2007), http://hm-treasury.gov.uk/sternreview_index.htm

[127] Anonymous, "Meeting the energy challenge: A White Paper on Nuclear Power," (London: Cm 7296, January 2008).

[128] http://www.world-nuclear.org/info/reactors.html

[129] The Nuclear Energy Agency.

A climate treaty is characterised by a large number of parameters: What should the abatement or emission levels be? How should the burden to abate be distributed across countries? What should the time profile for the emission levels be? Should there be issue linkages with other policy areas? Should there be any side transfers between some countries and, if so, what should the transfers be? This richness in parameters implies that there is a lot to decide and negotiate before the final climate treaty is ready. Moreover, there is great uncertainty regarding the future costs and benefits of abatement. Today, it is not yet known how much abatement will be desirable in the future. This means that any climate treaty must be updated, or renegotiated, quite frequently in the coming years. The realised climate policies depend on future international negotiations, and the rules governing these.[130]

The 2009 UN Climate Change Conference, known as the Copenhagen Summit, was held in December 2009. It included the 15th Conference of the Parties (COP 15) to the UN Framework Convention on Climate Change, and the 5th Meeting of the Parties (COP/MOP 5) to the Kyoto Protocol. According to the Bali Road Map, a framework for climate change mitigation beyond 2012 was to be agreed there. Unfortunately, despite widely held expectations that the conference would produce a legally binding treaty, the summit failed to achieve this. At the closure of the conference, after a further day of frantic negotiations, it was announced that "a meaningful agreement" had been reached between the US, China, India, South Africa and Brazil.[131] The resulting "Copenhagen Accord" was "taken note of" but not "adopted." Even this, however, was not a unanimous decision among participating countries. The document recognised that climate change is one of the greatest challenges of the present and that action should be taken to keep any temperature increases to below 2°C. But it does not contain any legally binding commitments for reducing CO_2 emissions that would be necessary to achieve that aim. The Accord asks countries to submit emission targets by the end of January 2010, and paves the way for further discussions to occur at the 2010 UN climate change conference in Mexico, and the mid-year session in Bonn. One part of the agreement pledges 30 billion USD to the developing world over the next three years, rising to 100 billion USD per year by 2020, to help poor countries adapt to climate change. An agreement was also reached that would set up a deal to reduce deforestation in return for cash from developed countries.

Developing countries with large greenhouse gas emissions will play a decisive role in negotiating a post-Kyoto climate agreement. No effective programme to reduce global emissions is possible without their support. At the same time, developing countries face the delicate task in balancing their growing responsibility for a liveable climate with the pursuit of continued economic development. Among the most vital unsettled questions are burden sharing between developed and

[130] Bard Harstad, "Rules for Negotiating and Updating Climate Treaties" (Boston: Harvard Policy Brief, Belfer Center for Science and International Affairs, 27 August 2009).

[131] Anonymous, "Key powers reach compromise at climate summit," *BBC News*, http://news.bbc.co.uk/2/hi/europe/8421935.stm

developing countries, the role of the market in the international climate architecture, as well as implementation arrangements.[132]

1.7 Conflict, war and the future of armed forces

While the nature of war is not changing, the character of conflict and war will constantly change and evolve. It is clear that interstate wars will not totally disappear. And conflicts will continue to evolve, as potential combatants adapt to advances in science and technology, improved weapon capabilities, and changes in the security environment. Future warfare is likely to be characterised by seven strategic trends:

(1) *The increasing importance of Information*: advances in IT are enabling new synergies in war fighting through the combination of advanced precision weaponry, improved surveillance, reconnaissance, targeting and enhanced command and control capabilities, and expanding use of artificial intelligence and robotics. Proliferation of long-range precision weapons will permit a growing number of states and non-state actors to threaten rapid destruction of an adversary's critical economic, energy, political, and military information infrastructures. And the growing importance of IT as an enabler of modern war fighting capabilities will make information itself a primary target in future conflicts. Some states may be able to deploy weapons designed to destroy or disable information, sensors, communication networks and systems, including anti-satellite, radio-frequency, and laser weapons.

(2) *The evolution of irregular and unconventional warfare capabilities*: the adoption of irregular warfare tactics by both state and non-state actors as a primary warfare approach in countering advanced militaries will be a key characteristic of future conflict. The spread of light weaponry, including precision and man-portable weapon systems, and information and communication technologies, will significantly increase the threat posed by irregular forms of warfare. Modern communication technologies such as satellite and cellular phones, the internet, and commercial encryption, combined with hand-held navigation devices and high-capacity information systems that can contain large amounts of text, maps, digital images, and videos, will enable future irregular forces to organise, coordinate, and execute dispersed and swarming operations.

(3) *Growing prominence of non-military aspects of warfare*: non-military means of warfare, such as cyber, economic, resource, psychological, and information-based forms of conflict will become more prevalent in conflicts over the next decades. And states and non-state adversaries will engage in media warfare in order to dominate the

[132] Jan von der Goltz, "Climate Change Negotiating Positions of Major Developing Country Emitters" (Washington DC: Center for Global Development, Working Paper 177, 8 October 2009).

24-hours news cycle, and manipulate public opinion to advance their own agenda and to gain popular support for their cause.[133]

(4) *Expansion and escalation of conflict beyond the traditional battlefield*: containing escalation and expansion of conflict will become more problematic in the future. The advancement of weapons capabilities such as long-range precision weapons, proliferation of WMD, and new forms of warfare such as cyber and space warfare are providing state militaries and non-state groups the means to escalate and expand future conflicts beyond the traditional battlespace.

(5) *Improving force protection by going underground*: future opponents will have recognised the advantages of going underground if they want to avoid the surveillance, targeting, and penetrative capabilities of sophisticated military forces, particularly those that deploy air platforms and space systems. In the future, states will seek to site most of their major nodes and the majority of their decisive fighting power underground. Similarly, irregular opponents will base themselves in underground networks, both for offence and defence, especially in complex urban spaces.[134]

(6) *More nuclear powers*: accelerating nuclear proliferation will create a more complex and dangerous strategic environment, with the likely clustering of nuclear-armed states in regions that have significant potential for instability or have fears about foreign intervention. North Korean, Pakistani or Iranian nuclear weapon capabilities, for example, will significantly increase the risks of conflict in Asia if a system of mutual deterrence does not emerge. In addition, possession of nuclear weapons may lead to greater adventurism and to irresponsible conventional or irregular behaviour, to the point of brinkmanship or misunderstandings. In addition, there is a possibility that neutron technologies may re-emerge as potential deterrent and war fighting options.[135]

(7) *A more difficult environment for interventions*: an increase in the number of nuclear-armed states will also affect the ability to undertake interventions. Operations that threaten personal or regime security of autocratic leaderships in nuclear-armed states will entail particular risks.[136]

More generally, conflicts and crises will become increasingly complex and unpredictable, both in their incidence and character, with serious interstate rivalry probably expressing itself through proxy actions by hostile groups who may or may not have issues of their own. Irregular, unconventional and asymmetric activity will be the prevailing theme, based on grievance, resentment, perceived inequalities or legacy mythologies, characterised by terrorism, insurgency, serious criminality, and disorder. Some activities may be widespread and endemic, depending on local conditions and circumstances. Overall, however, it will involve

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[133] Curzon, *Global Trends, Part 3: The Changing Face of Conflict*, http://cominganarchy.com/2008/11/26/global-trends-part-3-the-changing-face-of-conflict

[134] DCDC, *The DCDC Global Strategic Trends Programme 2007–2036* (London: Development, Concepts and Doctrine Centre (DCDC), UK MoD, January 2007), 73.

[135] Ibid., 71–72.

[136] Ibid., 74.

a range of states, non-state groups, and individual participants which will concentrate and operate, both globally and locally, wherever they gain an advantage in relation to opponents or objectives.

In the use of violence and the threat of force, military and civil distinctions will become more blurred as weapons and technologies will be more widely available to potential combatants and individuals. The greatest risks of larger scale conflict will likely be in areas of economic vulnerability, poor governance, environmental and demographic stress, enduring inequality and hardship, and especially where there has been a history of recurring conflicts. Most conflicts will be societal, involving civil war, intercommunal violence, insurgency, pervasive criminality, and widespread disorder. And in areas subject to significant demographic and wealth imbalances, there will be a risk of large-scale cross-border migration and exogenous shock. The trend towards societal conflict will be reflected in the continuing prevalence of civilian casualties, as it takes place increasingly in urbanized situations and human networks.

Legal, technological, social, and environmental contexts for conflict will contribute significantly to its complexity, and will create major challenges for those engaged in the planning and conduct of operations. Affluent and well-integrated states are likely to abide by international legal norms, while poor and weakly-integrated states as well as non-state actors are unlikely to be similarly constrained. When conflict does occur, richer states will attempt to maximize their economic and technological advantage. However, these may be undermined or reduced by growing affordability of new generations of weapons and the prevalence of mass effect options.

Conflict itself is likely to take place in new environments: Cyberspace, the littoral, chokepoints, near space, and increasingly in expanding cities or slums. Sprawling, rapidly and chaotically urbanised areas in the developing world, which lack basic infrastructure or municipal order, provide havens in which criminals, terrorists and insurgents can shelter and organise, and from which they can launch operations. They may also seek to colonize cities and other urban centres in the developed world, notably through influence on, and infiltration of, existing structures, backed up by the threat or use of societal violence.[137]

A further complicating factor will be the increasingly hazy relationship between military and non-military aspects of conflict. Civilians will carry out a wide range of activities hitherto undertaken by military personnel as more comprehensive approaches are adopted. Clear distinctions between combatants and non-combatants may be more difficult to discern. Military personnel will find themselves more often employed in non-military roles, owing to their readiness profile, training, and capacity for organised action, often as the first response to natural disasters, unexpected flash events, and other serious contingencies. They may be deployed in circumstances where normal law enforcement agencies can no longer cope, or where opponents use capabilities that can only be countered by

[137] Ibid., 69.

military levels of force. Increasingly, regular military forces will have to deploy in environments where armed irregular forces, for example armed followings, gangs of warlords, bandits, semi-official militias, Private Military and Private Security Companies, terrorists, and insurgents are operating, often as adversaries, but sometimes as neutrals or even as partners.

While war is always about the organised use of violence to achieve political ends, the character of a given war may change more dramatically over time. The uncertainty of the future strategic context, and the breadth of challenges to which appropriate responses require a military contribution, may more frequently result in armed forces being deployed in actions of a constabulary or settled nature, but with the potential for periodic or escalating violence. These will include peace support and stability operations, and actions in response to humanitarian crises. Separation in time and space between levels of military activity – strategic, operational, and tactical – and the environments, physical or virtual, within which they take place, will become increasingly blurred as greater use is made of networks and shared situational awareness. This will shape the character of military activity, demanding increased discrimination and judgment about how to deal with situations as a whole from military forces as well as from the political leaders who employ them. Crucially, this level of sophistication will require a concerted, comprehensive application of all the instruments and agencies of state power, together with cooperation from all relevant authorities and organisations involved in settling a crisis or resolving a conflict.

The increasing complexity of future conflict environments, including pervasive media and internet coverage, will pose greater challenges to armed forces operating within them, demanding new tactics, specialised equipment and heightened levels of discrimination. Military personnel at all levels will be subject to more complicated rules of engagement. These require increased awareness of the legal implications of their actions, and sophisticated training led by objective, authoritative doctrine. The variety and changing character of the environment will increase the training requirements, and broaden the range of skills required to generate sufficiently agile and battle-winning forces. Moreover, ethical questions regarding accountability for automated actions are likely to increase.[138]

It may well be that the multiplication of very sophisticated challenges, improved weapon capabilities, the increasing complexity of the security environment, and the widening range of skills required for successfully defeating a modern opponent in multi-faceted combat operations, signal the demise of the tradition of the citizen-soldier, and form a strong impetus towards professional troop contingents.

A majority of states have downsized their armed forces, anticipating a peace dividend at the end of the Cold War. New military organisations and structures were called for. Armed forces had to be smaller in number and size, but more capable. And they had to have a much broader range of competence. As they had to become more flexible, versatile, and capable of being deployed and sustained

[138] Ibid., 72.

abroad, their costs greatly increased. As a result, the size of affordable forces dropped. More professional forces were required with concentration on core capabilities, mission-critical or emergency-essential functions. It also required a more developed multinational division of labour, more roles sharing, and more specialisation. This resulted in less combat support, less combat service support, and more outsourcing. Militaries under increasing financial pressure found that by outsourcing more mundane tasks to contractors, they could continue to afford the showcase weapons and programmes they had grown to love. This trend expanded over the last decade, to the point that the US military could not carry out the mission in Iraq without contractor support. Many other states have also become reliant on high levels of contractor support to carry out their military operations.

Professionalisation of the armed forces and the expansion of private military and security companies (PMSCs) are part and parcel of the new era of warfare. As government wanes in power and loses a degree of support in the base of its population, it becomes difficult to mobilise citizen soldiers. Instead of calling for more volunteers or reinstituting conscription, governments find it much easier to turn to the market, drawing on a surplus of former members of the military, many of who were cashiered in the post-Cold War drawdown. Contractors provide states with a ready pool of military capacity, allowing government soldiers to be focused on the highest priority tasks. At the same time, contractors also allow states to flesh out their ranks without having to mobilize, or risk disenfranchising the population. However, there are serious drawbacks to professionalisation and privatisation, which may add to the woes of the nation-state as an institution.

Even as PMSCs grow in size, many states are finding it difficult to man their armed forces. States are recruiting their forces predominantly from certain, often disadvantaged social groups. These trends have both weakened state power and narrowed the base of popular support and involvement on which warfare rests. Furthermore, as states lean more on their reserve forces to flesh out their armed forces, they are forced to demand greater dislocation on the part of citizen soldiers, their families, and their employers, further reducing the state's independent capacity for action. In the US, eight years of war have turned recruiting for the all-volunteer army into a continuous struggle. The real challenge, however, is not merely recruiting enough soldiers, but quality soldiers.

A quality soldier is motivated to serve, learns quickly, and flourishes in the Spartan conditions of military life. To assess quality, the US Army relies on high school diploma as an indicator of motivation, higher aptitude tests scores as a marker of trainability, and the absence of a criminal record. Because ever more recruits lack high school diplomas or require waivers for misconduct, the Army had to develop plans and programs for more focused training to compensate for lower aptitude. But the Army is more than enlisted soldiers. There is also the officer corps. Unlike the enlisted force, where re-enlistment rates have been sufficient until recently,

officer retention continues to be a problem, because they are much better marketable, even in tight job markets.[139]

So what should be done? The essence of the problem with today's armed forces is that they are confronted with a revolutionary change in requirements that has resulted in two contradictory ends in the strategic frame of the classic interaction between ends, ways, and means: defence and security – and as such a problem of the division of labour. Because a great war does not seem to be imminent, the dominant trend is to rationalize this problem by addressing both ends in sequence: by putting defence on the backburner in order to concentrate on meeting the needs of security. However, there are dangers in reorganising the means to meet these ends without addressing the ways.

In theory, the way defence is dealt with has not changed. States still think of defence as requiring mass armies. It is true that, as weapons have become more capable, the density of forces needed in open battle is diminishing. But it is equally true that the future will witness increasing dislocation of the new threats, insurgencies, and combat into urban areas, requiring a much higher density of forces. It is even truer for peace support operations and out-of-area interventions. For such operations, land forces need to have more manpower of the actual battalions and brigades making up the force structure deployed to sustain the operation. They also need this manpower to generate sufficient periodic replacements and re-training of the forces engaged.

However, because of diminishing finances and lower defence budgets, states continue with the downsizing of their armed forces. Hence, it is no longer clear what the way should be either for defence or for security. The only thing that is clear is that the existing means are far from being optimized either for defence or security. So the most critical problem is to find new ways to satisfy both ends of defence and security with the means affordable – solving the challenges of the dual role of the military through greater participation of the whole security sector, and more precisely defined fields of division of labour.

What this all means is that a well thought out mix of forces may be required of highly specialized elite forces, all-volunteer professionals, Militia and reserve forces, supported by police, border and coast guards, customs, and other actor of the security sector, as well as contractors either for very specific or for the much more numerous mundane tasks of support to the military. Moreover, countries will have to cooperate more fully in collective defence and security tasks because fewer states will be able to meet all the defence and security requirements alone.

Thus, even if professional militaries prefer to invest in sophisticated materiel, specialized and highly-trained personnel, and even if the increasing reliance on advanced weaponry and Special Forces is rendering the Militia, National Guard and Reserve soldier less valuable – these still have their place in a tailored force mix. This particularly in the more delicate field of security, military and subsidiary support to civilian authorities, where the maturity and experience of the Militia

[139] Leonard Wong & Stephen Gerras, "All-volunteer Army: An ongoing experiment," *USA TODAY*, 25 June 2008.

soldier generally serve mission accomplishment better than in defence. The force mix and the effectiveness of overall capabilities need to be rethought and adjusted, and substantial changes in non-military national capabilities will also be needed. Hence, hard and discriminating choices will be required from governments.

There will be differences among the many countries, however. Confronted with few direct threats and declining populations, most affluent societies will attempt to minimize their defence burden by investing in conflict prevention and, for as long as it is in their interest to do so, participating in alliances, forming communities of interest, and contracting out security. The US will be the exception, making by far the greatest commitment to defence, consistent with its economic power and technological advantage.

China and India are likely to increase their defence spending in proportion to their economic growth, and the range of their global interests and investments. After 2025, they are likely to have developed two-tier armed forces, consisting of nuclear forces, large, relatively unsophisticated forces for territorial defence, and smaller high-capability forces for power projection.

For middle-income countries not part of an alliance, military capabilities will typically be quite some years behind those of more affluent states. Optimized for territorial defence, they will find it difficult to recruit the skilled personnel required for the more complex tasks of the future, but may wish, if they have a demographic advantage or a traditionally hostile near neighbour, to retain high levels of manpower for internal security, employment, and national prestige.

Low-income states of the developing world will continue to operate forces that, in principle, are organised along conventional lines, but will probably bear a closer resemblance to the irregular armed groupings operating locally within them. At times of heightened tension, both middle and low-income states are likely to rely on mass-mobilization of large-scale reserve or irregular forces which, while usually of doubtful military value, will add to a significant degree to operational complexity.[140]

In the advent of new conflicts breaking out, these differences among the armed forces of the many countries, and the multitude of non-state actors, will reinforce the trend to multi-modal or hybrid forms of war. War alone is not the only thing that is hybrid; an array of broader defence issues are hybrid as well. The evolving character of conflict is best characterized by convergence, including the convergence of the physical and psychological, the kinetic and non-kinetic and combatants and non-combatants. So, too, there will be convergence of military force and the interagency community, of states and non-state actors, and of the capabilities they are armed with.[141]

Hence, the bright lines that once separated civilian and military responsibilities are much less distinct in today's environment. This is particularly true in the domains

[140] DCDC "Strategic Trends Programme 2007-2036," 75.
[141] Frank G. Hoffman, "Hybrid vs. Compound War," *Armed Forces Journal* (October 2009).

that recently have become more prevalent, such as counterinsurgency, stabilisation and reconstruction, homeland defence and security, and cyber defence. In other words, the defence and armed forces portfolio has become irrevocably diverse and expansive.

Defence and armed forces will increasingly face three types of challenges: rising tensions in the global commons; hybrid threats that contain a mix of traditional and irregular forms of conflict; and the problem of weak and failing states. Defence challenges manifesting from these three categories have non-military and military components. By definition, all are defence-relevant hybrids both in their character and the character of likely responses.[142] Indeed, responses to any of the three, whether defence-led or defence-enabled, require blended military and non-military designs. Most, if not all, are irresolvable through the use of military force alone. All, however, do require the attention of the armed forces; and many, if not most, require defence leadership. Though non-military in character, the most difficult of these challenges defy favourable resolution unless skilful, discriminating, and innovative military resources are applied in combination with the other instruments of national power.

Future conflicts and wars may be unlike the large-scale mechanized sweeps of Operation Desert Storm. They might either look more like the "stepchild of Chechnya", where Chechens employed swarming tactics inside their own cities to thwart Russian domination, or they may be inspired by elements of more recent concepts of non-Trinitarian wars, 4th Generation Warfare,[143] compound wars[144], or what a pair of Chinese Colonels called unrestricted warfare – a form of warfare that "transcends all boundaries and limits", and exploits the central role that cyberspace plays in future conflict.[145] The predominant trend, however, is an increased merging or blurring of conflict and war forms – the advent of multi-modal or *hybrid* wars.[146] There is a rising potential for types of conflict that blur the distinction between war and peace, combatants and non-combatants, and the physical or kinetic, as well as the virtual dimensions of conflict. These include traditional, unconventional, irregular, terrorist, disruptive, catastrophic threats as well as challenges specifically designed to target the vulnerabilities of developed states and societies. The most complex challengers of the future may seek synergies and greater impact by combining *all* modes of war and tactics, whenever possible simultaneously.

Hybrid threats incorporate a full range of different modes of warfare including conventional capabilities, irregular tactics and formations, terrorist acts, indiscriminate violence, coercion, and criminal disorder. Hybrid wars can be

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142 See "hybrid," Dictionary.com, *Dictionary.com Unabridged*, Random House, Inc. In entry three, "hybrids" are described as things "derived from heterogeneous sources, or composed of elements of different or incongruous kinds."

143 William S. Lind, Keith Nightengale, John Schmitt, Joseph W. Sutton & Gary I. Wilson, "The Changing Face of War: Into the Fourth Generation," *Marine Corps Gazette*, October 1989, 22–26.

144 Thomas Huber, *Compound Wars: The Fatal Knot* (Fort Leavenworth, KS: Command and General Staff College, 1996).

145 Qiao Liang & Wang Xiangsui, *Unrestricted Warfare* (Beijing: PLA Literature and Arts Publishing House, 1999).

146 Frank G. Hoffman, *Conflict in the 21st Century: The Rise of Hybrid Wars* (Arlington: Potomac Institute for Policy Studies, December 2007).

fought by both states and a variety of non-state actors. These multi-modal activities can be conducted by separate units, or by the same unit, but are generally operationally and tactically directed and coordinated within the main battlespace to achieve synergistic effects in the physical and psychological dimensions of conflict. The effects can be gained at all levels of war.[147]

At the strategic level, many wars have had regular and irregular components. However, in most conflicts, these components occurred in different theatres or in distinctly different formations. In hybrid wars, these forces become blurred into the same force in the same battlespace. While they are operationally integrated and tactically fused, the irregular component of the force attempts to become operationally decisive rather than just protract the conflict, provoke overreactions or extend the costs of security for the defender.[148]

Tomorrow's hybrid wars will take place in complex terrain, most likely the burgeoning cities of the developing world. The hybrid challenger realizes that complex terrain affords defenders a number of advantages that offset the conventional superiority of the most developed nations. Recent combat operations suggest a shift towards what can be called *contested zones*. These zones include the dense urban jungles and the congested littorals where the majority of the world's population and economic activity is centred. Engaging the forces of developed states in the contested zones with a range of crude yet effective asymmetric approaches is intended to draw out conflicts, protract their duration and costs, and, foremost, sap the will of these states.[149]

Future challengers will present a more complex array of alternative structures and strategies, as seen in the summer of 2006 in the war between Israel and Hezbollah in Lebanon. Hezbollah clearly demonstrated the ability of non-state actors to study and deconstruct the vulnerabilities of militaries of developed states, and devise appropriate countermeasures. Hybrid wars blend the lethality of state conflict with the fanatical and protracted fervour of irregular warfare. The term hybrid captures both their organisation and their means. Organisationally, they may have hierarchical political structure, coupled with decentralized cells or networked tactical units. Their means will also be hybrid in form and application. In such conflicts, adversaries – states, state-sponsored groups or non-state self-funded actors – will exploit access to modern military capabilities including encrypted command systems, man-portable air-to-surface missiles, and other modern lethal systems, as well as promote protracted insurgencies that employ ambushes, improvised explosive devices, and assassinations. This could include states blending high-tech capabilities, like anti-satellite weapons, with terrorism and cyber warfare directed against financial targets. Conflicts will include hybrid organisations like Hezbollah and Hamas, employing a diverse set of capabilities.[150]

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147 Colonel Steven M. Zotti, "SVG Strategic Trends and Implications," (Information Paper, SVG/MCCDC, 12 February 2008).

148 Hoffman, *Conflict in the 21st Century,* 29.

149 Ibid., 15.

150 Ibid., 28. See also: Frank G. Hoffman, "Hybrid Threats: Reconceptualizing the Evolving Character of Modern Conflict", *Strategic Forum,* no.240 (April 2009).

The opponents in the future battlespace accept no rules. Their principal approach will be to avoid predictability, and seek advantages in unexpected ways, with asymmetric and ruthless modes of attack, combined with unanticipated tactics. Thus, irregular or unconventional warfare will become normal, but with greater velocity and lethality than ever before.[151]

1.8 Space

Space is now recognised as a fourth dimension of warfare, and identified as the ultimate military high-ground for battlespace domination. Space-based surveillance, reconnaissance, battlespace awareness, intelligence, communications, navigation, and precision guidance applications have played a dominant role in recent conflicts. Russia, the US, and China have demonstrated the ability to eliminate satellites by ballistic missiles launched from earth.[152] Space has been militarised for more than 45 years. Thousands of satellites have been launched into orbit, originating from more than fifty countries, with some relying on launching capabilities that ten nations now can provide. More than 900 satellites are currently operational,[153] of which 433 are American,[154] eighty-five Russian, and fifty-five Chinese. It is estimated that more than 1,100 satellites will be launched between 2009 and 2018.[155]

Traditional military missions for land, sea, and air have long been migrating to space. Military satellites are used for early warning, imagery and signals intelligence, telecommunications, meteorology, and navigation, all designed and deployed to serve direct support of military operations[156] and other national security needs. In February 2009, the question of space security has come into the public eye with the collision of Iridium 33, an operational US communications satellite, and Cosmos 2251, a decommissioned Russian communications satellite, in low earth orbit over northern Siberia. The collision was the first to involve two intact satellites, and resulted in more than 700 new pieces of orbital debris. It highlighted the need for space object data exchange, because it is estimated that by 2035, there will be ten times the amount of today's 18,000 pieces of orbiting space debris that can be tracked from earth. The debris problem is most pronounced in the densely populated bands of low earth orbit. It is thought that as few as several dozen highly energetic anti-satellite events like the Chinese test in 2007 could render whole swaths of low earth orbit unusable for years or even decades.

One of the advantages of space-based platforms is that there are no restriction or country clearances to overfly a nation from space. Sovereignty, however, will

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151 Barak Salmoni, "The Fallacy of Irregular Warfare," *RUSI Journal* 152, no.4 (August 2007): 18–24.

152 In January 2007, the Chinese military shot down an aging weather satellite, followed by the US Navy shooting down a defunct spy satellite in February 2008.

153 430 in Low Earth Orbit (LEO), fifty-eight in Medium Earth Orbit (MEO), 376 in High Earth Orbit (HEO) or geocentric orbit, above the geosynchronous orbit of 35,788 km, and forty in Elliptical Orbit.

154 Ten of which are civilian, 194 commercial, 122 government, and 107 military.

155 UNIDIR, *Space Security 2009 – Moving towards a Safer Space Environment* (New York & Geneva: UNIDIR, Conference Report 15–16 June 2009), 3.

156 During the 2004 Iraq War, 68 percent of munitions were satellite guided – up from 10 percent in the 1991 Iraq War.

remain a concern. The exploding number of satellites brings competition for orbit parking locations, frequency allocation and "basing rights" to distribute uplinks and downlinks to and from ground stations. And there are still insufficient universally accepted "rules of the road" to make crowding of space orderly and without incident.

Achieving space superiority will remain critical to success in future conflicts and wars. To achieve this is no small feat since there are many ways of disrupting satellite operations. A number are ground based and include jamming of communications between satellites and ground stations, or by targeting ground stations via physical attacks or computer hacking. GPS as well as Glonass and Galileo satellites are potential targets for jamming, as are satellite phone and TV signals. Satellites have been hacked by militant organisations to broadcast propaganda and to pilfer classified information from military communication networks. Directed-energy weapons can permanently or temporarily disable critical satellite functions. Other technologies either in use or being developed for peaceful or defensive purposes could also have offensive uses. For example, small manoeuvrable satellites used to inspect and repair spacecraft could themselves be used as weapons. There are also concerns that space-based interceptors could be used as weapons. Since the demise of the US-Russian Anti Ballistic Missile Treaty in 2002, there have been no restrictions on placing conventional weapons in space.[157]

Space strike systems based on satellites or on transatmospheric vehicles could enable precision strikes whose quantitative advantage in speed would result in a qualitative difference in capability. Among the most promising American projects are the "Global Strike" and so-called "Rods from God" programs. Global Strike involves the employment of military space planes capable of carrying some 500 kg of high-precision weapons with a CEP[158] of less than 3 metres, with the primary use of striking enemy military bases and C2 facilities at any point of the world. It can reach any spot on the globe within 45 minutes, and has a wide operational spectrum, encompassing utilisation of strategic weapons, neutralising nuclear missiles, to suppression of long-range air defences, and elimination of terrorists.[159]

"Rods from God" consist of orbiting platforms stocked with tungsten rods some 6 metres long and 30 centimetres in diameter that could be satellite-guided to targets anywhere on earth within minutes, for the rods would move at over 11,000 km an hour. This weapon exploits kinetic energy to cause an explosion the same magnitude of that of an earth-penetrating nuclear weapon, but with no radioactive fall-out. The system works with two satellites: one functioning as communication

[157] Matthew Hoey, "The proliferation of space warfare technology", *Bulletin of the Atomic Scientists*, 11 December 2008; Cyptome, *Global Space Warfare Technologies: Influences, Trends, and the Road Ahead*, Cyptome, 14 January 2010; Larry M. Wortzel, *The Chinese People's Liberation Army and Space Warfare*: *Emerging United States-China Military Competition* (Washington DC: American Enterprise Institute); Lt Gen G.P. Kupriyanov, "Principal Trends in the Evolution of Space Warfare," *Moscow: Military Thought* (31 March 2005): 84–89.

[158] Circular Error Probable: An indicator of the delivery accuracy of a weapons system, used as a factor in determining probable damage to a target. The circular error probable is the radius of a circle within which half of a weapons system's projectiles are expected to fall.

[159] Giuseppe Anzera, "The Pentagon's bid to militarize Space," *Power and Interest News Report*, 17 August 2005.

platform while the other would contain the arsenal of tungsten rods. Their main targets would be ballistic missiles in hardened sites, orbital devices, as well as satellite systems deployed by other powers.[160]

Other systems that could enable future space operations might include single-stage-to-orbit launch vehicles, space-based directed-energy weapons, space-based ballistic missile defence, satellite defence systems, small reconnaissance satellites, and both space-based and ground-based distributed networks to reduce the vulnerability of space capabilities.

Space, however, does have limiting factors that could constrain its military use. First, space is not amenable to human life, thus limiting the manned presence in future space operations.[161] As a result, most of the improvements in future space operations will most likely come through unmanned technologies. In addition, the speeds associated with space flight, and the amounts of fuel required to manoeuvre in orbit using current technologies and energy sources, greatly limit the flexibility of spacecraft in orbit. Therefore, sizable technical hurdles have to be overcome before space-based strike, anti-satellite systems, space lift and space transport become militarily usable capabilities.[162]

And there are the costs. Orbital weapons are extremely expensive. It has been estimated that a space defence system against ballistic missiles would cost between 220 billion and 1 trillion USD. A laser-based system to be used against ballistic missiles would cost about 100 million USD for each target. The Future Imagery Architecture – a project aimed at the implementation of new spy satellites which are vital to identify targets for space weapons – has already reached costs of 25 billion USD. It is a legitimate question, therefore, of whether the US really needs to finance such projects in today's geostrategic context. Moreover, would these tools be cost-effective in relation of their real operational capability? The first question raises doubts, and the second one remains, at the moment, without answer.

Systems related to national security have dominated space, but this dominance is eroding rapidly. The increasing number of states and commercial consortia turning to space to provide and receive services and to generate wealth forces states to adapt to this emerging environment. Military resources now shift from sustaining systems, and research and development, to buy-and-lease services that are state of the art, and ever more often designed for dual-use. The dual-use nature of satellites means that it can be harder to distinguish between military and civilian activities. Often only a software change makes the difference between a military and commercial satellite. The shift to buy-and-lease services means that governments have to ensure that the accompanying vulnerabilities do not threaten national security.

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160 Ibid.

161 Robert Thirsk, Andre Kuipers, Chiaki Mukai & David Williams, "The space-flight environment: the International Space Station and beyond", Review, *Canadian Medical Association Journal* (9 June 2009).

162 Jeffrey McKitrick, James Blackwell, Fred Littlepage, George Kraus, Richard Blanchfield & Dale Hill, "The Revolution in Military Affairs," in *Battlefield of the Future – 21st Century Warfare Issues*, ed. Barry R. Schneider and Lawrence E. Grinter (Honolulu: University Press of the Pacific, 2002).

Space capabilities are proliferating around the world, and space commerce has increasingly become integral to the global economy.[163] Military, civil, and commercial space sectors are converging. Navigation and communications may be the most significant examples of convergence. The shift will continue from the military to the commercial sector as the dominant receiver and provider of space services. The US is still the largest investor in space, and the technological and commercial leader in many areas, but its leadership is being challenged. When other nations have similar capabilities, control becomes a problem, assuming, as is the case with space, that control is also a critical issue in security. Moreover, exerting space power may be inconsistent with expanded commercial developments in space, raising investment risks and creating incentives for foreign competitors. To the extent that global market opportunity is denied by restrictive commercial policies, space power from a purely international economic competitive perspective is diminished. In 1996, for the first time, commercial launches exceeded US military launches, and commercial space revenues outstripped US government space expenditures.[164] Today, more than 1,200 commercial companies across fifty-five countries are developing, manufacturing, and operating space systems.

Space is integral to human security on earth. Satellites monitor the environment, drive telemedicine and tele-education, and support disaster management. Fixed satellite services handle hundreds of billions of voice, data, and video transmission tasks across all countries and continents between certain points on the earth's surface. Mobile satellite systems help to connect remote regions, vehicles, ships, people, and aircraft to other parts of the world or other mobile or stationary communications units, in addition to serving as navigation systems. And scientific research satellites provide meteorological information, cartographic, land survey and remote sensing data, and other scientific research applications such as earth and marine science, as well as atmospheric research. Mobile communications; agricultural benefits; precise navigation; storm and disaster warning; banking; entertainment; and personal computing will depend on leading-edge commercial space services. Space technology is integral to our daily lives and contributes to sustainable development. That means that space capabilities will become increasingly important to all societies, and will make freedom of operation within space critical to the future of all nations.[165]

[163] Space Foundation, *The Space Report 2009: The Authoritative Guide to Global Space Activity* (Colorado Springs: Space Foundation, May 2009).

[164] *Future Strategic Environment*, Space, at: http://www.fas.org/spp/military/docops/usspace/Irp/ch01.html

[165] Wolfgang Rathgeber, *Space Policies, Issues and Trends in 2008/2009*, Report European Space Policy Institute, 18 May 2009.

2. The unfinished business: Things that should have been solved a long time ago, but are hard to address

2.1 Corruption

The Global Corruption Report 2009 depicts the core problem of corruption in business succinctly:

> Growing a successful sustainable business requires three things: an uncompromising devotion to developing products and services that contribute real value to the client; passionate leadership that attracts and inspires the best to join the venture; and an unwavering commitment to act as a responsible player in the community, nurturing public trust and support on which all businesses ultimately depend. Corruption erodes each of these pillars of business success. It means three things: cutting corners and shirking honest competition rather than producing real value for the clients; compromising corporate and individual integrity, deterring and demotivating the best and most innovative entrepreneurs and scientists from signing on; and consenting to, and propping up, a business environment in which complicity is for sale, entrusted public power is routinely abused for the sake of private gain, and public trust in the beneficial partnership between business and society is gradually undone.[166]

There is no single uniform definition of all the constituent elements of corruption.[167] Corruption may be defined as soliciting or accepting, promising, offering or granting an undue advantage for the commission or non-commission of an action. A distinction is made between active corruption, which involves promising or offering a person an undue advantage, and passive corruption, which involves soliciting or accepting such an advantage. Bribery, graft, sweetheart deals, political payoffs, influence peddling, cronyism, patronage, and nepotism are a few of the many faces of corruption. And there is lobbyism, the most modern form of corruption, with some 20,000 lobbyists in Washington D.C., 15,000 in Brussels, and the thousands in other capitals all over the world.

Gregory Mock sees a combination of economic, social, and administrative factors at the roots that create favourable conditions for corruption. Low salaries for civil servants in developing countries, for example, increase the motivation to earn additional income through corrupt activities. In societies where civil service pay is low, bribes, other gifts and favours may form a significant percentage of a public employee's total income. There are other aspects of public administration that play a part as well, such as hiring, job advancement or promotion, which is determined more by connections and payoffs than by merit. This leads to reduced professionalism and competence of the bureaucracy, and the strengthening of the cycle of corruption.[168]

Corruption flourishes where the following mechanisms of accountability and oversight are weak or fail to function as they should: independent audits, special

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[166] N.R. Narayana Murthy, "Foreword 1, Tackling corruption in business: profitable and feasible," in *Global Corruption Report 2009* (Berlin: TI, 2009): xix.

[167] See: P.C. van Duyne, "Will 'Caligula' go transparent? Corruption in acts and attitudes," *Forum on Crime and Society* 1, no.2 (December 2001): 74-76.

[168] Gregory Mock, "Undue Influence: Corruption and Natural Resources," in *World Resources 2002-2004*,ed. WRI (Washington DC: Sun Val, 2003): 36-37.

investigative units of government inspectorates, parliament, NGO watchdog groups, media, and political opposition parties. Where these institutions of detection and enforcement are lacking or when they are themselves corrupt, the chances of exposure are rapidly diminishing. Complexity of government regulations and the amount of discretionary power bureaucrats' exercise can also factor into the corruption equation. Wherever rules are complex, vague or frequently changing, public administrators have more opportunities to use their influence to exact bribes.[169]

Expectations on the prerogatives of authority also vary. In a number of African countries, for instance, corruption is common and often quiet visible, and most of those engaging in it believe that they are entitled to the benefits they reap. Public service is frequently seen as a legitimate opportunity for self-enrichment, to take care of one's family or to fulfil other social obligations. Together, these factors can lead to an entrenched culture of corruption, where the social stigma attached to such practices may be lower and tolerated by the public as normal business practice and part of everyday life, even if such practices are not always approved.[170]

There are few domains free of corruption. Organised crime mainly flourishes because of corruption. Corruption exists in both the private and public sector, and is most widespread at the intersection of the two. Natural resources are one of the domains that offer rich opportunities for corruption. Indeed, environmental crime, such as illegal logging, theft of public lands, diversion of oil and resource revenues, trade in rare and protected species, or other illegal appropriations of public assets, is a modern growth industry facilitated by corruption. These resources often have high commercial value, making them prime targets for plunder. Natural resources are often governed by complicated regulations, require special permits for exploitation and export, and must be inventoried and accounted for to determine royalties and taxes, all of which being good entry points for manipulation and corruption. An added inducement to corrupt behaviour is the fact that there is often a low risk of being caught. Most natural resource exploitation is taking place far from public view, in remote regions where there is little monitoring and media scrutiny.

The nature of corruption is such that it cannot be accurately measured. Consequently, it has to be estimated using indicators prepared from surveys of the perception of corruption among different populations. The World Bank and the IMF estimate that over 1 trillion USD a year is lost to corruption, representing 5 percent of world GDP. The African Union reckons that corruption costs African economies over 148 billion USD a year, or 25 percent of the continent's GDP. And UNODC, the UN Office against Drugs and Crime, estimates that countries which take steps to counter corruption and promote lawful behaviour could quadruple their national income.

[169] Ibid.
[170] Ibid.

The Global Corruption Report, produced annually by Transparency International, is one such estimate used to compare the degree of corruption among different countries.[171] This Corruption Perception Index (CPI) is based on a number of respected polls, and reflects the perceptions and opinions of people working with multinational corporations and international institutions. The findings listed in the index, and a number of other studies and polls, indicate that the problem of corruption affects all societies, rich and poor, but that the incidence is particularly high in many of the poorest nations. Because perceptions of corruption can also be influenced by factors such as culture, ethical standards, and the media, it is important to note that this index, as other corruption polls, constitutes a subjective measurement of corruption. Moreover, not all countries are listed in the CPI, and some country rankings may be less precise than others. Nonetheless, the sampling frame of the CPI is broader than other corruption polls, and it has widely served as the basis for additional research studies.[172]

The global financial and economic crises have revealed large scale fraud that dropped public confidence and trust in the financial sector, which now presents a daunting array of challenges to companies and governments alike. Practically, no single stakeholder can effectively address the problems that contributed to this crisis: corruption, greed, lack of transparency and of leadership. Hence, there is a case for collective action that enables companies to collaborate with competitors and stakeholders from the public and the civil society sector to create and maintain fair market conditions. Recognising this, the World Bank Institute has undertaken an Executive Development Program precisely on such joint approaches: Fighting Corruption through Collective Action in today's Competitive Marketplace.[173] Working collectively, companies can help level the playing field between competitors, create incentives to avoid bribery among organisations and individuals and introduce greater transparency and predictability to business transactions.[174]

The countries of Central and Eastern Europe have made impressive progress towards establishing democracy, the rule of law, and a market economy. But they often inherited conditions conducive to the persistence of corruption, such as a tradition of entrenched mistrust of the state. They have also undertaken transitional tasks that are inherently highly vulnerable to corruption, such as the privatisation of their economies. Resulting is a situation in which many countries continue to be troubled by high levels of corruption, particularly those where international organised crime is prevalent. Although corruption has been a prominent political issue in most of these countries, the awareness has not been such as to exert consistent pressure on elites to behave non-corruptly or to pursue effective anti-corruption policies. Only in a small number of countries have civil society organisations been able to fulfil their essential role of making anti-

[171] TI, *Global Corruption Report 2009, Corruption and the Private Sector* (Cambridge and New York: Transparency International and Cambridge University Press, 2009).

[172] Gregory Mock, "Undue Influence: Corruption and Natural Resources", 36.

[173] Djordjija Petkosi, Michael Jarvis & Kathrin Frauscher, "Fighting Corruption through Collective Action in today's Competitive Marketplace," *Ethisphere Magazine*, 13 May 2009.

[174] World Bank, "Governance Matters, a blog about Governance and Development for All. Problems solved: corruption, lack of transparency and leadership," World Bank, http://blogs.worldbank.org/governance/problems-solved-corruption-lack-of-transparency-and-leaderwship

corruption initiatives a domestic and international issue, thus contributing to the process of devising effective anti-corruption policies.[175]

Corruption, while not confined to any particular continent, is a significant problem in much of the developing world where it affects not only sovereign functions such as policing and justice, but also economic, social, and cultural activities encompassing access to basic services like education, healthcare, energy and water, and even food aid in some of the poorest countries. In these countries corruption it is fostered and aggravated by economic factors such as unbalanced economic structures, rents, lack of export diversification, as well as political factors such as weak governmental structures. Moreover, corruption fosters other forms of serious economic and financial crime like smuggling, misappropriation of public funds, tax and customs revenue, extortion, and fraudulent award of public procurement contracts. The efficiency costs can be even worse in that corruption may be the major contributor to the low growth rates of many developing countries, particularly in countries where cases of grand scale corruption abound. Examples include the more than 1 billion USD of Angola's state oil revenue missing each year, a portion of which is siphoned into private bank accounts offshore. The amounts flowing out of the developing world as a result of corruption in all probability exceed the amounts of direct foreign assistance flowing in. Finding a way of curbing the flow of this corruption money must thus become a priority.

What is hampering effective countermeasures is that corruption leaves few traces, since neither bribers nor bribe-takers nor intermediaries have any interest in seeing their actions exposed. The fact that corruption may sometimes be regarded as an acceptable practice makes it all the more difficult to eradicate. The existing network of treaties and conventions is still not effective in stopping the flow of illicit funds. The problems are deep and systemic. At the core is the same central problem that is at the heart of every truly global issue: the prerogatives of national sovereignty. In no area are those prerogatives more vigorously asserted than in the area of criminal law because anti-corruption efforts have mostly focused on criminal law responses. Criminal law by its very nature is territorial. Some progress has been made with the signing of the 1997 OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions.[176] This international treaty makes it a crime to bribe any foreign official, and outlaws the practice of money laundering that often accompanies bribery. It also forbids the practice of deducing the cost of foreign bribes as business expenses on tax returns – a distressingly common practice in many developed nations until a few years ago.

The UN Convention against Corruption adopted by the UN General Assembly on 31 October 2003 and signed by 140 states, is the first legally binding global

EUMAP, "EU Monitoring and Advocacy Program, Corruption and Anti-corruption Policy," EUMAP, http://www.eumap.org/topics/corruption

[176] *Convention on Combating Bribery of Foreign Public Officials in International Business Transaction*, OECD, DAFFE/ IME/BR897)16/REV, OLIS 25 November 1997, http://www.justice.gov/criminal/fraud/fcpa/intlagree/related/combatbribe.html

anti-corruption instrument.[177] In force since 2005, it now needs to be embraced fully by all signatories. It requires contracting states to criminalize certain practices, such as bribery, extortion, and money laundering. Though it has faced serious enforcement problems, the convention is innovative and balanced, combines repression and prevention while providing for technical assistance to help countries implement preventive measures. One of its distinctive features is that it broaches the question of the return of assets derived from corruption.

Various regional conventions have also been concluded, such as the African Union Convention. At the European level, the 10th European Development Fund introduced the principle of incentives for countries committed to good governance programs. At the global level, the IMF and World Bank have included anti-corruption measures in the criteria to be taken into consideration when making loans or donations. In addition to this legal arsenal, the international community seeks to help countries introduce procedures capable of improving transparency in accounting, and to take preventive measures against corruption. The Extractive Industries Transparency Initiative, EITI, for example, aims to encourage governments to publish the revenues they receive from the exploitation of natural resources, and oil and mining companies to disclose the amount of their payments to those governments. Other natural resources are also given special treatment. The Kimberly Process as well as the International Tropical Timber Organisation, for example, provide for the framing of certification and authorization rules for diamonds and tropical timber respectively.[178]

To deal with the issue of crimes that cross borders, countries have developed a system of extradition treaties and mutual legal assistance agreements. Thus far, with the exception of the International Criminal Court, there is no international criminal law. Indeed, the newly negotiated anti-corruption conventions still call signatory states to pass their own implementing criminal legislation.[179] Although there are procedures for the movement of evidence across international borders, the process is slow and cumbersome. National interests and political forces sometime trump real cooperation.

A step change in strategy and action is required to ensure that corruption is tackled effectively: (1) Business needs to recognise that corruption risks start with bribery and go beyond, requiring an integrated approach to corporate integrity and corporate citizenship. (2) Governments need to take advantage of the new generation of innovative tools and thereby put more emphasis on regulatory capabilities, actual enforcement, and international cooperation. (3) Civil society needs to become fully aware of how corruption in business is at the core of many other social, development and environmental challenges, and must forge much broader and more effective partnerships to support corporate integrity. And (4) stakeholders, from business owners, executives and workers to auditory, investors,

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[177] *UN Convention against Corruption*, UN General Assembly, 58 Session, Agenda item 108, A/Res/58/4, http://www.un-documents.net/a58r4.htm

[178] French working paper on anti-corruption, Memorandum adopted by the Interministerial committee for international cooperation on 5 December 2006, http://www.oecd.org/dataoecd/50/46/38260631.doc

[179] Testimony of Jack A. Blum, Esq., Before the Committee on Financial Services, US House of Representatives, The problem of Curbing Grand Scale Global Corruption, 19 May 2009, 3.

regulators, and anti-corruption activists, have to acknowledge that corporate integrity is a multi-stakeholder effort that requires collective action across sectors, borders, and institutional boundaries.[180]

2.2 Terrorism

Terrorism remains a major threat worldwide.[181] No matter what its origins or what form it takes, terrorism is a crime that no grievance can justify or excuse. It threatens not only the very fabric of a free and pluralistic society, but the rights of every individual too. Even if there is no internationally accepted standard definition of terrorism, there is widespread consensus concerning what a terrorist act actually is, namely a deliberate assault on civilians with the aim of intimidating people or pressurising a state or international organisation into acting in a certain way or refraining from action. Basically, terrorist attacks are designed to draw the attention of the media, because the attack itself will have accomplished little without being viewed by the larger audience provided by media coverage. One of the key goals of the terrorists is to shape public attitudes and perceptions, und ultimately to undermine the will to fight. Terrorists attempt to accomplish that goal through the manipulation of media coverage.

Terrorist attacks continue to take place while only few have been foiled. Approximately 11,800 terrorist attacks against non-combatants have occurred in various countries during 2008, resulting in over 54,000 deaths, injuries and kidnappings. Compared to 2007, attacks decreased by 2,700, or 18 percent in 2008 while deaths due to terrorism decreased by 6,700 or 30 percent. The largest numbers of reported terrorist attacks have occurred in the Near East. But unlike previous years, South Asia had the greater number of fatalities. These two regions were the locations for 75 percent of the 235 high-casualty attacks in 2008 – those that killed ten or more people. Attacks in Iraq, Afghanistan and Pakistan accounted for about 55 percent of all attacks. Attacks in Iraq have continued to decline since 2007. About 35 percent of the attacks have occurred in South Asia with Afghanistan and Pakistan registering increased attacks. Attacks in Pakistan have more than doubled in 2008. And 2009 was the worst year of terrorist violence, when Pakistan saw 3,021 deaths in terrorist attacks, up 48 percent on the year before.[182]

The sad irony of Islamic terrorism is that the great majority of its victims continue to be Muslims. In a 2007 online forum, al-Qaeda's second in command Ayman al-Zawahiri, confronted questions about the organisation's use of violence and especially violence against Muslims. Zawahiri and other leaders have defended al-Qaeda's use of violence, arguing that their operations do not kill Muslims, and on

[180] TI, *Global Corruption Report 2009*.
[181] US Department of State, *Country Reports on Terrorism 2008* (Washington DC: US Department of State, April 2009); Risk Management Solutions, *Global Terrorism Trends 2009*, *Overview of Terrorism Risk*, 2009 (Newark: Risk Management Solutions, Inc., August 2009).
[182] Declan Walsh, "Pakistan suffers record number of deaths due to militant violence," *Guardian*, 11 January 2010.

the rare occasion they do, such individuals are apostates or martyrs. Since the inception of al-Qaeda, the organisation has claimed to represent Muslim interests around the world declaring itself the vanguard of true Islam, and defender of Muslim people. Unfortunately for al-Qaeda, their actions speak louder and clearer than their words – as a recent study shows that used Arabic media sources to establish the victims of al-Qaeda's violence through a non-Western prism. The fact is that the vast majority of victims are Muslims. Only 15 percent of the fatalities resulting from al-Qaeda attacks between 2004 and 2008 were Westerners.[183] The readiness of the jihadists to slaughter hundreds of fellow Muslims in order to kill handfuls of infidels has already provoked a backlash in Muslim countries, including Indonesia, Saudi Arabia, Egypt, and Jordan.

A major change in counterterrorism policy has been introduced by the new US administration.[184] As outlined by John Brennan, the Assistant to the President for Homeland Security and counter-terrorism, the new US counterterrorism policy is based on five major principles: (1) terrorism is no longer the defining characteristic of US foreign policy. "Rather than looking at allies and other nations through the narrow prism of terrorism – whether they are with the US or against the US – the new administration is now engaging other countries and peoples across a broader range of areas." (2) the paradigm behind US counterterrorism policy is no longer the "global war on terror," and it will no longer dignify the cowardice and inhumanity of Islamic extremist terrorists by referring to them as "jihadist." (3) US counterterrorism policy will recognise and address the "upstream factors," such as poverty, corruption, and illiteracy, which provide the fertile ground for the growth of violent extremism. Building on the third principle, the new policy will (4) provide for "a political, economic, and social campaign to meet the basic needs and legitimate grievances of ordinary people: security for their communities, education for children, a job and income for parents, and a sense of dignity and worth." (5) the new policy calls for a coordinated, integrated effort on the part of all elements of US power. In this, the US is committed to using every element of national power to address the underlying causes and conditions that fuel so many national security threats, including violent extremism. And in order to achieve this, the US will take a multidimensional, multi-departmental, and multinational approach.

In Europe, home-grown terrorist groups start to play an increasing role. Overall, the EU has made progress with additional measures in counterterrorism inside the Union, under the 2004 Hague Program, and with a new Strategy for the External Dimension of Justice and Home Affairs, adopted in 2005. These have made it easier to pursue investigations across borders, and coordinate prosecution. The EU Counterterrorism Strategy of 2005 is based on respect for human rights, and international law.[185] It follows a four-pronged approach: preventing radicalization,

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[183] Scott Helfstein, Nassir Abdullah & Muhammad al-Obaidi, *Deadly Vanguards: A Study of al-Qa'ida's Violence Against Muslims* (West Point: Combating Terrorism Center, Occasional Paper, December 2009).

[184] Frank Naif, "Obama's New Counterterrorism Message Is Good, But the Messenger Has Problems," *Intelligence And US Army Veteran*, 10 August 2009; B. Raman, "Nuanced, Not Simplistic – Obama's New Counter-Terrorism Policy" (South Asia Analysis Group, Paper No. 3336, 7 August 2009).

[185] Council of the European Union, *The European Union Counter-Terrorism Strategy* (Brussels: Council of the European Union, 30 November 2005), 14469/4/05 REV 4, DG H2, EN.

recruitment, and the factors behind them; protecting potential targets; pursuing terrorists; and responding to the aftermath of an attack. While national action is central, the appointment of a Counterterrorism Coordinator has been an important step forward at the European level.

Within the EU, much has been done to protect societies against terrorism. However, the EU must tighten coordination arrangements for handling a major terrorist incident, in particular using chemical, radiological, nuclear, and bioterrorism materials on the basis of such existing provisions as the Crisis Coordination Arrangement and the Civil Protection Mechanism.[186] Further work on terrorist financing is required, along with an effective and comprehensive EU policy on information sharing, taking due account of protection of personal data. The EU must also do more to counter radicalisation by addressing extremist ideology and tackling discrimination. And the EU needs to improve the way in which it brings together internal and external dimensions.[187] Better coordination, transparency, and flexibility are needed across different agencies, at national and European level. This was already identified in the European Security Strategy. But progress has been slow and so far incomplete.

It is impossible to make predictions about the future course of terrorism, except to say that there inevitably will be surprises. Efforts to anticipate the future of terrorism should be approached with modesty and greeted with scepticism. Nonetheless, some trends are discernable. So it seems safe to say that the jihadist enterprise, guided by al-Qaeda's ideology and leadership, will remain the dominant threat for the foreseeable future. It has yet to run its course. It may retreat and advance, depending on events; it will adapt and morph into new shapes; but it will doubtless persist. And the process of radicalization will continue. Moreover, the current insurgencies in Iraq and Afghanistan are creating fungible skills that are likely to disperse throughout the world, through its veterans and via the jihadists' online distance-learning enterprise.[188]

Three trends in terrorism can be identified: first is the emergence of smaller, more amorphous groups of actors capable of independent operations, which are more difficult to trace and detect – in part spurred by US successes in isolating or killing a number of al-Qaeda's leadership. The result is an al-Qaeda with are more subdued, although arguably still significant operational role, but assuming more of an ideological, motivational, and propaganda role. Second is the trend toward sophistication by terrorists' exploitation of the global flow of information, finances, and ideas to their benefit, often through the Internet. Terrorists will become more proficient in their craft of violence and in their communications. And third is an increasing overlap of terrorist activity with transnational organised crime, which may expose the terrorists to a broader range of law enforcement countermeasures. In addition, an overall increase in suicide bombings can be

[186] EU, "EU Community Civil Protection Mechanism: Frequently Asked Questions, Brussels: 5 August 2008," EU, http://www.europa-eu-un.org/articles/en/article_8069_en.htm

[187] EU, *Report on the Implementation of the European Security Strategy – Providing Security in a Changing World* (Brussels: EU, 11 December 2008), S407/08.

[188] Brian Michael Jenkins, "Introduction," in *Terrorism: What's Coming – The Mutating Threat,* ed. James O. Ellis III (Oklahoma City: Memorial Institute for the Prevention of Terrorism), 12.

noted, particularly in Iraq, Afghanistan, and Pakistan. However, some of those incidents in these countries would be better categorized as insurgent activity, and also to some degree as criminal activity. A further fact seems to be that active, direct state sponsorship of terror is further declining, with the possible exception of Iran.

Three emerging trends that may require enhanced policy focus are: (1) attacks that aim to cause more economic damage, such as those on transportation infrastructure, tourism and oil installations; (2) a growing number of unattributed terrorist attacks; and (3) the growing power and influence of radical Islamist political parties in foreign nations.[189] In addition, there are indications that suggest an immediate future with a larger number of "smaller attacks, less meticulously planned, and more local rather than transnational in scope." If so, some adjustment in implementation of anti-terror strategy and tactics to reflect a more international law enforcement-oriented approach may be warranted, rather than more militarised counterterrorism. As the global economic, political, and technological landscapes evolve, data being collected to identify and track terrorism may need to change in order to enable improved risk assessments. Without robust and coherent risk assessment states may spend too much to protect against the threat of high consequence–low probability events, such as the 9/11 attacks, at the expense of protecting against the threat of low consequence–high probability incidents like the London bombings of 2005. As a result, a net security effect for the state might not be created despite substantial homeland security investments.

The new terrorism is increasingly networked, more divers in terms of motivations, and security consequences. Technology has enabled terrorist organisations to reduce sizing and signature. Today, the means and methods of terrorism can easily be gleaned from the Internet, obtained from bookstores, and mail-order publishers. More generally, terrorism has become accessible to anyone with a grievance, an agenda, a purpose, or any idiosyncratic combination of these. Relying on commercially obtainable bomb-making manuals and operational guidebooks, the amateur terrorist could become just as deadly and destructive, and even more difficult to track and anticipate than his professional counterpart. And the absence of a central command authority may, moreover, result in fewer constraints on the terrorist's operations and targets, and, when combined with a religious fervour, fewer inhibitions about indiscriminate casualties.[190]

Maritime terrorism may become a growing threat in the future. Though there have been few incidences so far,[191] maritime terrorism does pose a threat to world trade, and it has the potential of providing terrorist organisations with the mega-event they have been seeking since 9/11. Given the terrorist search for maximum casualties and economic impact, the maritime industry has distinct correlations to

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189 Raphael Perl, *Trends in Terrorism: 2006* (Washington DC: CRS Report for Congress, RL33555, 21 July 2006).

190 Ian O. Lesser, et al., *Countering the New Terrorism* (Santa Monica: RAND Corporation, 1999), 21–22.

191 Examples are the failed attack on the *USS The Sullivans* in 2000 in Aden, the attacks on the *USS Cole* in Aden October 2000, on the French tanker *Limburg* off Ash Shahir in October 2002, and on a passenger ferry in the Philippines in February 2004, the planned attacks in the Strait of Gibraltar, June 2002, on British and US ships, and the prevented attacks on shipping in the Strait of Hormuz in 2003.

the aviation industry. An explosion of a large tanker in a mega-harbour or in chokepoints could become as attractive as an in-flight destruction of a fully loaded B-747 jumbo jet or Airbus A380. A terrorist attack on a fully loaded gas tanker in one of the mega-harbours would have a serious impact on world trade. A blown up container ship could block a harbour for weeks. And the sinking of one or more ships through deliberate collisions, naval mines, anti-ship missiles or torpedoes in a chokepoint like the Straits of Malacca would close a sea lane used by 90,000 ships per year.[192]

Al-Qaeda has also threatened to attack critical infrastructures, the hinges of the world economy, as bin Laden calls them.[193] These obviously include oil. One step to come closer to this goal is to drive up oil prices. On 15 June 2004, a book was published on the Internet, purportedly authored by the Saudi cleric Sheik Abdullah bin Nasser al-Rashid, with the title *The Religious Rule on Targeting Oil Interests*. It was an attempt to construct some basis in the Islamic legal tradition for attacks on the oil industry, and outlined six expected economic effects: (1) the rise of the price for oil; (2) the costly efforts needed to enhance energy security; (3) the diversion of resources to meet the higher price of oil; (4) the costs of research on alternative energy sources; (5) the destabilization resulting from the flight of local and foreign capital; and (6) the damaging effect on the economic reputation of the US.[194] This analysis was probably inspired by bin Laden himself who had called the oil the strongest weapon against America.[195] On 16 December 2004, in an audio message, bin Laden had explicitly called for attacks in the Gulf region and the Caspian Sea, on the entire sectors of the oil industry.

In the summer of 2002 a group of plotters was arrested who aimed to attack Ras Tanura, the world's largest offshore oil loading facility. And on 24 February 2006 there was a failed attack on Abqaiq, the central node of the Arabian oil industry where more than 6 million barrels of oil a day is processed, which led to an immediate increase of the oil price. Abqaiq is well protected by fences, cameras, motion detectors, and patrols also by helicopters, but remains vulnerable to an insider job. In the meantime, great progress has been made to secure such targets in Saudi Arabia. According to the Interior Minister Price Nayef, Saudi authorities have prevented about 90 percent of planned attacks.[196] The lesson is that it only requires a relatively small amount of oil to be taken out of the system to have huge economic and security implications.

As Jenkins noted, except in ongoing-conflict zones, terrorists have seldom successfully attacked the critical infrastructure some worry so much about: bridges, tunnels, power plants, waterworks, refineries, etc., which are often large, inherently robust facilities, and complex networks that are difficult to destroy. Successfully attacking them requires well-planned sophisticated operations with

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[192] One third of the world trade, 80 percent of oil imports for East Asia, and two thirds of the worldwide liquid gas transports go via this route. Ships would have to make a detour of 1,000 kilometers and two additional days via the Indonesian straits of Sunda or Lombok resulting in 8 billion USD additional costs per year.

[193] Cited by Daniel Yergin, "Ensuring Energy Security," *Foreign Affairs* 85, no.2 (March/April 2006).

[194] Michael Scheurer et al., *Saudi Arabian Oil Facilities: The Achilles Heel of the Western Economy* (Washington DC: The Jamestown Foundation, May 2006), 7.

[195] Anonymous, "Kuwait boosts oil security after Saudi Qaeda attack," *Reuters,* 27 February 2006.

[196] Shawn Woodford, "Al Qaeda and Saudi Arabia: A Chronology," in *Saudi Arabian Oil Facilities*, 47.

simultaneous attacks that are difficult to engineer. Moreover, effective long-term disruption can only be brought about in a continuing campaign – which may explain why terrorists prefer to attack symbolic targets or concentrations of people that will guarantee high body counts.[197]

With more than thirty larger-scale terrorist attacks worldwide since 9/11, the jihadists have maintained an impressive pace of terrorist operations. But continued pressure and cumulative losses have degraded their operational capabilities. Despite its spectacular beginning, the jihadist enterprise now has begun to show some of the strains and weaknesses inherent in all terrorist campaigns. Historically, terrorists have tended to think more about tactics than strategy, and more about the necessity of violence than about what it will accomplish. Jihadist strategy, too, remains notional by offering vague visions rather than clear objectives. Continuing terrorist operations advertise their ideology and attract recruits. However, they provide no demonstration of how these will lead to goals beyond publicity and personal salvation, which must be accepted on faith.[198]

In the future, we may witness a more dangerous evolution of terrorism. Terrorism in the modern context may no longer occur in the form of fringe groups terrorising the populace. Rather, terrorism may manifest itself in the competition between strong non-state groups and the nation-state over economic control – by terrorist groups that are formed around lucrative business interests. This is happening in Mexico, where the Sinola cartel, one of Mexico's big drug-smuggling organisations, is engaged in systematic assassinations of law enforcement officials in defence of its economic interests. It can also be witnessed in Nigeria, where a contract militia is attacking oil platforms operated by Shell as part of a larger disruption campaign to shut down Nigeria's oil production. Militias like this one, which operate under an umbrella group called the Movement for the Emancipation of the Niger Delta, MEND, are in the process of ejecting the Nigerian government and its corporate partners out of the Delta's oil business. It is also happening with the Taliban attacking NATO troops in Afghanistan, using funds and weapons derived from Afghanistan's massive opium business. With an economy larger than Afghanistan's, the opium business can also be seen as fighting NATO and the Afghan government in order to protect future profits.

Today, large non-state groups are riding the wave of globalisation and political fragmentation to new levels of power and influence. These groups, founded on globalisation's credo – everyone in competition with everyone else – are forming in the fertile soil of globalisation's dispossessed, where they offer something the state can no longer: group support in a vicious global economic competition. By co-opting the residents of Sao Paolo's favela-slums that are members of the First Command of the Capital, PCC, a large drug gang; the Afghan poppy-growing mafia; software programmers of the Russian Business Network RBN, a global Internet crime syndicate; and leading Shia members of Hezbollah, such groups are acquiring the means and capacity to compete with nation-states.

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[197] Jenkins, "Introduction," 13.
[198] Ibid., 9.

One lesson learned by large non-state groups around the world is that instead of simple attacks on civilians to generate fear and panic, they can achieve much better results by targeting economic infrastructures that the state is obligated to defend. From the attacks on natural gas pipelines in Mexico, that cost a few thousand dollars but generate billions in damage, to the electricity system and oil pipeline disruptions in Iraq that has kept the country in economic limbo for five years, non-state groups are using the leverage which can be gained by disrupting vast global economic networks to their advantage.[199]

The result of the competition with nation-states will not parallel the previous century's experience where terrorist groups sought to replace the state politically. In ever more cases, from Lebanon to Iraq, India and Pakistan, to Colombia, non-state groups turn away from state replacement. Instead, those that continue to prosper opt to hollow out the nation-state by making it unable to exert control over its economy and territory while still maintaining the outward appearance of a government to the international community. Thus, as we progress further into this century, we may expect to see ever more states becoming hollow – beset by transnational non-state groups that entice states with corruption and coerce or punish them with disruption. This will only worsen as technology continues to progress into bio- and nanotechnology since both are tractable to innovation within tinkering networks.

2.3 Proliferation

Preventing the spread and use of nuclear, chemical, biological, and radiological weapons is essential for creating a more secure world. Proliferation of weapons of mass destruction (WMD) has been widely identified as potentially the greatest threat to international security. While the international treaty regimes and export controls arrangements have slowed down the spread of WMD and delivery systems, a number of states and non-state actors have sought or are seeking to develop such weapons. The risk that terrorists will acquire nuclear, chemical and biological weapons, radiological or fissile materials and means of delivery, adds a new critical dimension to this threat. Opportunities for mass-casualty terrorist attacks will increase as technology diffuses and weapons programs expand. That risk has increased in the last years, bringing multilateral frameworks under pressure.[200]

The Iranian nuclear programme significantly advanced, representing a danger for stability in the region as well as for the whole non-proliferation system. There is a real risk that its nuclear program will prompt other countries in the Middle East to pursue nuclear options. And Iran would likely choose missiles as its preferred method of delivering nuclear weapons since it already has the largest inventory of ballistic missiles in the Middle East, and continues to expand the scale, reach and

[199] John Robb, *Terror, Control and the Future of the Nation State* (Athens: RIEAS, Research Institute for European and American Studies, 13 September 2008).

[200] Jason D. Ellis & Geoffrey D. Kiefer, *Combating Proliferation – Strategic Intelligence and Security Policy* (Baltimore & London: The Johns Hopkins University Press, 2007).

sophistication of its ballistic missile forces. North Korea's nuclear weapons and missile programs pose a serious threat to the security environment in East Asia. Because the military capabilities gap between North and South Korea has become so overwhelmingly great and prospects for reversal of this gap so remote, the North relies on nuclear weapons to deter external attacks on the state and to its regime. Both Pyongyang's export of ballistic missiles to Iran and Pakistan, and its assistance to Syria in the construction of a nuclear reactor, illustrate the reach of its proliferation activities.

The US, the EU, and also NATO have been active in multilateral fora. In East Asia, the US, China, Russia, Japan, and the Republic of Korea continue efforts to bring an end to North Korea's nuclear program. Together with the US, the EU, on the basis of the WMD Strategy adopted in 2003, has been at the forefront of international efforts to address Iran's nuclear programme.[201] The ultimate objective is to prevent, deter, halt and, where possible, eliminate WMD proliferation programs of concern worldwide. The strategy emphasizes prevention, by working through the UN and multilateral agreements, by acting as a key donor, and by working with third countries and regional organisations to enhance their capabilities to prevent proliferation.

Both the US and the EU will continue their efforts with political and financial action. For both a successful outcome of the Non-Proliferation Treaty Review Conference in 2010 is critical, with a view in particular to strengthening the non-proliferation regime. They will endeavour to ensure that, in a balanced, effective, and concrete manner, this conference examines means to step up international efforts against proliferation, pursue disarmament, and ensure the responsible development of peaceful uses of nuclear energy by countries wishing to do so.

A main problem with the international conventions regulating the proliferation of WMD is that many governments have not adopted or fully implemented national legislation to ensure fulfilment of their obligations. National implementation obligations regularly receive less critical attention than the international conventions themselves, and are rarely verified. The absence of an international verification organisation for certain WMD treaties contributes to this problem. And there is another inherent problem: The burden of proof in demonstrating compliance with international conventions must shift away from those alleging non-compliance to those states whose compliance is in doubt. International norms must be adapted so that such states are obligated to reassure those who are worried, and to take reasonable measures to prove they are not secretly developing WMD.

More needs to be done on specific proliferation issues, including US and EU support for a multilateral approach to the nuclear fuel cycle; countering the financing of proliferation; measures on bio-safety and bio-security; and containing the proliferation of delivery systems for WMD, notably ballistic missiles. In

[201] Council of the European Union, *EU Strategy against the proliferation of WMD: Monitoring and enhancing consistent implementation* (Brussels: Council of the European Union, Brussels, 12 December 2006), 16694/06, DG E WMD, EN.

addition, negotiations should be undertaken on a multilateral treaty banning production of fissile material for nuclear weapons. A likely revival of civil nuclear power in the next decades will also pose challenges to the non-proliferation system if not accompanied by the right safeguards.

And there is a newer issue requiring full attention: the need to curb proliferation of small arms and light weapons (SALW). The black market small arms' trafficking is a 1 billion USD-a-year global business. But the financial profit comes at a tremendous cost to the world's security. SALW are responsible for almost 500,000 deaths a year, 300,000 of which occur in armed conflicts. The number of SALW in circulation throughout the world is estimated by the UN at 600 million. Of the forty-nine major conflicts in the 1990s, forty-seven were conducted with SALW as the major weapons. And in some conflicts up to 80 percent of casualties are caused by these weapons. A further 200,000 people a year die through SALW in homicides and suicides.[202] Weapons such as pistols, assault rifles, sub- and light machine guns, grenades and portable rocket launchers do not cause violence and death by themselves. However, it has become widely accepted that the proliferation of these weapons, excessive accumulations and illicit trafficking makes them widely and easily available on legal and black markets. In turn, this availability of SALW destabilizes regions, sparks, fuels and prolongs conflicts; obstructs relief programs and undermines peace initiatives; exacerbates human rights abuses; hampers development; fosters a "culture of violence", and poses a serious threat to peace, security, and sustainable development. The misuse of SALW also gravely undermines respect for human rights and international humanitarian law.

Meanwhile, a substantial international track record on tackling the proliferation of SALW has been established in recent years. Internationally and regionally, a number of agreements and fora for substantial dialogue have been established. In addition, a number of specific projects have been undertaken on an *ad hoc* basis by donors and beneficiary countries. The UN programme[203] envisions spheres of action against SALW at the international, regional, national and local levels. It calls for close cooperation among states to reach stated goals, including information sharing, assistance and standard setting, and highlights the role of regional organisations in fostering this cooperation. The OSCE Document on SALW[204] recognizes the contribution of destabilising accumulations of SALW have made to recent regional conflicts. It divides the task for combating the proliferation and spreading of SALW into several baskets of norms and measures. And the EU SALW Strategy[205] exploits fully the means available to the EU at multilateral and regional levels, within the EU and in the EU's bilateral relations. These entire efforts amount to the combined response needed to overcome the threats posed by the illicit accumulation and trafficking of SALW, and their ammunition.

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[202] Small Arms Survey, *Annuaire Sur Les Armes Légères 2001* (Geneva: IUHEI, 2001), 215.

[203] Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects, UN Document A/Conf.192/15.

[204] *OSCE Document on Small Arms and Light Weapons*, OSCE, Adopted at the 308th Plenary Meeting of the OSCE Forum, FSC.JOUR/314, FSC.DOC/1/00, FSCEW231, 20 November 2000,

[205] Council of the European Union, *EU strategy to combat illicit accumulation and trafficking of SALW and their ammunition* (Brussels: Council of the European Union, Adopted on 15/16 December 2005, 5319/06, 13 January 2006).

2.4 Organised crime

Transnational Organised Crime (TOC) poses a threat to all nations and is a fundamental threat to democracy, the rule of law, and human rights. It disrupts free markets, drains national assets, and inhibits the development of stable societies. When it escalates, economic development, political independence, the environment, human security, and global security are threatened. As practiced today, organised crime undermines civil society, political systems, and the sovereignty of states by normalising violence, graft, and by introducing a corruptive cancer into political structures. It distorts market mechanisms, including some government regulatory activity, and deprives consumers and producers of the benefits of fair, free, safe and secure economic and commercial systems. In extreme cases, whole legitimate economic sectors are dislocated by commerce based on illegal activities, subverting loyalties from the nation-state, and habituating individuals to operate outside the legal framework. Moreover, organised crime undermines the integrity of the banking and financial systems, the commodities and securities markets as well as cyberspace. It degrades environmental systems through evasion of environmental safeguards and regulations. It burdens societies with the enormous social and economic costs of illegal drugs. And it hinders the progress of, and foreign investments in, economies in transition and in developing countries.

TOC penetration of states will deepen, leading to co-option in a few cases and further weakening of governance in many others. The growing span of TOC business activities and financial incentives is pushing TOC to seek strategic alliances with state leaders and intelligence services, threatening stability and undermining free markets. There is a growing nexus in Russia and in Eurasian states among government, organised crime, intelligence services, and big business figures. An increasing risk from Russian TOC is that criminals and criminally linked oligarchs will enhance the ability of state or state-allied actors to undermine competition in oil, gas, aluminium, and precious metal markets.[206] TOC's coercive tactics and shady business practices most likely will further undermine transparency and confidence in other key energy, metal, diamond, and other sectors where recent acquisitions and investments have occurred.

TOC can even have a debilitating impact on war. Thus, criminal enterprises and activities have made the attainment of US objectives in Iraq much more difficult. Organised crime inhibited reconstruction and development and became a major obstacle to state-building. [207] The insurgency was strengthened and sustained by criminal activities; sectarian conflict was funded by criminal activities and motivated by the desire to control criminal markets; and more traditional criminal enterprises created pervasive insecurity through kidnapping and extortion. Moreover, TOC acted as an economic and political spoiler in an oil industry

[206] Dennis C. Blair, *Annual Threat Assessment of the US Intelligence Community for the Senate Select Committee on Intelligence* (Washington DC: Statement for the Record, 2 February 2010), 44.

[207] Phil Williams, *Criminals, Militias, and Insurgents; Organized Crime in Iraq* (Carlisle: US Army War College, Strategic Studies Institute, 26 August 2009).

expected to be the dynamo for growth and reconstruction in a post-Ba'athist Iraq.[208]

This is now repeated in Pakistan, where the Taliban, working with criminal groups, are using Mafia-style networks to kidnap, rob banks and extort, generating millions of dollars for the militant insurgency in Northwestern Pakistan. Organised crime has surfaced in most cities, but Karachi, the central nervous system of Pakistan's economy and home to the richest businessmen, is the hub. It has been less affected by the bombings that have tormented Pakistan's other major cities, and has become the place where the Taliban come to hide and where they raise their finances. These criminal syndicates helped drive kidnappings in Pakistan last year to their highest numbers in a decade. The ransoms they generate – generally 60,000 to 250,000 USD each – collect more money than all other crime cases combined. They have also generated a spike in bank robberies. The robbers have beards and bigger than usual guns, and, unlike ordinary thieves, they tend to kill the security guards, and take the banks' surveillance system along with the cash.

Perhaps the best-known criminal organisations in the world are the Sicilian and American Cosa Nostra, most commonly known as the Mafia. The Neapolitan Camorra, the Calabrian 'Ndrangheta and the Apulian Sacra Corona Unita are the main Italian organised crime groups. Other organised criminal enterprises include numerous Russian and Serbian Mafias, the Israeli and the Albanian Mafia, a number of Mexican and Colombian Drug Cartels, the Indian Mafia, the many Chinese Triads, the Irish Mob, the Japanese Yakuza, the Jamaican-British Yardies, the Turkish Mafia and many other crime syndicates

While it is notoriously difficult to estimate the profits gained by organised crime, these are enormous. The illicit global economy or global black market is estimated to amount to 1 trillion USD.[209] The trade in illicit drugs is said to have reached a value of 322 billion USD in 2005 – equivalent to a GDP ranking of 30th in the world, measured against national economies, and roughly 75 percent of the total GDP of Sub-Saharan Africa.[210] However, by far the biggest part of the illicit trade is not the drug trade, which amounts to 32 percent, but the 53 percent of counterfeiting and piracy. Environmental goods constitute 6 percent of the illicit trade, trafficking in human beings 4 percent, consumer products another 4 percent, and the weapons trade 1 percent. In the meantime, the placing of stolen assets abroad has reached unprecedented levels.

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[208] Iraq lost in more than 250 attacks against pipelines more than 10 billion USD in oil revenues from sabotage and was almost brought down before the attacks of the insurgents could be brought under some control. See: US Congress, House, "Terrorist Threats to Energy Security," Hearings before the Subcommittee on International Terrorism and Non-proliferation of the Committee on International Relations, 109th Congress, 1st Session, 27 July 2005, 2.

[209] See: www.hovocscope.com/ with counterfeit and piracy amounting to 533 billion USD, the global drug trade to 322 billion USD, environmental goods 57 billion USD, trafficking in humans 44 billion USD, consumer products 60 billion USD, and trafficking in weapons 10 billion USD.

[210] UNODC, *UN Office on Drugs and Crime Annual Report 2005* (Vienna: UNODC, 2005), 4. It was higher in retail price than the GDP of 163 out of 184 countries for which the World Bank held data. See: www.drugwarfacts.org/economi.htm

Different developments are underway in organised crime: (1) There may be more individuals and smaller groups empowered by high-tech computer skills and telecommunication capabilities that do not require the infrastructure or protection of syndicates to engage in cyber crime. (2) The trend of greater cooperation among criminal organisations may be replaced by one in which large international crime groups are able to produce, acquire, move, market, and distribute drugs and other contraband without reliance on outside brokers. (3) There may also be more and larger interactive networks of small, highly specialized independent organisations that cooperate on the basis of comparative advantage and in joint ventures. (4) Organised crime groups having access to weapons arsenals may displace arms brokers that still dominate the grey arms markets by establishing sophisticated acquisition, transportation and financial networks to facilitate evasion of international sanctions. And (5) ever more organised crime groups are likely to take advantage of the scientific and manufacturing advances to produce new synthetic drugs and more high-quality counterfeit products.

The UN Convention against Transnational Organised Crime is the main international instrument to counter organised crime.[211] The Convention commits states to introduce a range of measures, including the creation of domestic criminal offences to counter the problem; the adoption of new frameworks for mutual legal assistance; extradition; law enforcement cooperation; technical assistance and training. UNODC helps countries use the provisions of the Convention to create domestic criminal offences to counter the problem; to adopt new frameworks for mutual legal assistance; to facilitate extradition; law enforcement cooperation; technical assistance and training.

As globalisation has expanded international trade, so the range of organised crime activities has broadened and diversified. The traditional hierarchical forms of organised crime groups have diminished, replaced with loose networks who work together in order to exploit new market opportunities. For example, organised crime groups involved in drug trafficking are commonly engaged in smuggling of other illegal goods. Organised crime is cooperating with terrorist organisations in increasingly symbiotic ways in the procurement of finances, money laundering, proliferation and smuggling of weapons.[212] The links between terrorism, proliferation, drug trafficking and other forms of transnational organised crime call for a more integrated approach to address this nexus. The signing of the UN Convention against Transnational Organised Crime in 2000 was a historic step forward in countering this threat, but is still hampered by insufficient national enforcement measures.

Implementation of existing UN instruments on crime is essential. Thus, the EU should support multilateral efforts, principally in the UN. Existing partnerships within the EU neighbourhood and key partners should be deepened in addressing the movement of people, police, and judicial cooperation. The EU should further

[211] UNGA, *United Nations Convention Against Transnational Organised Crime* (New York: United Nations, General Assembly Resolution A/RES/55/25, 15 November 2000).

[212] Jennifer L. Hesterman, *Transnational Crime and the Criminal-Terrorist Nexus: Synergies and Corporate Trends* (Maxwell Air Force Base: Air University, April 2004).

strengthen the counter-crime, counter-proliferation, and counterterrorism partnership with the US, including in the area of data sharing and protection. It should also strengthen the capacity of its partners in South Asia, Africa, and its southern neighbourhood.

2.5 Piracy, hijacking, kidnapping, abduction, and extortion

Piracy is an economically driven phenomenon, both for the profiteers who engage in it and for the victims. The ship owners' desire to keep operating costs as low as possible has often outweighed the imperatives for more concerted onboard security. The two main factors feeding piracy have been the enormous volume of commercial freight moving by sea, and the necessity of ships to pass through congested maritime chokepoints. The emergence of modern-day piracy reflects the continued relevance of these drivers. Chalk mentions seven other contributing variables: "a trend towards the use of skeleton crews; pressure to invest in land-based homeland security measures since 9/11; lax coastal and port security; corruption; the anarchic situation in some coastal countries; the willingness of ship owners to pay large ransoms; and the global proliferation of arms."[213]

The European Security Strategy highlighted piracy as a new dimension of organised crime, and also as a result of state failure. The world economy relies on sea routes for 90 percent of trade. Piracy in the Indian Ocean and the Gulf of Aden has made this issue more pressing, particularly since 2008 because it affected delivery of humanitarian aid to Somalia.[214] The upsurge has led to a reactive response from many states in the form of naval taskforces to combat piracy. One such multinational task force is the Combined Maritime Forces (CMF), which operates under the US Navy's Bahrain-based Central Command, comprising Combined Task Force 150 and 151. CTF 151 was created out of CTF 150 on 8 January 2009 to focus specifically on counter-piracy operations. Today, more than twenty-three countries contribute force elements to one or both of the Combined Task Forces.[215]

The EU launched its first ever naval operation on 8 November 2008 to protect vessels of the World Food Program (WFP) delivering food to displaced persons in Somalia and to protect commercial vessels. The EU has also responded with ATALANTA, the first maritime European Security and Defence Policy mission, to "deter, prevent and repress acts of piracy and armed robbery off the Somali coast", alongside countries affected, and other international actors. NATO launched Operation Allied Provider from 24 October to 12 December 2008 to provide naval escort to WFP vessels, and also to "deter, defend against, and disrupt pirate activities." Following the conclusion of this operation, NATO

[213] Peter Chalk, "Sunken Treasures, The Economic Impetus Behind Modern Piracy," *RAND Review* (Summer 2009).
[214] EU, *Report on the Implementation of the European Security Strategy – Providing Security in a Changing World* Brussels: EU, 11 December 2008, S407/08), 8.
[215] US Naval Forces Central Command, "Combined Task Force 150," http://www.cusnc.navy.mil/command/ctf150.html ; US Navy, "Focus on Combined Task Force 151," http://www.navy.mil/local/CTF-151

launched the follow-up Operation Allied Protector in March 2009. This was again replaced by an expanded operation called Operation Ocean Shield on 18 August 2009.[216]

Piracy is seen as a serious threat to human lives, trade, and state sovereignty. Since pirates have traditionally been viewed as enemies of all mankind, serious measures have always been taken against piracy. Piracy is viewed as a violation of the human security concept of "freedom from fear" – that individuals should be protected against violent conflicts while recognising that such threats are associated with poverty, lack of state capacity to respond, and other forms of inequities. But piracy can also be linked to the concept of "freedom from want", a more holistic approach to human security, which takes into account developmental issues, including health and economic security.[217]

An estimated 33,000 commercial ships transit the Gulf of Aden near Somalia each year, and approximately 11 percent of the world's seaborne petroleum passes through its way to the Suez Canal or to regional refineries annually. In addition, 7 percent of the world's maritime commerce transits the Suez Canal, thus making it one of the most important maritime sea lines of communications (SLOCs). Insurance premiums for the Gulf of Aden have increased tenfold. Hence, the danger and costs of piracy means that shipping could be forced to avoid the Horn of Africa, and divert around the Cape of Good Hope, making maritime shipping much more expensive.

There is the fear that terrorists and pirates could co-opt and attack commercial shipping in the Gulf and the larger Indian Ocean. There are indications that al-Shabaab, the armed wing of the Islamic Courts Union battling what remains of the Transitional Federal Government of Somalia, is using the pirates' infrastructure to ensure the security of its smuggling operations, to transport weapons into the country, and to facilitate the movement of foreign jihadists in and out of Somalia. And there are the fears that more transnational terrorist networks could use the financial returns of piracy to fund their activities around the world.

Piracy has the potential to cause a major environmental disaster such as spillage if an oil tanker is sunk, fired upon, run aground or set on fire. As pirates are increasingly using weaponry like man-portable air-defence systems (MANPADS), anti-tank and anti-ship missiles, and rocket-propelled grenade launchers (RPG), the chances of these weapons being used against tankers remains a concern. Use of such weapons against, for example, the Saudi supertanker Sirius Star – captured on 18 November 2008 and loaded with 2 million barrels of crude oil – could have a catastrophic environmental impact.

Piracy around the world reached a total of 406 incidents in 2009, in contrast to 239, 263 and 293 incidents reported in 2006, 2007 and 2008 respectively. In 2009,

[216] North Atlantic Treaty Organisation, "Counter-piracy Operations," http://www.nato.int/cps/en/natolive/topics_48815.htm

[217] Anonymous, "NTS ALERT", Centre for NTS-Studies, S. Rajaratnam School of International Studies, Nanyang Technological University, 1 August 2009.

153 vessels were boarded, forty-nine vessels were hijacked, there were eighty-four attempted attacks and 120 vessels fired upon – compared to 46 ships fired upon in 2008. A total of 1052 crew were taken hostage, sixty-eight crew were injured in various incidents and eight crew killed. The total number of incidents attributed to the Somali pirates stands at 217 with forty-seven vessels hijacked and 867 crewmembers taken hostage. Somalia accounts for more than half of the 2009 figures, with the attacks continuing to remain opportunistic in nature. In 2008, there were 111 vessels targeted by Somali pirates resulting in forty-two hijackings, and in 2007, nineteen attacks occurred with twelve successes.[218]

The reasons piracy attacks continue despite increasing multinational naval presence is because its root causes are not addressed. These are three: First, the complete breakdown of governance, law and order in Somalia. Second, there is overfishing, mainly caused by illegal fishing. And third is toxic and nuclear waste dumping by foreign vessels in the waters around Somalia. The three root causes reflect the dire socio-economic insecurities that Somalis face. Somalia is experiencing one of the world's worst humanitarian emergencies. The population is struggling to cope with a devastating combination of conflict, massive displacement, drought, high food prices, devaluation of the Somali shilling, and hyperinflation. The Food and Agriculture Organisation's (FAO) Somali Food Security Analysis Unit, and the Famine Early-Warning System Network, reported in February 2009 that 3.2 million people, representing 43 percent of Somalia's total population, are in need of emergency livelihood and life-saving assistance. The ongoing humanitarian crisis is unique in that it is so widespread. Not only are 1.2 million rural people in the crisis stage, nearly two thirds or 2 million people are urban poor and internally displaced populations.

Fisheries, the one alternative source of income and livelihood, are under external pressure because Somalia's fishing grounds have long been recognized as one of the world's five richest fishing zones. As NTS ALERT notes, foreign ships, taking advantage of the anarchy in Somalia that developed since the overthrow of the authoritarian regime of Siad Barre in 1991, illegally extract more than US$ 450 million of fish stocks. "FAO estimated that 700 foreign-owned vessels were fully engaged in unlicensed fishing in Somali waters by 2005." Foreign vessels are thus steeling valuable economic and protein sources from some of the world's poorest people.[219]

Besides illegal fishing, foreign ships – mostly European – regularly dump toxic and nuclear waste, such as radioactive uranium, hospital waste, and industrial chemicals, in the waters around Somalia. Evidence of such practices appeared on the beaches of northern Somalia when the Indian Ocean tsunami hit the country in 2004. While the cost of waste disposal in Europe is 1000 USD per ton, it costs

[218] Anonymous *Piracy and Armed Robbery Against Ships: 1 January – 31 December 2008,* London: International Maritime Bureau, International Chamber of Commerce, January 2009); Anonymous, "2009 Worldwide piracy figures surpass 400," *International Maritime Bureau Annual Piracy Report 2009*, 14 January 2010.

[219] Anonymous, "NTS ALERT," 5.

as little as 2.5 USD per ton to dump it in Somali waters, with an adverse impact on Somalia's marine environment.[220]

Piracy off the Horn of Africa can thus be viewed as a 'resource swap' in which Somali pirates collect an estimated 18 to 30 million USD (500,000 to 3 million USD per ship) a year from ransoms, while Europeans and Asians poach more than 400 million USD a year in fish stocks. The lack of economic options in Somalia coupled with the payment of massive ransoms provides the motivation for piracy, making it the single largest source of income and an attractive alternative livelihood. The chronic instability in most parts of Somalia, and the attendant daily threats to life mean that the risks with piracy can be seen as little worse than those faced every day. And given the potential gains, the benefits clearly outweigh the risk involved in hijacking ships. This the more so as long as the naval taskforces engaged in countering piracy refrain from hot pursuit and combating pirates on the shores of Somalia.[221]

If the international community is serious about addressing the root causes of piracy, it needs to look beyond traditional naval countermeasures. The immediate requirement is to provide urgent humanitarian assistance. To this end, the World Food Program (WFP) has scaled up its operations in the first half of 2009, providing food assistance to a total of 2.8 million people in Somalia, and it aims to feed an additional 300,000 women and children. However, security concerns hamper these efforts. Currently, the African Union Mission to Somalia (AMISOM) is the only foreign peacekeeping force there, mandated to support transitional governmental structures, implement a national security plan, train the Somali security forces, and to assist in creating a secure environment for the delivery of humanitarian aid.

However, AMISOM has been plagued by a lack of resource and material support right from its inception in January 2007, which prevented it from making a meaningful impact in Somalia. Only 4,300 peacekeepers from Uganda and Burundi were deployed in the capital Mogadishu, thus falling short of its proposed strength of 8,100. In order to make a substantial contribution in Somalia, AMISOM must be strengthened in terms of troops and materials. The UN, the EU, the US and other donor countries will have to contribute the necessary funding required to strengthen the peacekeeping operations. This could also be done through an emergency relief fund or alternatively through a levy on commercial shipping through the Gulf of Aden.[222]

Multinational naval taskforces alone will not be able to contain piracy. Current naval operations do not deter the pirates from carrying out their attacks. One major limitation is the available assets relative to the size of the area that requires monitoring. Somali pirates operate within 2.8 million km² of water space whereas only fourteen warships are available to monitor them at any one time. Since October 2009 increased activity has been observed in the Indian Ocean with

[220] Idem..
[221] Idem.
[222] Ibid., 6.

thirty-three incidents reported, thirteen of these occurred east of the recommended east of 60º east. Many of these attacks have occurred at distances of approximately 1,000 miles off Mogadishu.[223] Moreover, naval forces are not cost effective. The bill for the EU NAVFOR Operation ATALANTA alone is expected to total over 300 million USD in 2009. Given the present economic climate, it is unlikely that the current levels of operations can be sustained. In addition, states have diverging security concerns with regard to piracy. Most states are willing to respond to offshore piracy, but are not ready to commit resources to address issues on land, where the root causes of piracy are to be found. In order to make the anti-piracy efforts more sustainable, a regional approach should be adopted. Regional navies and coast guards should be encouraged to pool their resources in order to conduct anti-piracy patrols. Regional navies not only can be more responsive to incidents in the Gulf, they are also likely to be more acceptable to Somalis.

Acts of piracy are not limited to the Gulf of Aden and the greater Indian Ocean. Less international and media attention has been paid to piracy and maritime predations in Southeast Asia, particularly in the Straits of Malacca, through which more than 90,000 ships transit each year, accounting for 40 percent of the world's trade.[224] During the 1980s, piracy was labelled "a serious problem" by the International Maritime Organization. When piracy surged once more in the late 1990s, Indonesia, Malaysia, and Singapore responded with coordinated patrols of the Straits starting in 1992, and provided for bilateral information sharing and a coordination mechanism for anti-piracy operations. Another surge of attacks in 1998 renewed interest in the problem. From 2004 onwards, responses have focused on coordinated sea patrols and joint aerial surveillance. These massively reduced attacks on international shipping but not the sub-set of piracy called maritime predations – attacks against local fishing trawlers engaged in fish wars. Conflicts that are a result of competition for access to fish stocks occur either between groups within a state or between groups from different states. In the Malacca Straits, technologically advanced and efficient trawlers from the Hutan Melintan community in Malaysia are pitted against smaller and less well-equipped artisanal fishers from Aceh. However, acts of piracy are not limited to those committed by Acehnese fishers. Corrupt Indonesian law enforcement officials are accused to be equally engaged in maritime predations against Hutan Melintang and other trawlers. Since recently, piracy is again increasing in the South China Sea.

Other high-risk zones include the waters off Nigeria,[225] Tanzania, Bangladesh, and India, which accounted for 57 percent of incidents in 2008 not related to the Horn of Africa. The true figure is undoubtedly greater because in many cases ship owners are reluctant to report attacks against their vessels out of concern that this

[223] IMB, "2009 Worldwide piracy figures surpass 400," *Annual Piracy Report 2009*, International Maritime Bureau, 14 January 2010.

[224] Anonymous, *Maritime Predations in the Malacca Straits: Treading New Waters* (Singapore: Singapore, Centre for Non-Traditional Security, NTS Studies, Rajaratnam School of International Studies, Nanyang Technological University, August 2009).

[225] Twenty-eight incidents were reported for Nigeria in 2009, of these twenty-one vessels were boarded, three fired upon and one hijacked.

will merely trigger higher maritime insurance premiums and result in lengthy and costly investigations.

Economically, piracy has a direct impact in terms of fraud, stolen cargo, and delayed trips, and could undermine a maritime state's trading ability. The overall annual cost of piracy to the maritime industry is today estimated to be anywhere between 1 and 16 billion USD. The true figure could be even higher, particularly when factoring in expenses incurred from implementing mitigation efforts.[226]

It is obviously not only pirates that engage in hijacking. Hijacking, kidnapping or abduction for ransom is an old phenomenon, now nearing epidemic proportions, while evolving and becoming more violent in many parts of the world. According to the Control Risk Group, kidnappings of foreign nationals globally have increased by 275 percent over the past 10 years. Kidnappings are on the rise in Latin America, but also growing by leaps and bounds in Sub-Saharan Africa and rising in Eastern Europe, the Central Asian Republics, and the Balkans. Countries which were largely unaffected by the problem are also seeing an upswing in abductions, including Vietnam and China.

In countries like Colombia and Brazil, kidnapping is generally motivated purely by financial gain. In these countries, kidnappers have become sophisticated in their methods, kidnapping has truly evolved into a mature industry, and the payment of ransom usually results in the safe release of the hostage. But with the rise of terrorism and political violence worldwide, kidnapping often means death in places such as South Asia and the Middle East. While the global landscape of kidnapping is highly fluid, the connection between political upheaval, extreme poverty, low levels of law enforcement, and annual numbers of kidnappings is clear. Actual numbers are difficult to ascertain, as many incidents go unreported due to fear of corruption, and the fact that kidnapping levels are one statistic that governments are anxious not to advertise.[227]

It is clear that Mexico with some 6,000 cases per year holds the dubious honour of the world's leader in kidnappings. But in contrast to Colombia, where the kidnappers are traditionally highly trained, well-organised pseudo-Marxist rebel groups who make no attempt to hide the fact that their sole concern is profit, in Mexico kidnappings follow a more brutal pattern, are shorter, and cheaper. Kidnappers sometimes send the family a finger or an ear to prove they mean business. The same is true in the Philippines, where ransoms demanded may be lower than in Latin America, but a victim's chances of murder or injury are far higher. As in Pakistan, Muslim radicals such as the Abu Sayyaf group in the Philippines are often more concerned with taking human life and spreading fear than they are with actually receiving a ransom payment.

Other hotspots of kidnapping are South Africa with more than 2,800 cases per year, Argentina with some 2,000, Venezuela with 537 kidnappings per year and

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[226] Chalk, "Sunken Treasures," 4.

[227] John Michael Fidler & David Palmer, *Crisis Management for Multinationals: Growing Threats, Proven Solutions* (London: Crisis Management, AIG Europe S.A., no date).

some 130 killed per 100,000 inhabitants, Nigeria with more than 400, Haiti with 300, Kuwait with 9.1 kidnappings per 100,000 inhabitants, and increasingly the states of the former Soviet Union. It is suspected that a high proportion of kidnappings is perpetrated by economically motivated crime groups, but it is not possible to estimate with any degree of accuracy what percentage can be attributed to organised crime.

The abduction of children for various purposes such as ransom, extortion, work, sex, power, custody, has historically been a feature of many societies. In recent years, however, abductions have been more widely publicised, and carry great symbolic power ever since. As childhood became a potent focus for social and personal anxieties, child abduction registered as a threat not only to ordinary people but also to prominent individuals to whom it once seemed restricted. During the last two decades, the perception of the frequency of such abductions has increased markedly, largely because childhood seems to have become more vulnerable and less sheltered while a number of issues relating to the family have become important public concerns. The mass media have learned that the reporting on child abduction has become an issue that evokes strong emotions. In the recent past in the US and Europe, accelerating divorce, women's growing role outside the home, and public fears about paedophilia have put a spotlight on child abduction, while dissatisfactions about class disparities in Latin America has once again brought ransom abduction into international headlines.[228]

Ransom payments can vary widely, depending on the circumstances. In Mexico, very rich people are released for ransoms in millions while kidnapping in Nigeria sometimes sees victims released in exchange for a computer or a fax machine. And kidnappers in Yemen often release hostages in exchange for construction of a new road or well for a rural village.[229] However, it is not only the region where one is kidnapped that determines the level of ransom demanded, but also who the hostage is and for whom he works. Thus, a CEO of a multinational corporation usually will bring the best rewards, be it an expatriate or a business traveller. A tourist would not bring as much, and an aid worker or one engaged in humanitarian assistance would generate a still smaller ransom.

Kidnapping is not the only potentially lethal risk faced by expatriates and travelling executives. Extortion, whether in the form of threats to contaminate products, damage property, or cause personal injury, is also a growing concern for corporations, and is often performed disgruntled employees or laid-off workers. The threat of extortion is clearly on the rise. In China and Africa, for example, the problem has reached staggering proportions, and shows no sign of abating.[230]

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[228] *Abduction – Encyclopedia of Children and Childhood in History and Society*, at: http://www.faqs.org/childhood/A-Ar/Abduction.html

[229] Fidler & Palmer, *Crisis Management for Multinationals*

[230] Ibid.

2.6 Migration and integration

Migration is considered one of the defining global issues of the early 21st century, as more people are on the move today than at any other point in human history. UN estimates show that in 2010, 214 million people will be living outside their countries of birth or citizenship. Nearly half this number, some 95 million according to calculations of the International Labour Organization (ILO), is economically active as migrant workers. Together with their families, they make up the large majority of all international migrants. While migration has reached higher levels today than ever, there is no typical profile of migrants around the world. Agricultural labourers, fruit pickers, nurses, political refugees, construction workers, academics and computer programmers are all part of the nearly one billion people on the move both within their own countries and overseas. Yet most movement in the world does not take place between developing and developed countries; it does not even take place between countries. The overwhelming majority of people who move do so inside their own country, often from rural to urban areas or to slums. Approximately 740 million people are internal migrants, almost four times as many as those who move internationally. Among those who have moved across national borders, just over a third moved from a developing to a developed country – fewer than 70 millions. Most of the world's over 200 million international migrants moved from one developing country to another or between developed countries.[231]

Most countries experience migration either as origin, destination and/or transit countries. Many countries are all three of these. Although, for many, migration is a positive experience, many others migrate under duress and face severe hardships. Migrant workers all over the world suffer abuse, discrimination and exploitation by traffickers, smugglers, and employers. People displaced by insecurity and conflict face special challenges. There are an estimated 14 million refugees living outside their country of citizenship, representing about 7 percent of the world's migrants. Most remain near the country they fled, typically living in camps until conditions at home allow their return. But around half a million per year travel to developed countries and seek asylum there. A much larger number have been internally displaced. They have crossed no frontiers, but may face special difficulties away from home in a country riven by conflict, suffering from climate change or racked by natural disasters. Another vulnerable group consists of people – mainly young women and children – who have been trafficked. Often duped with promises of a better life, their movement is not one of free will but of duress, sometimes accompanied by violence and sexual abuse.[232]

In general, however, people move of their own volition, to better-off places. When people move, they embark on a journey of hope and uncertainty, whether within or across international borders. Most migrants, internal and international, reap gains in the form of higher incomes, better access to education and health,

[231] UNDP, "Overcoming barriers: Human mobility and development," in *Human Development Report 2009* (New York: UNDP, 2009).

[232] Ibid, 6. See also: Cornelius Friesendorf, ed., *Strategies Against Human Trafficking: The Role of the Security Sector* (Vienna and Geneva: National Defence Academy and Austrian Ministry of Defence and Sports in cooperation with Geneva Centre for the Democratic Control of Armed Forces, 2009).

and improved prospects for their children.[233] For many people in developing countries, moving away from their home can be the best – sometimes the only – option open to improve their life chances. Most people move in search of better opportunities, hoping to combine their own talents with resources in the destination country so as to benefit themselves and their immediate family who often accompany or follow them. If they succeed, their initiative and efforts can also benefit those left behind and the society in which they make their new home. But not all do succeed. Migrants may feel unwelcome among people who fear or resent newcomers, they often do not get a job, or fall ill, and thus become unable to access the support services they need in order to prosper.

Migrants may also get stuck in temporary basins that migratory flows tend to create, when they encounter an obstacle on their road: Mali, Mauritania, and Senegal – before the journey goes on in small boats to the Canary Islands; Morocco – before the Strait of Gibraltar can be crossed or the barriers around Ceuta and Melilla be broken through; Tunisia and Libya – from where the route leads to the islands of Pantelleria, Lampedusa, Malta, Sicily or to mainland Italy; Egypt – into which an ever increasing number of migrants from Sudan, Somalia, Eritrea, and the Great Lakes area migrate; or Turkey, which, for people from South Asia and the Middle East, serves as the springboard for the Balkan route. Most of these temporary host nations find themselves in a precarious economic and demographic situation. This migratory pressure is difficult to absorb, reduces further the already meagre perspectives of the local youth, and thus creates in turn additional migratory pressure. It also lays the groundwork for a religious radicalization of young people – and hence for extremism and conflict.[234]

Today, migrants comprise more than 15 percent of the population in over fifty countries. An estimated 50 million people are living and working abroad with irregular status. Some countries, such as Thailand and the US, tolerate large numbers of unauthorized workers. And there are diasporas scattered around the world far greater in total than the population of the country of origin – such as the Lebanese and the Armenian diasporas, for example. These numbers will grow as demographic push and pull factors intensify. Push factors refer to those conditions that drive people to migrate, and are based on economic, political, cultural, and, due to climate change, worsening environmental conditions. Examples include poverty, hunger, and lack of employment opportunities, conflicts, and political or religious persecution. Pull factors are those conditions that attract people to a new geographic area. Examples include the promise of freedom, stable and peaceful living conditions, better employment opportunities and, more generally, hope for a new life.

During the next 20 years, globalisation, population growth, demographic imbalances between OECD and developing countries, interstate and civil conflicts will fuel increasing international migration. The number of persons living outside their country of birth nearly doubled to more than 200 million worldwide between 1985 and 2005. Figures for Europe show even a steeper increase of resident

[233] *Human Development Report 2009*
[234] Bailes, Krause & Winkler, *The Shifting Face of Violence*, 25.

immigrants: within 15 years, their number grew from an estimated 23 million in 1985 to more than 56 million or 7.7 percent of the total European population in 2000. Luxembourg excels, with 38 percent of its population listed as foreigners, Switzerland with some 21 percent, and Germany remaining in mid-field at 9 percent or about 7 million foreign residents.

Migration has a mixed impact, both for sending and receiving countries. For sending countries, emigration will relieve pressures from their unemployed youth, generate substantial remittances, and often provide them with leverage on receiving countries. Returning immigrants often will be agents of economic modernization and political liberalisation. But emigration also will result in the loss of skilled personnel which can be a serious handicap to development – especially in Sub-Saharan Africa, South and East Asia, and Russia – while ethnic diasporas will sometimes be agents of extremism or separatism.[235]

For most receiving countries, immigration will provide demographic and economic vitality for those with aging populations, even if it raises complex political and social integration challenges. It is cheaper to import highly skilled workers than to train them up domestically. Migration will ameliorate labour force and, in some cases, even military manpower shortfalls, and expand tax and consumer bases in developed countries. But immigrants' initial strain on social, educational, and health services, and their differing languages, cultures, and religious practices will evoke discrimination, which hampers their further assimilation. The negative impact of large illegal or mass migration will be greatest in less developed receiving countries, straining local infra-structures, contributing to the spread of infectious diseases, sometimes upsetting ethnic balances, and contributing to conflict or violent regime-change.

Globalisation has commoditized labour migration, notably in many Middle Eastern countries, which are dependent on Asian migrants for the "dirty, dangerous and difficult" jobs rejected by nationals. Airlines construct their schedules to serve the routes taken by migrants. The receiving countries build infrastructure not just to accommodate foreign labour but also to create an appropriate cultural environment. Payments known as remittances, which are sent home by international migrants, have become an important measure of the performance of a globalised world economy. In 2008, remittances exceeded 320 billion USD, almost three times total foreign aid disbursements.[236] But because of the economic and financial crises, these diminished by 7–10 percent in 2009.[237]

Some 50 million people in developing countries will enter the job market each year through 2030. Many will fail to find work, and some will emigrate, whether legally or illegally. Illegal migration – facilitated increasingly by alien-smuggling syndicates, often profiting from corrupt government officials – will grow dramatically, matching or exceeding other forms of migration into many countries

[235] NIE, *Growing Global Migration and its Implications for the United States* (Washington DC: National Foreign Intelligence Board, NIE 2001-02D, March 2001).
[236] One World, "One World Globalisation Guide," oneworld guides inside the global divide, www.oneworld.net
[237] Anonymous, "Migration and Development Brief No.10" (Washington DC: World Bank, 13 July 2009).

in Europe and in the more developed countries of Asia, Africa, and Latin America. Illegal migration into the EU has increased by 64 percent from 2007 to 2008. Illegal immigration into South Africa, estimated at 5 million, including some 3 million Zimbabweans – equal in numbers to South Africa's entire white population – has become a permanent feature. Libya has 1–2 million migrants seeking to enter Europe illegally, making it the main hub for this form of migration. It is also a centre for human trafficking groups, which make about 500 million USD in annual profits. Over 100,000 illegal immigrants, taking risky voyages arranged by organised criminal gangs, arrive in Europe from Arab countries every year according to an Egyptian government study.[238] Violent conflicts, economic crises, and natural disasters in developing countries will ever more often trigger mass migration.

Europe and Japan are faced with aging populations and shrinking labour forces, threatening the solvency of pension systems, and constraining economic growth in the absence of greater migration or other compensatory measures such as pension reform and increases in productivity. However, a wide range of constraints – many of them resulting from recent globalisation and democratisation trends – will limit most countries' willingness and ability to control migration flows across their borders.[239]

In Europe, EU member states attempt to reconcile securing the external borders and cultural identity with the need to relieve growing demographic and labour market imbalances. Policies generally favour the admission of the better educated. Governments tend to be far more ambivalent with respect to low-skilled workers. Most EU countries are unlikely to opt for large numbers of new immigrants, while legal constraints against discrimination and laws favouring family reunification also preclude a 'fortress' approach. Instead, most are likely to opt for 'targeted migration' in an effort to meet labour shortages in selected sectors while not unduly burdening national health and welfare systems or provoking a political backlash.

In North America, legal and illegal migration to the US and within the region will continue to rise. Between 12 and 20 million illegal immigrants are estimated to be living in the US, the large majority from Latin America. Despite declining population growth and stronger economic prospects in Mexico, persistent poverty and large wage differentials will further fuel large-scale emigration to the US and Canada. Central America will remain the second-largest source of illegal migrants, and its large alien-smuggling infrastructure will make it a gateway for other US-bound immigrants from South America and Asia. Moreover, political instability, economic decay or natural disasters in countries like Cuba or Haiti could again lead to mass migration to the US. And growing illegal migration within Latin America may become a more contentious issue also among governments.

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[238] Anonymous, "Over 100,000 Arabs illegally enter Europe every year, says Egypt", *Middle East News*, 18 February 2008.

[239] *Growing Global Migration and its Implications for the United States*, op. cit.

In Russia and Eurasian states, weak immigration control regimes, all too often abruptly shifting economic development, ethnic conflicts, and discrimination against minorities will sustain migration pressures that already have produced some 10 million – mostly Russian – migrants since the breakup of the Soviet Union. On average, 200,000 legal immigrants enter Russia every year. In addition, there are an estimated 10–12 million illegal immigrants in the country.[240] Migration into Russia will partially compensate for, but not offset, labour force shortfalls and declining population. It will also add to welfare costs and may generate more friction with other states of the former Soviet Union and with China over illegal immigration into the Russian Far East.[241]

In Asia, populous countries such as China and India will be the source of growing regional and global migration flows. Many immigrants from Mongolia, and some from North Korea, have tried to make it to China. And there might be as many as 100,000 African in Guangzhou, mostly illegal overstayers.[242] It is estimated that several million illegal immigrants live in India, mainly from Bangladesh, most of them Muslims. Several Eastern states, including Assam and West Bengal, are experiencing significant demographic changes due to continued influx. The advanced countries in the region – with the exception of Australia and New Zealand – will strongly resist integrating migrants socially and politically. Japan, which faces the greatest demographic imbalances, will attempt to retain its current, highly cautious approach to immigration. Japan's premium on ethnic homogeneity, few legal constraints against discrimination, high population density, and geographic insularity will reinforce this approach absent a sustained economic recovery. Should a recovery take hold, however, labour shortfalls may become so acute that Japan may shift eventually to a more open, targeted migration approach.

The Middle East and Sub-Saharan Africa are the principal sources as well as places of refuge to some 10 million refugees – among others Palestinians, Afghans, Iraqis, Eritreans, Congolese, and Rwandan Hutus. In Syria, refugees from Iraq have increased in number since the US-led Invasion of that country in March 2003. The UN estimates that nearly 2,200,000 Iraqis have fled the country, at times with nearly 100,000 fleeing to Syria and Jordan a month. Since 2007, the Iranian government has forcibly deported back to Afghanistan unregistered Afghans living and working in Iran at a rate between 250,000 to 300,000 per year. Pakistan announced that all 2,400,000 Afghan refugees, most living in camps, must return home by 2009. Turkey receives many migrants from nearby countries such as Armenia, Georgia, Azerbaijan and Iran, but also from Afghanistan, Central Asia and Pakistan. In 2007, over 44,000 Congolese were forced to leave Angola, and since 2004, more than 400,000 illegal immigrants, almost all from the Democratic Republic of the Congo, have been expelled from Angola. Intraregional migration will play a key role in the economies of more developed

[240] Anonymous, "Russia cracking down on illegal migrants," *International Herald Tribune*, 15 January 2007.
[241] Some Chinese flee the overpopulation and birth control regulations of their home country and settle in the Far East and in southern Siberia. Russia's main Pacific port and naval base of Vladivostok, once closed to foreigners, today is bristling with Chinese markets, restaurants, and trade houses.
[242] Anonymous, "Out of Africa and into China, immigrants struggle," *Reuters*, 21 August 2009.

states, but these regions will also be a major source of migration to developed countries.

Integration has become a central theme in politics in Europe since the 1990s. Political and social inclusion, citizens' rights, and solidarity are at the heart of EU policy. Migration and integration policies are inherently intertwined. Societal integration will be easier to maintain if governments manage immigration well. Conversely, the public's willingness to accept newcomers is dependent on successful integration and an understanding that migration also has benefits, such as providing a labour force and sustaining often ailing social security systems. Integration policies inevitably reach beyond the simple idea of providing facilities for newcomers to adapt and function in the new society. The premise of any integration policy has led to questions of how the society in which newcomers 'integrate' essentially defines itself, and whether it is able and willing to change.

This has made integration policies politically as sensitive as the issue of immigration. Northwest European countries have moved in recent years from earlier conceptions of integration policies that focused on the position of newcomers in society to one that is primarily focusing on the cohesion of societies as a whole, and on commonalities that are supposed to be crucial for social cohesion. This has led to much more fundamental questions and discussions on the identity of European societies. The results of such discussions have consequences for newcomers and for what their integration should mean. Some have even named the recent policies in Denmark and the Netherlands "neo-assimilationist."[243]

It is at this point that the nexus between the two policy fields of migration and integration becomes clear. While there is broad consensus about the value of skilled migration, low-skilled workers generate more controversy. It is widely believed that while these migrants fill vacant jobs they also displace local workers and reduce wages. Other concerns posed by migrant inflows include heightened risk of crime, added burdens on local services, and the fear of losing social and cultural cohesion. Nonetheless, previous assumptions about restrictive immigration being a necessary precondition for success of integration policies have now been joined by new ways of thinking: integration policy measures are used to select those immigrants that are able and willing to integrate, and deter those who are not. Making first admission to Northwest European countries dependent on tests in the country of origin, extension of residence permits on success in integration courses, and naturalization on ever more elaborate requirements of integration, are examples of measures that fit this inversion.

South European countries have a much more recent experience in immigration and integration, but at the same time a stronger growth of immigration than Northwest Europe presently has. Italy, Greece, and Spain have become the leading immigration countries. The Southern European countries' institutional framework for migration regulation is new, and their practices are less burdened

[243] Rinus Penninx, Dimitrina Spencer & Nicolas Van Hear, *Migration and Integration in Europe: The State of Research* (Oxford: University of Oxford, ESRC Centre on Migration, Policy and Society (COMPAS), 2008), 8.

by historical experience and the path-dependency that it may entail. This has led to different measures for migration regulation, such as more frequent regularisations.[244] For most of the twelve new members of the EU the experience of migration and integration is relatively new and has taken multiple forms: emigration, immigration, and transit migration co-exist in most of these countries. At the same time, the EU has become an important forum for policy development through its initiatives to create a framework for common migration policies – since 1997 – and integration policies – since 2003.[245]

Some forms of migration may pose additional problems. Western Europe's Muslim population currently totals between 15 and 18 million. The largest proportion of Muslims – between 6–8 percent or 5 million – are in France, and with 1 million in the Netherlands, followed by countries with 4–6 percent: Germany with 3.5 million, Denmark with 300,000, Austria with 500,000, and Switzerland with some 400,000, or 5 percent of the population. The UK and Italy also have relatively large Muslim populations with 1.8 and 1 million respectively. If current patterns of immigration and Muslim residents' above-average fertility rates continue, Western Europe could have 26 to 30 million Muslim residents by 2025.[246]

Countries with growing numbers of Muslims may experience a faster shift in ethnic composition, thus complicating efforts to facilitate assimilation and integration. While economic opportunities are likely to be greater in urban areas: if there is little growth and few suitable jobs, the increasing concentration could lead to more tense and unstable situations, such as occurred with the 2005 Paris suburban riots. Slow growth rates as well as highly regulated labour markets and workplace policies, if maintained, are likely to make it difficult to increase job opportunities, despite the need to stem the decline of Europe's working-age population. Coupled with job discrimination and educational disadvantage, these factors will more likely confine many Muslims to low status, low-wage jobs, and deepening ethnic cleavages. Hence, despite a sizeable stratum of integrated Muslims, a growing number – driven by a sense of alienation, grievance, and injustice – may more probably prefer separation in areas with Muslim-specific cultural and religious practices. And this may fuel the growth of parallel societies.[247]

2.7 Parliamentary control and oversight

Barely four decades ago, just a handful of states existed with institutionalized parliamentary control and oversight. If today parliamentary control and oversight

[244] The Spanish government, for example, has enacted on three occasions regularisation of illegal immigrants.

[245] See for example: European Parliament resolution of 22 April 2009 on a Common Immigration Policy for Europe: Principles, actions and tools (2008/2331(INI)). And: 12.09.2007 COM (2007) 512. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Third Annual Report on Migration and Integration

[246] Pew Research Center, *Mapping the Global Muslim Population: A Report on the Size and Distribution of the World's Muslim Population* (Washington DC: Pew Research Center, Forum on Religion & Public Life, October 2009).

[247] NIC, *Global Trends 2025: A Transformed World* (Washington DC: NIC 2008-003, November 2008), 25.

is established and exercised in the great majority of states, can this be considered as convincing proof and exemplary success of promoting democracy?

As has been elaborated in many of the best practices and codes of conduct existing, essential responsibilities of parliamentary control and oversight include legislative, budgetary, deliberative, scrutiny and sometimes even elective functions.[248] In theory, as the oversight potential increases, it makes it easier to scrutinize and control the government and its activities. And since controlling the government is seen to be a key component of democratic government, the more government is subject to potential control, the more likely it is for the political system to be democratic. The control and oversight potential is thus becoming a cause and not a consequence of democratic quality.

But the reality is more disparate and ambivalent. Specifically, practice shows that the challenges confronting effective parliamentary control and oversight are dependent both directly and indirectly on the authority, ability, and attitude of parliament regarding its oversight functions. There are some parliaments that perform these functions in an exemplary fashion. More generally, however, shortcomings abound. The most important among these shortcomings is that no internationally agreed standards of democratic control and parliamentary oversight exist. And this contributed to the development of a situation where every state has its own particular system and tradition of control and oversight, which is making comparisons a difficult endeavour.

Though specific provisions may differ, most constitutions are predicated on the principle of civilian supremacy and control over government actions and agencies. Thus, the core of the challenges facing parliamentary oversight can hardly be pinned to a lack of constitutional provisions for legislative control. But beyond formal provisions, the degree and efficacy of parliamentary oversight is most clearly demonstrated by the capacity of parliament to hold the government and its agencies accountable.[249] To effectively exercise oversight responsibilities, parliament requires adequate financial, human, and technical capabilities to conduct independent research and investigations. Such resources and capacities are, however, often palpably inadequate, particularly in developing countries or in countries in transition from authoritarian to democratic rule.

Control and oversight are often beset with other deficiencies, particularly where oversight refers to parliament's responsibility, control, and accountability over the security sector – over those institutions that are entrusted with the direct and indirect protection of the state and its citizens. Security agencies hold many leverages of power that need to be counterbalanced and controlled by the

[248] Philipp Fluri & Hans Born, *Parliamentary Oversight of the Security Sector – Principles, Mechanisms and Practices* (Geneva: Inter-Parliamentary Union and Geneva Centre for the Democratic Control of Armed Forces, 2003); Heiner Hänggi & Theodor H. Winkler, eds., *Challenges of Security Sector Governance* (Münster: LIT Verlag, 2003); Hans Born & Ian Leigh, *Making Intelligence Accountable: Legal Standards and Best Practice for Oversight of Intelligence Agencies* (Oslo: Publishing House of the Parliament of Norway, 2005).

[249] Wolfgang Wagner, *Parliamentary Control of Military Missions – Accounting for Pluralism* (Geneva: Geneva Centre for the Democratic Control of Armed Forces, Occasional Paper No. 12, 2000).

legislature.[250] Though the oversight function of parliament is more efficiently and visibly developed at the level of specialised committees because work in committees facilitates more technical and detailed cross-party scrutiny, deficiencies are also caused by the committee system – the mechanism through which elected representatives should ensure that the security sector is managed within the rule of law, according to agreed methods and benchmarks.[251] In many countries, too many select committees, often with overlapping mandates, are involved in the oversight of the security sector. These not only range from the defence, armed forces, foreign affairs, budget or appropriation, intelligence, and the committee of the interior, but also to committees overseeing human rights, homeland defence, energy and industry matters, science and technology, research and development, and critical national infrastructures.

A predominant reason for deficiencies in legislative oversight is the fact that the traditional roles of parliamentary control and oversight are all too often encroached upon by the executive branch, which shows a tendency to marginalize the legislature. While the risk of excessive executive dominance exists for all sectors, it is the closed and specialized nature of the security sector that makes it particularly susceptible to the proclivity of the executive to exert a monopoly over central levers of state power. In countries where post-colonial parliamentary traditions survive, the security sector has even been constitutionally conceded as the exclusive preserve of the executive. But the role of parliamentary control may also be rendered less effective by political factors, such as party discipline and one party majority. The power to make laws may be equally encumbered by the fact that it is not exclusive to parliament: the executive often dominates, leaving parliament to function as a mere rubber stamp. Even parliament's "power of the purse" can be constrained – this already by the legislature's inability to significantly modify, much less initiate, budget proposals.

A democratic system of civilian oversight can vary in its design, but serves the critical function of ensuring that the security sector is held accountable to the needs and priorities of the public. A strong and effective security sector is one where the armed forces, law enforcement and the police, gendarmeries, paramilitary forces, military and civilian intelligence and security services, coast guards, border guards, customs authorities, reserve and local security units such as civil defence forces, national guards, and militias, operate with professionalism within a democratic system of civilian oversight that ensures accountability and transparency. A professional security sector is one that understands not only its professional military, law enforcement, or intelligence duties, but its proper relationship with, and responsibilities to, society at large.

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[250] Hans Born, Philipp Fluri & Anders Johnson, eds., *Handbook on Parliamentary Oversight of the Security Sector* (Geneva: Geneva Centre for the Democratic Control of Armed Forces, DCAF, 2003); Katrin Kinzelbach & Eden Cole, *Monitoring and Investigating the Security Sector* (Geneva: Geneva Centre for the Democratic Control of Armed Forces, DCAF, Handbook, 2007).

[251] Anonymous, "Parliamentary Committees of Defence and Security," (Geneva: Geneva Centre for the Democratic Control of Armed Forces, DCAF-Backgrounder, 2006); Hans Born, Suzana Anghel, Alex Dowling & Teodora Fuior, "Parliamentary Oversight of ESDP Missions," (Geneva: Geneva Centre for the Democratic Control of Armed Forces, Policy Paper No.28, 2008).

Depending on the country, there are a variety of oversight functions that parliament is afforded by law, and exercises to varying degrees in practice.[252] Generally, parliament has the power and responsibility to debate, approve, enact and oversee the implementation of security sector laws and policies. In some countries, parliament has the additional power to debate or even participate in the selection of the chiefs of the agencies. But in most countries it is the executive branch that implements security sector policies, laws and actions, plans the annual budget, and sets priorities. This responsibility may be well-placed in the domain of the executive to ensure that the use of force and the protection of civilians are carried out effectively and competently. The role of parliament then is to act as check and balance, ensuring that the development and implementation of security sector laws and policies are reflective of the nation as a whole, and are addressing the diverse needs and priorities.[253] The most important responsibility of parliament is overseeing the budget for the security sector, where it can hold the executive accountable for the execution and priorities, and ensures that funds are disbursed appropriately and effectively.[254]

The ability of parliaments to oversee and influence the budget process differs from country to country. Some parliaments have the ability to formulate and substitute a budget. Others can influence the budget by amending or rejecting it. Still others are only permitted to rubber stamp the budget placed before parliament. The degree of influence parliament has over the budget process is often attributable to whether a country has a presidential or parliamentary system. Generally, in a parliamentary system, relations between the parliament and the executive are cordial and more cooperative as the executive is dependent on the majority support of parliament. As such, rewriting the government's proposed budget would be equivalent of a vote of no confidence in the government. In presidential systems, on the other hand, the political future of the executive is not as intricately intertwined with the majority in parliament, so there is no guarantee that the executive and the majority in parliament are of the same political persuasion or even that the executive has developed a strong working relationship with the majority in parliament. In situations where the political future of the executive and the majority in parliament are not directly linked, there is a greater likelihood that parliament would be willing to amend the budget.[255]

Critics of parliamentary oversight usually cite parliaments' time-consuming procedures and protocols, the parliamentarians' lack of expertise on security issues, their woeful scrutiny of national security, their lack of access to all the requisite intelligence needed to make informed decisions, and concerns over parliaments' ability to keep classified material and information secret. Numerous

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[252] Willem van Eekelen, "Democratic Control of Armed Forces – The National and International Parliamentary Dimension," (Geneva: Geneva Centre for the Democratic Control of Armed Forces, Occasional Paper No. 2, 2002).

[253] Craig Kowalik, *Parliaments and Security Sector Oversight. An Emerging Area for Capacity Development* (Ottawa: Parliamentary Centre, January 2006).

[254] Anonymous, "Parliament's Role in Defence Procurement," (Geneva: Geneva Centre for the Democratic Control of Armed Forces, DCAF-Backgrounder, 2006); Willem F. van Eekelen, "The Parliamentary Dimension of Defence Procurement – Requirements, Production, Cooperation and Acquisition," (Geneva: Geneva Centre for the Democratic Control of Armed Forces, Occasional Paper No. 5, 2005).

[255] Mitchell O'Brien, Rick Stapenhurst & Niall Johnston, eds., *Parliaments as Peacebuilders in Conflict-affected Countries* (Washington DC: The World Bank, 20 May 2008).

examples of such shortcomings and misbehaviour exist, and no parliament seems to be exempt from these. Hence, if the objective is to bring the security sector under not just civilian control but also democratic control, then improved parliamentary oversight is essential.

However, the most empowering constitutional and formal legal provisions, combined with adequate resources and technical expertise, would come to nothing if parliamentarians lack the political will and the predilection to exercise their powers, and to deploy the necessary resources. Thus, the most important condition for an effective parliament is its members' attitude to the duty to represent the citizens' interests. If there is a lack of a firm political will, the formal powers and the resources parliaments have to engage in both lawmaking and oversight lose their relevance. A poor attitude is in most cases the main cause of the decline of public trust in the institution of parliament and its individual members. In fact, parliamentarians' attitude and conduct are directly responsible for the prevalence of the public perception of parliaments as being non-responsive, unaccountable, and inefficient institutions.

It is notable that in many developing countries, and in a number of African countries in particular, the attitude, political convictions, and disposition of parliamentarians regarding oversight are generally casual and weak.[256] This is due to many factors. In the first place, there has been a taboo culture with regard to defence and security issues. In addition, party political interests and 'party discipline' often guarantee an uncritical approach to parliamentary oversight. At the individual level, parliamentarians are often eager to remain in the good books of powerful and patronage-dispensing officials of the executive branch, both civilian and military. Therefore, once elected, the parliamentarians in the governing majority tend to worry more about maintaining good relations with the president's or prime minister's office rather than looking after those who elected them. The net effect of such a disempowering attitude is that parliamentary oversight of the security sector often comes across as being decorative, rubberstamp, or appendages of their respective executives. The sum of these challenges approximates to real democratic deficits, which characterise parliamentary oversight of the security sector in many of those countries.

The many institutional, organisational, individual and performance deficiencies of oversight have been amply investigated and described. Nevertheless, there are some domains that have been insufficiently covered, such as the anti-corruption impact oversight could and should have if properly focused on and handled, particularly in the growth industry of lobbying in parliament; the fact that the different oversight committees of the security sector often address contradicting demands to the same agencies, normally without coordination; the absence of efforts of parliamentary oversight to exploit the opportunities that exist for consolidating the gains of accountability and transparency in order to establish them as cornerstones of good governance; and the steadily increasing burden of work-overload that exists in some agencies of the security sector due to the ever

[256] Adedeji Ebo & Boubacar N'Diaye, eds., *Parliamentary Oversight of the Security Sector in West Africa: Opportunities and Challenges* (Geneva: Geneva Centre for the Democratic Control of Armed Forces, 2008).

growing demands of the many parliamentary oversight committees – sometimes so much so that these agencies can no longer function properly. It is a fact that some parliaments are at times loosing the feeling for what an agency can be reasonably expected to do in answering questions. This is particularly the case with control and oversight of intelligence and secret services. Thus, in a most recent case of too much parliamentary zeal, even the Minister of the Interior of Germany was led to call for the abolition of the parliamentary oversight committee for the secret services.[257]

However, looking at the future of parliamentary control and oversight, the problems above pale in view of the new challenges the London Summit of the G-20 has brought about with their commitments to address both the economic downturn and regulatory failures of global and national financial markets, instruments and institutions. Based on the Washington Plan of Action of November 2008, the London Summit final Leaders' Statement of 2 April 2009 has brought these central issues on one common global policy agenda. This agenda translates into a programme of work that is supposed to provide benefits for all people around the world, today and tomorrow, as the final Leaders' Statement[258] claims with strong reference to the G-20 founding statement of purpose. This new and extraordinary challenge for parliaments stems from the fact that the G-20 leaders have made it unmistakably clear that the majority of regulatory power and decision-making regarding fiscal measures to revive the economy shall remain with the nation-state – not with a multinational institution or international organisation.

In the absence of relevant global democratic oversight structures, it is thus now more than ever the time and task of parliaments to ensure that prerogatives and powers of the nation-state are matched by an effective capacity and political will to engage in parliamentary oversight that takes a global view. However, neither the political will, nor the capacity of parliaments to conduct such effective oversight, is a given. To the contrary, experience from Britain, France, South Africa and India[259] shows that both the broad sweep and detail of foreign policy, writ large, is very little under scrutiny. As a result, in many countries government policy on major issues that concern people around the world is only marginally influenced by those who have the most developed statutory powers and legitimacy to do so. Today, most parliaments lack the capacity and established mechanisms that would enable them to conduct effective oversight of government action and progress on the G-20 program of work. This may lead to a problematic lack of accountability of both governments and parliaments to the citizens they serve. And this raises

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[257] Mathias Brüggmann, "Schäuble-Vorstoss, Bundestag bald ohne Geheimdienst-Kontrolle?" *Handelsblatt,* 17 September 2009.

[258] G-20, *London Summit – Leaders' Statement*, 2 April 2009, at: http://www.londonsummit.gov.uk/resources/en/PDF/final-communiqué.

[259] Simon Burrall, Brendan Donelly & Stuart Weir, eds., *Not in our Name, Democracy and Foreign Policy in the UK* (London: Politicos, 2006); Clément Boutillier & Michael Hammer, "'Un Président irresponsable?' Prospects for democratic oversight of foreign policy in France," (London: One World Trust Briefing, Paper No. 107, October 2007); Michael Hammer, Clément Boutillier & Anuya Uphadyay, "Ready for the global pitch? Making the foreign policy process in emerging powers such as South Africa and India democratically sustainable," (London: One World Trust Briefing, Paper No. 110, May 2008).

the big question of who can and will hold the G-20 members accountable for delivering on their agenda.[260]

[260] See: One World Trust, *Accountability in Action* (London: One World, April 2009).

3. The issues that will be on our desks in the coming years

3.1 Globalisation

Globalisation[261] describes an ongoing process by which regional economies, societies, and cultures have become integrated through a globe-spanning network of exchange. The term is sometimes used to refer specifically to economic globalisation: the integration of national economies into the international economy through trade, foreign direct investments, capital flows, migration, and the spread of technology.[262] But globalisation is usually recognized as being driven by a combination of economic, technological, socio-cultural, political, and biological factors.[263]

The first globalisation ended in 1914, followed by two world wars and an intervening global depression. It had failed because states' shared assumptions pushed them towards fragmentation rather than cooperation, mutual incomprehension instead of shared awareness. An epoch that seemed to be characterized by interdependence and common interest ended in shared disaster.[264]

The second globalisation, which has steadily deepened since the end of World War II, could fare better, but has entered a turbulent period now. Over the past two decades, the most significant threats to international security, stability, and prosperity have evolved more rapidly. Global systems have become more tightly interconnected, with risks proliferating faster across borders. The drivers of change – including population growth, climate change, resource scarcity, major shifts in economic power, and increasing state fragility – produce less predictable, non-linear effects. Technology continues to diffuse more rapidly, information is corroding traditional hierarchies, and security-related risks have become more asymmetric.[265]

The world now faces novel challenges, such as managing pandemics, IT- and bio-security. And there is a need to develop both unprecedented institutions: resilient global carbon markets, and more powerful enforcement mechanisms, for example, against nuclear proliferation and for emissions control. Power shifts must be managed both in the short term, such as economic imbalances, and over the long term, such as demographic change. Interactions between risks have become more complex, like energy and food security, for instance. And non-state actors like terrorist, insurgent and organised crime groups, have ever more opportunities to

[261] Globalisation is the multiplicity of linkages and interconnections that transcend the nation-state, and by implication the societies, which make up the current world system. It defines a process through which events, decisions, and activities in one part of the world can have significant consequences for individuals and communities in quite different parts of the globe.

[262] Jagdish Bhagwati, *In Defence of Globalisation* (Oxford, New York: Oxford University Press, 2004).

[263] Sheila L. Croucher, *Globalisation and Belonging: The Politics of Identity in a Changing World* (Rowman & Littlefield, 2004),10.

[264] Alex Evans, Bruce Jones & David Steven, *Confronting the Long Crisis of Globalization, Risk, Resilience and Inter-national Order* (New York: New York University, Brookings Institution, Center on International Cooperation, Managing Global Insecurity, 26 January 2010), 3.

[265] Ibid.

disrupt global networks, especially where and when state weakness and access to these networks coincide.

Pressures from these forces build for long periods with little visible effect, but when released, they trigger abrupt shifts and cascading consequences across interlinked global systems. Shocks, rather than stresses, have become the primary triggers of change, as the three global crises of 9/11, the combined food and oil price spike that peaked in 2008, and the global financial and economic crises have demonstrated over the last decade. These also demonstrated that the international system, crippled as it is by design faults, is unable to confront and control the volatility of contemporary globalisation. At both national and global levels, policy formation and delivery is weak and fragmented across issues and organisations.[266]

The second globalisation, largely the result of planning by politicians to break down borders hampering trade to increase prosperity and interdependence thereby decreasing the chance of future war, led to the Bretton Woods conference, framework agreements for international commerce and finance, and the founding of several international institutions to oversee the process of globalisation.[267] The current globalisation has been facilitated by technological advances that have reduced the cost of trade, and by measures for the promotion of free trade.[268]

For the most part, the developed world recognises that it has a major stake in the continuing progress of globalisation. The same can be said for those moving into the developed world. Today, all powers profess to profit more from stability than turbulence. The response to the financial crisis, for example, has been effective, at least in the short term. But other dangers loom: in misunderstandings among the major powers; over competition for resources and emission rights; in tensions over protectionism and exchange rates; and particularly during acute emergencies, where events can run suddenly beyond control.

The processes propelling globalisation could improve the lives of most of the world's population, particularly for many millions of the poorest. Violence resulting from economic shortcomings or problems has traditionally arisen where economic and political systems have failed to meet raising expectations. Any failure of globalisation would therefore equate to a failure to meet such rising expectations. Hence, the real danger in a globalised world lies in a reversal or halt to global prosperity. In all likelihood, such a development would lead states and non-state actors to scramble for a greater share of shrinking wealth and resources

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[266] Ibid.

[267] Among them the International Bank for Reconstruction and Development – the World Bank, the International Monetary Fund (IMF), later the World Trade Organisation (WTO), for which the General Agreement on Tariffs and Trade (GATT) is the foundation.

[268] These measures are: (1) Elimination of tariffs and creation of free trade zones with small or no tariffs; (2) Reduced transportation costs, especially resulting from the development of containerization for ocean shipping; (3) Reduction or elimination of capital controls; (4) Reduction, elimination and harmonization of subsidies for local businesses; (5) Creation of subsidies for global corporations; (6) Harmonization of intellectual property laws across the majority of states with more restrictions; and (7) Supranational recognition of intellectual property restrictions.

– as it occurred in the 1930s with the rise of Nazi Germany in Europe, and Japan's "co-prosperity sphere" in Asia.[269]

Clearly, some will be left behind by globalisation, either through the misfortunes of geography or culture, like some countries of Sub-Saharan Africa, or by design, like North Korea and Myanmar. Some of these states are weak or failing states that will require an international array of development, economic, diplomatic, and military resources to re-establish or sustain stability. In most cases the assisting of, or intervention in, failing states will require a cooperative engagement of regional economic powers together with international organisations.

Critics of the current wave of globalisation often portray its dark side in the inequality of rich and poor. In some worst-case scenarios, they see the rise of resentment and violence throughout the world as a direct result of globalisation. However, the future is likely to contain both good and bad as globalisation accelerates the pace of human interaction and is extending its reach. Critiques typically look at both the damage to the planet, in terms of the unsustainable harm done to the biosphere, as well as the human costs, such as poverty, inequality, miscegenation, injustice, and the erosion of traditional culture, which all occur as a result of economic transformations related to globalisation. They point to a multitude of interconnected fatal consequences: social disintegration, a breakdown of democracy, more rapid and extensive deterioration of the environment, the spread of new diseases, increasing poverty and alienation, which they claim are the unintended but very real consequences of globalisation. They criticize the disadvantages that poorer countries suffer, the exploitation of foreign impoverished workers, the shift to outsourcing, the weakening of labour unions, and the increasing exploitation of child labour. They emphasize that globalisation is mediated according to corporate interests. And they typically raise the possibility of alternative global institutions and policies, which they believe address the moral claims of the poor and working classes throughout the globe.[270]

In contrast, proponents of globalisation and supporters of free trade claim that it increases economic prosperity as well as opportunity, especially among developing nations, enhances civil liberties and leads to a more efficient allocation of resources. Economic theories of comparative advantage suggest that free trade leads to more equitable allocation of resources, with all countries involved in the trade benefiting. In general, this leads to lower prices, more employment, higher output, and a higher standard of living.[271] And supporters of laissez-faire capitalism claim that higher degrees of political and economic freedom in the form of democracy and capitalism in the developed world are ends in themselves because they produce higher levels of material wealth. They see globalisation as the beneficial spread of liberty and capitalism.[272]

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[269] US JFC, *The Joint Operating Environment 2010* (Norfolk: United States Joint Forces Command, Public Affairs, 18 February 2010), 18.

[270] Dogu Ergil, What is the argument against globalization?" *Today's Zaman*, 5 February 2010.

[271] J.J. Asongu 1, "The Future of Globalisation: An Analysis of the Impact of Political, Economical, Legal, and Techno-logical Factors on Global Business," *Journal of Business and Public Policy* 1, no.4 (Fall 2007).

[272] Arvind Panagariya, "The Miracles of Globalization," *Foreign Affairs* (September/October 2004); Anonymous, "Arguments in favor of globalization," *Second Life Record – All about 2nd Life,* 15 June 2009.

Whatever good and bad can be attributed to globalisation: there remains one important bottom line. International and national security will continue being influenced primarily by globalisation, its accelerating pace of political, economic, and social change driven by scientific progress and technological innovation, and its resulting growing interdependence. Globalisation is giving rise to the multiplication of actors, sources of crises, conflicts and wars. The accelerating pace of change is altering the characteristics of threats, dangers, and risks to national and international security, and is widening the spectrum of means of violence useable in conflicts and for waging wars. And the growing interdependence of states is enhancing economic, financial, and critical national infrastructural vulnerabilities, particularly of those states and societies profiting most from globalisation.

This bottom line of international and national security, primarily influenced by globalisation, is just one aspect of a far more important general problem: that of *governing* globalisation. There is a need to find new approaches to global problem solving, ultimately for *globalising governance*. While there has been considerable agreement on the nature of global problems, there has been little progress in resolving them, because the current instruments of global governance are far from producing satisfactory progress. The line between international and domestic policy is more blurred than ever, with the primacy of national sovereignty increasingly challenged by the reality of common problems that respect no borders. For most states at most times, the greatest threats to security and prosperity are no longer posed by other states acting alone, but by networks of state and non-state actors, by the unintended consequences of transnational flows – finances, contraband, technology, emissions, nuclear, radiological and biological materials, weapons, and ideas – and by the under-supply of global public goods.

Hence, there is an overarching need to move from a foreign policy that focuses on usually ill-defined conceptions of national interests to one that aims at managing shared risk. Though agreement may still prove elusive, a risk paradigm can provide a better basis for cooperation between states – one that puts emphasis on uncertainty; focuses more on future challenges; provides a long-term context to balance immediate interests in acute crisis; and can bind together disparate structures for cooperation. Concomitantly, it can induce governments and international institutions to increase their focus on long-term stresses, while preparing for acute shocks and anticipating and countering deliberate disruption of systems. To continue profiting from the benefits of globalisation will be ever more dependent on the creation of an international order that is more resilient in the face of a range of greater risks. Resilient systems are those that can absorb disturbances and reorganise while undergoing change, so as to retain or enhance effective functions, structures, identities, and feedbacks.[273]

Global governance is insufficiently representative to those it affects most. International decision-making is not only too exclusively focused on governments; it also remains disproportionately concentrated in the G-8 countries. Moreover,

[273] Evans, Jones & Steven, Confronting the Long Crisis of Globalization, 4.

the system of global economic governance exhibits a lack of coherence: discussions on aid, trade, and finance remain highly compartmentalised, both multilaterally and bilaterally. This is why those that wish to extend the benefits of economic globalisation want to create institutions of global governance which are more democratic than the existing collection of international agencies. Global economic governance requires a set of supranational institutions that are able to deal collectively with a range of transnational issues. International trade is obviously one of these. But finance, global liquidity, labour migration, technology transfers, intellectual property rights, environmental issues, and other subjects must also be addressed. On too many issues the international community is failing to marshal the necessary processes and resources to meet its stated aspirations. And these shortcomings contribute to the lack of compliance to endorsed goals and standards. Hence, what is needed is a combination of reform of existing international institutions and the creation of new supranational institutions.[274]

Foremost, global economic governance suffers from a democracy deficit. The countries weak in economic terms are very far from international decision-making. And despite the welcome spread of democratic institutions and processes at the national and local level through much of the world, too little provisions remain for the democratic precepts of voice, participation, and accountability in supranational and multilateral institutions that are assuming ever greater importance in the management of international relations. The essential principle of democracy is the expression and implementation of public will through mechanisms of participation in which that will is noted and becomes effective, resulting in the consent of the governed. The granting of legitimacy by the public depends essentially on the decision-making process: how open and transparent it is, how it engages and transmits the voices of the people, and the extent to which it serves that voice or is subordinated to other interests.[275]

There are many possibilities to remedy the weaknesses in the capacity to solve global problems. These range from a more representative summit for economic stewardship by replacing the G-8 with a broader grouping of heads of governments; improving the coherence and accountability of, as well as representation and participation in, the supervision of the IMF, the World Bank, and the WTO. And representation can be improved by engaging parliamentarians in the supervision of global economic management; by strengthening international labour and environmental governance; amplifying and diversifying voices by coalitions of the voices of the poor, creating more spaces for civil society consultation to inform global policymaking; and by evolving new forms of hybrid governance through joint groups of concerned UN entities, industry groups, and NGOs that act as catalysts to ensure implementation of UN conventions such as the Convention against Corruption – among other approaches. Organisations well placed for doing this already exist, such as the Helsinki Process on "New Approaches to Global Problem Solving." They can bring together NGOs, civil

[274] Keith Griffin, "Economic Globalization and Institutions of Global Governance," *Development and Change* 234, no.5 (2003): 789–807.

[275] Helsinki Process, *Governing Globalization – Globalizing Governance*, New Approaches to Global Problem Solving (Helsinki: Report of the Helsinki Process on Globalization and Democracy, 11 June 2004).

society groups, and governments on such proposals, with the aim to constitute joint groups of governments, NGOs, international organisations, and media managers for pushing ahead the needed remedies for the governance of globalisation.[276]

3.2 The nation-state in a globalised world

Globalisation is the growing movement of people, knowledge and ideas, goods and money across national borders that have led to increasing interconnectedness among the world's populations – economically, politically, socially, and culturally. One of the main results is the integration of economies, trade, finance, and information that is creating a single global market. Globalisation is caused by the falling cost of distance: transport costs, the costs of storage, security, timeliness, information, and intimacy. Globalisation has exceptionally powerful effects when the reduced costs of distance combine with economies of scale. One implication is that as long as the costs of distance fall, globalisation will continue. It may continue in different ways. Who even twenty years ago would have predicted that a whole range of services were tradable – business service off-shoring, call centres, and electronic purchasing, among other activities – facilitated by cheap telecommunications means. The future of globalisation may bring new surprises.

An essential link between globalisation and the nation-state is the concept of sovereignty. Originally intended in reference to the establishment of order within a state, sovereignty has since been interpreted by some as a legal quality that places the state above the authority of all external laws. Yet whenever a state exercises its sovereign right to sign a treaty, it is also wilfully limiting that right by the very act of undertaking an international legal obligation. States are also bound by other rules, such as customary international law. With these formal legal limitations, sovereignty of the nation-state persists even in an age of globalisation, and is manifest in such functions as the coining of money, gathering of taxes, the promulgation of domestic law, the conduct of foreign policy, the regulation of commerce, and maintenance of domestic order. These are all functions that are reserved exclusively to the state, a condition that the EU is challenging today in many dimensions of governance, but will not easily overcome.[277]

There are three distinct aspects of globalisation that challenge the nation-state. First, there is the reduced ability of the nation-state to exert influence on its economy when economic transactions increasingly take place on a global level. Second is the growing number of international organisations, be they political like the UN, economic like the WTO, the OECD, NAFTA, the IMF and the World Bank, or a combination of the two like the EU. And third, there is the emergence of other supra-national and sub-national centres of power, ranging from

[276] Ibid.
[277] Jayantha Dhanapala, "Globalisation and the Nation State," *The Colorado Journal of International Environmental Law and Policy* (7 April 2001).

multinational corporations to NGOs, civilian lobbying and pressure groups to local councils.[278]

There are three key conceptions of how the nation-state may respond to these challenges. One view is that the nation-state is dissolving as an institution, becoming obsolete. Another is that the nation-state has gained increased importance for maintaining and evolving globalisation trends, and that the state is essential for producing stability. And there are those who think that the nation-state faces restructuring through globalisation, and while it will not disappear, it will evolve into an altered state, with a different role from the Keynesian welfare state that operated successfully during much of the second half of the 20th century.[279] But now, as the informational state replaces the bureaucratic welfare state, control over information creation, processing, flows, and use has become a more effective form of state power.[280]

Realists see the nation-state far from finished. The importance of the state has even increased recently with the financial and economic crises, and equally in other areas, certainly with respect to promoting international competitiveness through support for research and development, for technology policy, and for other assistance to domestic firms. The challenges that globalisation presents are not insurmountable, and globalisation may even be a construct of the nation-state rather than an exclusionary force aligned against it. Virtually all states have become involved in the process of internationalisation, even if only to maximize potential national benefits or to minimize possible harmful effects. The nation-state remains the most powerful institution to channel and tame the power of markets, and to ensure the rule of law. Moreover, the state is the most effective method of organising international relations currently in existence.[281]

Over the years, states have discovered that their interests are better served and advanced within a broader system of binding rules than without such a system. Rules help to define rights and duties. As Jayantha Dhanapala notes, the exact meaning of these rights and obligations depends on a whole complex of circumstances: political, economic, cultural, and technological. Concomitantly, globalisation is also having a profound effect upon national and international rules, and is influencing the norms that govern world commerce, transportation, environmental protection, and many other things binding the nation-state. Quite a number of the legal and political principles of exclusivity commonly associated with the nation-state are enshrined in the treaty linking all countries: the UN Charter. Yet, the start of the new millennium has also raised the awareness throughout the world of our common heritage, humanity, and the planet as a whole, rather than the sum of its parts. And this synthesis of the globe and the nation-state as the fundamental units of sustained political activity is just another

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[278] *Is there a future for the nation-state in an era of globalization? If so, what Future?* (POLS G79 – Globalization and Governance – Essay One), 5.

[279] Eric Brahm, "Globalization," *Beyond Intractability* (July 2005), http://www.beyondintractability.org/essay/globalisation/ ; *Is there a future for the nation-state in an era of globalisation?* 9.

[280] See: Sandra Braman, *Change of State – Information, Policy, and Power* (Boston: The MIT Press, September 2009).

[281] *Is there a future for the nation-state in an era of globalisation?*10-11.

way of thinking about the process of globalisation. Resulting is the idea not to replace the nation-state, but to adapt it to be more responsive to human needs under new global conditions.[282]

The best expression of this synthesis is contained in a document issued after the UN Millennium Summit, one of the largest gatherings of world leaders. The Millennium Declaration consists of a statement of common values and principles and a list of specific common objectives. Specific initiatives are outlined in the areas of peace, security, and disarmament; development and poverty eradication; protection of the environment; human rights, democracy, and good governance; protecting the vulnerable; meeting the special needs of Africa; and strengthening the UN.[283] Noteworthy is that the primary agent for pursuing these common global goals remains the nation-state. Unlike the UN Charter, the Millennium Declaration was a statement by "heads of state and government," not their peoples. In this document, these leaders rededicated themselves "to uphold the sovereign equality of all states," to respect their "territorial integrity and political independence," and to reaffirm their commitment of "non-interference in the internal affairs of states." This is making it harder to conclude that the nation-state has become obsolete.

However, to read just the passages pertaining to the nation-state would ignore the parts that seek to move the focus of political action to the betterment of all humanity. Listed among the key values of the Millennium Declaration is a "collective responsibility to uphold the principles of human dignity, equality and equity at the global level." The document, moreover, proclaims the existence of a duty "to all the world's people," and refers throughout to "our common humanity." It is not just the consensus behind the Declaration which makes it important, but the synthesis and redefinition of ends and means in this millennium. The document puts forward clear global ends, and relies upon states as key agents in pursuing those ends on behalf of all humanity. Hence, it offers states a road map of initiatives they should follow for the collective good of all.[284]

In protecting the environment, for example, the Declaration calls upon states to embrace and implement numerous international conventions and understandings such as the Kyoto Protocol,[285] and support for the principles of sustainable development enshrined in the Rio Declaration.[286] The actions needed to enforce such agreements continue to depend heavily upon enlightened action by states. This raises the question of how it is possible to motivate structures of the state that have for centuries sought to maximize the interest of specific local nationalities, to implement instead policies that serve the global common good? Global values cannot be imposed upon states from without; they must be

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[282] Jayantha Dhanapala, "Globalisation and the Nation State. A cartography of Governance: Exploring the Role of Environmental NGOs," *Colorado Journal of International Environmental Law and Policy* (7 April 2001).

[283] *United Nations Millennium Declaration*, General Assembly resolution 55/2, 8 September 2000, http://www2.ohchr.org/english/law/millennium.htm

[284] Dhanapala, "Globalisation and the Nation State"

[285] *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 16 February 2005, at: http://unfccc.int/resource/docs/convkp/kpeng.html

[286] United Nations Environment Programme, *Rio Declaration on Environment and Development* (Geneva: United Nations publication E.73.II.A.14, June 1992).

embraced by states from within. The central challenge nowadays is not to achieve the end of the nation-state, but to rehabilitate the ends of the nation-state, since national action is the determining factor. And there is a single idea that embodies the sum total of national action: good governance.[287]

Popular participation, transparency and public accountability constitute the essence of good governance.[288] Strong legislation for the protection of the environment, for example, is forged as a result of a sustained political process, which requires persisting efforts throughout civil society. Government leaders need popular participation to adopt laws and policies to meet genuine human needs, just as the societal groups advocating reforms are dependent upon official authorities to promulgate and enforce such reforms. Seen in this light, NGOs can be a catalyst of what is truly good about globalisation. Though not elected, and lacking legal authority to govern, NGOs play a crucial role in helping the state to identify new goals, in educating the wider public of the need for action, and in providing political support that government leaders require for the enactment of new laws, to implement new policies, and to enforce them. Concomitantly, NGOs have an equally important role in exposing inefficient and ineffective policies, and in mobilising demands for constructive change.[289]

The problem is that globalisation is now challenging the nation-state like never before. Its power, security, influence, standing in the world, and its future will be decided by how the nation-state can cope with, and adapt to, six predominant features that characterise the globalised world. Today's world is connected, complex, competitive, yet demands more intense cooperation. It will also be dominated by confrontation and a visible corrosion of the West's global influence. Within these six domains, the nation-state is in need to find new principles, rules, agreements, and structures with which it can tackle the problems of global magnitude that are affecting the nation-state.

As to *connectivity*: more than ever, markets, countries, societies, organisations, communities, sectors, networks, individuals, and non-state actors are connected with one another, both tangibly and virtually. This connectivity unavoidably gives all their interrelations new forms of relevance and potential significance, whether between bigger or smaller states, more central or more peripheral actors, more moderate or more radical elements, with like-minded partners, rivals or opponents.

As to *complexity*: the present global reality is complex in several dimensions. Interconnections between issues and policies render present challenges – political, socio-economic, environmental, and security – intensely complicated. This

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[287] Heiner Hänggi, "Making Sense of Security Sector Governance," in *Challenges of Security Sector Governance*, ed. Heiner Hänggi & Theodor H. Winkler (Geneva: DCAF & LIT Verlag, 2003), 3–23.

[288] Sam Agere, *Promoting Good Governance – Principles, Practices and Perspectives* (London: Commonwealth Secretariat, Management and Training Services Division, 2000); Deindre M. Curtin & Ramses A. Wessel, eds., *Good Governance and the European Union – Reflections on Concepts, Institutions and Substance* (Antwerp, Oxford, New York: Intersentia, 2005). See also: OECD, *OECD Principles of Corporate Governance* (Paris: OECD, 2004).

[289] Dhanapala, "Globalisation and the Nation State,"

complexity often stems from the potential knock-on effects and indirect consequences that may be caused in one area, region or sector as a result of a development in another seemingly unrelated and even geographically distant area, region or sector. In addition, there is the demand for increased policy coherence and integrated approaches that is ever-present, though obviously difficult to achieve.

As to *competition*: resource exploitation, access to energy and supply routes, opportunities, markets, leverage, influence or outreach, competition appears to be ever more pressing between and within regions, among allies and adversaries. In addition, after what was in retrospect a brief interlude that followed the end of the Cold War, competition between value systems and ideas has returned to help frame politics. This time, however, it is not taking place just between states or alliances of states; non-state and multinational actors, transnational networks and communities are also calling the shots and making their claims to influence, leverage, and resources.

As to *cooperation*: the increasing pace of change brought about by globalisation in a situation where issues are interconnected and competition is high is making cooperation imperative. Recognition of the many aspects of what were previously thought to be single and discreet problems, and the degree of direct or indirect interdependence between actors, make cooperative solutions mandatory. Over-indebtedness, employment and trade imbalances, water and food scarcity, insufficient resource management, and global warming make it obvious that such issues can only be properly addressed in a shared framework.

As to *confrontation*: global outreach of new regional powers, and countervailing steps taken by other great powers are accompanied by more outspoken, confident and assertive expressions of their world views, values, and interpretations. In parallel, other forms of large-scale if often *ad hoc* and issue-based alignments develop – such as North versus South – which renders confrontation the operative mode in discussions of many aspects of domestic and international politics. As the actors react to established norms, confrontation on matters of principle and substance are ever more likely. This may either serve as a driving force or an obstacle to cooperation between countries and alliances. In either case, it increases the complexity of any given situation as well as the competition for resources, alliances, and influence.

As to *corrosion*: the relative decline of the West's global influence began to become evident since the US intervention in the Middle East, as the quagmire of Iraq drained the US of political capital and moral authority. This decline is now more manifest in the effects of the US and Europe-centred global financial and economic crisis. The US and the countries of the EU struggle with attempts to manage and overcome the crisis, and undertake structural reforms in order to relaunch their economies, whereas rising states such as China, India, Brazil, and the Gulf states are expanding their economic, financial and political influence, and significance. There is, in effect, little doubt that power is being redistributed – globally, transnationally, nationally and also among state and non-state actors.

These six features, singly and in combination, impinge directly on currently dominant perceptions of security. States, organisations, political and military alliances, formal and informal networks, and communities see all dimensions of their security and prosperity more interconnected and interdependent than ever before. And this has an impact on how the government builds and maintains the confidence and trust of the public and the international community in its ability to manage complex security issues.

However, the ability to manage these issues is hampered because in most states the national security architecture is flawed in design and remains handicapped by an archaic and compartmentalized system that dates from the Cold War. Most governments remain still structured around functions and services with separate budgets for defence, foreign affairs, intelligence, and development. The agencies of the security sector have changed little since the Cold War. But there is the fact that traditional notions of defence, foreign affairs, intelligence, and border control have become increasingly redundant in the contemporary security environment. At best, these notions tend to confuse roles and responsibilities rather than clarify accountability. At worst, they act as barriers to collaborative ventures across government, strengthening the existing silo mentality, and ensuring that the government cannot create the required effects.

Central to a holistic approach to national security are the principles of openness and transparency. In particular, governments should focus on making the security architecture more accountable to parliament and the wider public. This requires the government to move beyond communicating with the private sector and public to engaging with them concerning risks to the state and society. These principles are also central to a new culture in government that addresses the accountability deficit, collapses walls between departments, and fosters collaboration among civil servants. Such a culture must also support information sharing across government through changes in process and use of innovative technologies. Government and agencies must move beyond the traditional mindset of the "need to know" to embrace the concept of "need to share", where the focus of individuals in the system is on the "responsibility to provide."[290]

Underpinning this approach to national security must be a new intellectual framework – *public value*. This provides a way of measuring the performance of ministries, departments, and agencies through the allocation of resources and selecting appropriate ways of implementing policies focusing on outcomes, not output, and on trust, legitimacy, and fairness. Public value will help to rethink the way government implements policy by allowing flexible and innovative thinking to emerge at the level of individual decision-makers. Long-term success must be based on a more inclusive, open, and holistic approach to national security.[291]

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[290] "Current notions of defence, foreign affairs, intelligence and development are redundant in the new security environment …" Charlie Edwards, *National Security for the Twenty-first Century* (London: Demos, Magdalen House, 2007).

[291] Gavin Kelly, Geoff Mulgan & Stephen Muers, *Creating Public Value: An analytical framework for public service reform* (London: Strategy Unit, Cabinet Office, 2002).

The emerging paradox is that stability will be possible only through embracing 'perpetual adaptation of the system' as a whole, and this will require two complementary approaches to be taken. The first and most fundamental is a more trusting relationship between the government, the private sector, and the public. In a complex system, there will always be multiple goals and objectives, so government should learn to acknowledge differences, and instead of imposing change shape it. Second, this will require government to experiment both with the system and through multiple interventions and evaluations. In doing so, command and control approaches to policy implementation will become redundant in favour of more distributed models that place leadership and responsibility on local or "immediate actors." This will be especially true for building resilience in local communities, where the responsibility is on local authorities, and where central government will play a less influential role.

Finally, a new style of leadership and management will have to emerge to respond to the complexity of the security environment. No matter how much coherence there is at the centre of government, this has to be supported by networks across the system that allow new approaches and methods to take root. In accepting this approach, governments will have to distribute responsibility downwards, ceding some control and authority to local actors in return for greater collaborative partnerships.[292]

What by now has become evident is that governments in established and emerging powers alike have some homework to do. Not only do they need to increasingly look beyond the traditional horizons of their strategic neighbourhoods; they also need to develop a more acute understanding of the differences that the strategic environments in each region hold. The relative influence of states and non-state actors, the historic experiences of peaceful or hostile interaction or the constraints of natural endowments and fragile environments present very different strategic settings in the various parts of the world. And, more important for governments, this homework includes a readiness to assume a constructive role in the responsibility of securing peace and prosperity in their respective regions.

3.3 Failing and failed states

Strong states are distinguished from weak states, and weak ones from failing, failed or collapsed states according to the levels of their effective delivery of the most crucial political goods. Human security is the most important among these goods, comprising the security of borders, elimination of domestic threats, prevention of crime, and facilitation of peaceful dispute resolution. Sustainable human security is enabling the rule of law, political freedoms, functioning physical, educational, and economic infrastructures as well as an active civil society. Strong states are those that unquestionably control their territories and deliver the full range of high quality political goods to their citizens. In addition, they offer high levels of security from political and criminal violence, ensure political freedom and

[292] Edwards, *National Security for the Twenty-first Century*.

civil liberties, and create environments conducive to the growth of economic opportunity.[293]

Weak states, in contrast, are inherently weak because of geographical, physical, or fundamental economic constraints. They may be basically strong, but temporarily or situationally weak because of internal antagonisms, management flaws, greed, despotism, or external attacks. And they usually reflect ethnic, religious, linguistic, or other intercommunal tensions that have not, or not yet thoroughly, become overtly violent. Urban crime rates tend to be higher or increasing, the various infrastructural and economic networks have deteriorated, corruption has increased, and autocrats often rule. There is a special sub-category of weak states, which appear to be strong, suppress dissent, and are secure, but provide few political goods. North Korea is such a case.[294]

Failing states are another sub-category of weak states. The more poorly weak states perform by each measure, the weaker they become, and the more that weakness tends to edge toward failure. Failing states are thus weak states that have begun to fail, though the tipping point remains imprecise. States with shallow domestic legitimacy tend to fail when they lose foreign support. And when major powers abandon local regimes that are no longer acceptable or convenient partners, failure is accelerating.[295]

Failed states have several attributes. One of the most common is the loss of physical control of its territory, or of the monopoly on the legitimate use of physical force therein. Other attributes include the erosion of legitimate authority to make collective decisions, an inability to provide reasonable public services, and the inability to interact with other states as a full member of the international community. The institutions of the state are flawed, except in the exercise of executive functions. This may include the armed forces that, though possibly retaining their integrity, may be heavily politicised. The physical infrastructure is deteriorated or destroyed, and education and health care become unavailable to the general public, with concomitant declines in literacy, increases in infant mortality, infectious diseases, and gender-based violence. Crony capitalism and economic exploitation, accompanied by corruption, flourish, while GDP figures decline. Failed states are tense, deeply conflicted, dangerous, and contested bitterly by warring factions. The government must contend with one or more armed insurgencies, civil disturbances, varying degrees of communal discontent and a plethora of dissent directed at the state and groups within the state. Violence is enduring, with much of it directed against the government or the regime. And the civil wars that characterize failed states are usually rooted in ethnic, religious,

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[293] Robert I. Rotberg, "Failed States, Collapsed States, Weak States: Causes and Indicators," in *State Failure and State Weakness in a Time of Terror*, ed. Robert I. Rotberg (Washington DC: Brookings Institution Press, 2003), 4.

[294] Ibid., 4–5.

[295] William M. Wise, "American Perspectives on the Threat Posed by Weak and Failing Asian States" (paper presented at the US-China Conference on Areas of Instability and Emerging Threats, Bejing, February 23–24, 2004).

linguistic or other communal enmity. In fact, there is no failed state without disharmonies between communities.[296]

There are many ways and methods to measure state weakness. *Foreign Policy* recently presented a list of the world's most fragile and dysfunctional states.[297] The *Brookings Institution's* Index of State Weakness ranks 141 developing countries on the basis of four critical state abilities: economic growth, political institutions, security, and social welfare.[298] To measure failure, the authors of the *Failed States Index*[299] use indicators that cover a wide range of elements of the risk of state failure, such as extensive corruption and criminal behaviour, inability to collect taxes or otherwise draw on citizen support, large-scale involuntary dislocation of the population, sharp economic decline, group-based inequalities, institutionalized persecution or discrimination, sever demographic pressures, brain drain, and environmental decay. States can fail at varying rates through explosion, implosion, erosion, or invasion over different time periods.

The rank order of the states is based on the total scores of twelve indicators of state vulnerability – four social, two economic and six political. The four social indicators are: (1) Mounting demographic pressures; (2) Massive movement of refugees or internally displaced persons creating complex humanitarian emergencies; (3) Legacy of vengeance-seeking group grievance or group paranoia; and (4) Chronic and sustained human flight. The two economic indicators are: (5) Uneven economic development along group lines; and (6) Sharp and/or severe economic decline. And the political indicators are: (7) Criminalisation and/or de-legitimisation of the state; (8) Progressive deterioration of public services; (9) Suspension or arbitrary application of the rule of law and widespread violation of human rights; (10) Security apparatuses operate as a 'state within a state;' (11) Rise of factionalized elites; and (12) Intervention of other states or external political actors.[300]

For each indicator, the ratings are placed on a scale of 0 to 10, with 0 being the lowest intensity – most stable – and 10 being the highest intensity – least stable. The total score is the sum of the twelve indicators and is on a scale of 0 to 120. Countries that have scores lower than 30 are categorized as *most stable*. Countries that have scores more than 90 are considered as *critical*. The scores between them indicate that a state is *in danger*, *borderline*, or *stable*. The indicators are not designed to forecast when states may experience violence or collapse. Instead, they are meant to measure a state's vulnerability to collapse or conflict. All countries in the red (*alert,* 90 or more), orange (*warning,* 60 or more), or yellow (*moderate*, 30 or more) categories display some features that make parts of their societies and

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296 Robert I. Rotberg, "The New Nature of Nation-State Failure," *The Washington Quarterly* (Summer 2002): 85-96; Robert I. Rotberg, ed., *When States Fail: Causes and Consequences* (Princeton: Princeton University Press, 2003). See also: Jonathan Di John, "Conceptualizing the Causes and Consequences of Failed States: A Critical Review of the Literature" (London: Crisis States Research Centre, Crisis States Working Papers Series No. 2, 2008).

297 Anonymous, "Life in a Failed State" *Foreign Policy* (21 July 2009); Elizabeth Dickinson, Annie Lowrey & Joshua Keating, "Portraits of Instability" *Foreign Policy* (July/August 2009).

298 Susan E. Rice & Stewart Patrick, *Index of State Weakness in the Developing World* (Washington DC: The Brookings Institution, 2008).

299 Fund For Peace, *Failed States Index 2009* (Washington DC: The Fund for Peace, 2009).

300 Ibid.

institutions vulnerable to failure. Some in the yellow zone may be failing at a faster rate than those in the more dangerous orange or red zones, and therefore could experience violence sooner. Conversely, some in the red zone, though critical, may exhibit some positive signs of recovery or be deteriorating slowly, giving them time to adopt mitigating strategies. The Failed States Index lists only sovereign states determined by UN membership.

In 2009, 177 states were included in the *Failed States Index*, of which thirty-eight were classified as *alert*, ninety-three as *warning,* thirty-three as *moderate*, and thirteen as *sustainable*. The twenty states in worst shape among the failed states listed presently are: Somalia, Zimbabwe, Sudan, Chad, the Democratic Republic of Congo, Iraq, Afghanistan, the Central African Republic, Guinea, Pakistan, Côte d'Ivoire, Haiti, Myanmar, Kenya, Nigeria, Ethiopia, North Korea, Yemen, Bangladesh, and Timor-Leste. Of those, Somalia and Yemen are one example of a worrisome development with the thousands of Somali teenagers fleeing war and chaos of a failed state for a failing one.[301] Yemen's fragile government fears that Somali fighters from al-Shabaab will swell the ranks of Yemen's Islamist militants at a time when links between the Somali group and al-Qaeda in the Arabian Peninsula are growing. Not only could this push Yemen even deeper into a downward spiral, beset as it is by poor governance, extreme poverty, dwindling resources, mounting internal strife, a five-year-old sectarian civil war in the north, and threats of secession in the south. Yemen is re-emerging once again as a major terrorist safe haven, with Somalia for Yemen becoming what Pakistan is for Afghanistan. Al-Qaeda is now looking to use the under governed regions of Yemen as a staging ground for attacks not only in Yemen but throughout the Arabian Peninsula and the Horn of Africa, thus threatening the oil supply and the sea lines of communications into the Red Sea and the Suez Canal.

State failure directly affects a broad range of interests of developed nations, including the promotion of human rights, good governance, the rule of law, religious tolerance, environmental preservation, and opportunities for investors and exporters. State failure contributes to regional instability, weapons proliferation, narcotics trafficking, and terrorism. Failed states not only provide safe haven for terrorists, but facilitate the planning, preparation and conduct of terrorist operations, the recruitment of terrorists and supporters, the construction of training complexes, arms storage areas and communications facilities, and travel with legitimate documents. *De facto* control over territory not only permits terrorists to raise operational funds through criminal activities such as smuggling and narcotics trafficking, it also enables terrorists and organised crime networks to acquire military hardware, and to establish transhipment points for logistics support.[302]

Failed states are thus generally associated with a laundry list of tragic risks and problems: poverty, disease, famine, refugees flowing across borders, transnational

[301] An estimated 74,000 African refugees, mostly from Somalia and Ethiopia, arrived in Yemen last year, 50 percent more than in 2008, according to statistics from the Office of the UN High Commissioner for Refugees.

[302] Martin Doornbos, Silvia Roque & Susan Woodward, *Failing States or Failed States?* (Role of Development Models: Collected works, FRIDE, A European Think Tank for Global Action, 8 February 2006); Chester A. Crocker, "Engaging Failed States" *Foreign Affairs* 82, no.5 (September/October 2003).

terrorism, organised crime, proliferation, unrest, and outbreak of violence, ethnic cleansing and genocide. This is the conventional wisdom that has developed over the past two decades, and rightly so given the scale of the human tragedies in Bosnia, Somalia and Rwanda, just to mention the most egregious cases of the 1990s.

However, this prevailing view of failed states is incomplete. Failed states are not only a source of domestic calamities; they are also a potential source of great power competition that in the past has often led to confrontation, crisis, and war. The failure of a state creates a vacuum which may draw in competitive great-power intervention, particularly in strategically important regions. This more traditional view of state failure is less prevalent these days, for only recently has the prospect of great power competition over failed states returned. But the recent war in Georgia – and possible future scenarios in Iraq, Afghanistan and Pakistan as well as in Southeastern Europe, Asia and parts of Africa – provide reason to adjust the way we think about failed states and the kinds of problems these can cause.[303]

The difference between the prevailing and the traditional view on state failure is not just one of accent or nuance, but can have important policy implications. Great power conflict over the spoils of a failed state will demand a fundamentally different set of strategies and skills from developed states. While the response to humanitarian disasters following state failure tends to consist of peacekeeping and state-building missions, swift unilateral action and large-scale military intervention are the more likely strategies great powers will adopt when they compete over a power vacuum. Politically, multilateral cooperation within the setting of international institutions is feasible and desirable in case of humanitarian disasters. But multilateral cooperation may be much more difficult, perhaps impossible, when a failed state becomes an arena of great power competition.[304]

A combination of events created two interlocked impressions concerning the source of state failure that are largely accepted uncritically today. The first is that weak states have unravelled because of great power disinterest in them. This has allowed serious domestic problems, ranging from poverty to ethnic and social strife, to degenerate into chaos and systemic governance failure. The second impression post-Cold War events have created is that the main threat posed by failed states starts from within them, and then spills over to other states and regions. And this because failed states export threats ranging from crime to drugs, refugees, and to global terrorism.

As the number of failed states rose, developed states reacted much of the time by hoping that the problems arising from state failure would remain limited so that internal chaos could simply be waited out. It was the 9/11 terrorist attacks against the US which changed the perception that failed states could be safely ignored. Failed states suddenly were not only humanitarian disasters but security threats.

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[303] Jakub Grygiel, "Vacuum Wars. The Coming Competition Over Failed States" *The American Interest* (July-August 2009)

[304] Ibid.

However, 9/11 did not alter the conviction that the main threat posed by failed states stems from endogenous problems and not from great power competition over the vacuum their demise created. But this ignores the competitive nature of great power interactions. The traditional understanding of power vacuums is still relevant. The power vacuum created by failed states attracts the interests of great powers because they are an easy way to expand their spheres of influence while at the same time weakening their opponents or forestalling their intervention. A state that decides not to fill a power vacuum is effectively inviting other states to do so.[305]

Many areas are characterised by weak or collapsing states that are arenas for great power competition. The interest of great powers is not to rebuild the state or to engage in nation-building for humanitarian purposes, but to establish a foothold in the region, to obtain favourable economic deals, especially in the energy sector, and to weaken the presence of other great powers. And there exist many plausible scenarios in which a failed state could become a playground of both regional and great power rivalry. This is why failed states may pose a greater danger to international security today. Humanitarian disasters are tragedies that deserve serious attention. But they are not a threat to international security or world stability. A great power confrontation, however, poses such a threat to security and world stability. Though the past decade or so has allowed ignoring great power rivalries as the main feature of international relations, there is no guarantee that such a constellation will continue long into the future. And since there is no one-size-fits-all policy option for a given failed state,[306] humanitarian disasters carry a set of policy prescriptions that are liable to be counterproductive in an arena of great power conflict. This, because it is indeed often safer to seek to extend one's control over failed states quickly in order to limit the possibility of intervention by other great powers.

As to the result of great power competition over a vacuum created by a failed state, history suggests four basic possibilities: non-intervention by all powers; partition; unilateral preventive intervention; and war. If a failed state is too distant and ultimately strategically irrelevant, great powers may ignore it, sensing that an intervention would not increase their own power. In a way the irrelevance of a failed state would lead to the most stable situation. But there are ever fever areas of the world that fall into this category. Interconnectedness combined with growing power-projection capability of powers such as China creates incentives to intervene in even the most remote areas. That does not necessarily mean another world war over Sudan, for example. But the current concentration on issues of humanitarianism and terrorism within a failed state, and the accompanying fascination with nation-building, just seems short-sighted in the light of history.[307]

Thus, what is needed is a greater appreciation for the complexity of failed states, and a greater awareness of the possibility that humanitarian tragedies may have a

[305] Ibid.
[306] Christopher J. Coyne, "Reconstructing Weak and Failed States: Foreign Intervention and the Nirvana Fallacy" *Foreign Policy Analysis,* no.2 (2006): 343–360.
[307] Grygiel, "Vacuum Wars"

tendency to turn into larger wars. For most countries, strategic significance is a variable, not a constant. Some countries are always significant. But even countries that appear of marginal or no importance can suddenly become crucial. Afghanistan is not the only example. The lesson that should have become clear by now: No country is so insignificant that it can never become important. Obviously, the main focus should be on strategically important countries – as long as one can predict which these are.

3.4 Nation-building

Nation-building refers to the process of constructing or structuring a national identity using the power of the state. This process aims at the unification of the people or peoples within the state so that it remains politically stable and viable in the long run. Traditionally, there has been some confusion between *nation-building* and *state-building* – terms often used interchangeably in North America. Both have fairly narrow and different definitions in political science, the former referring to national identity and the latter to the institutions of the state. The debate has been clouded further by the existence of two different schools of thinking on state-building. The first, prevalent in the media, portrays state-building as an interventionist action by foreign countries. The second, more academic in origin and increasingly accepted by international institutions, sees state-building as an indigenous process.[308] In the US, however, nation-building is understood as the use of armed force in the aftermath of a conflict to promote enduring peace and establish a representative government.[309] This involves the use of armed force as part of a broader effort to promote political and economic reforms with the objective of transforming a society emerging from conflict into one at peace with itself and its neighbours. For the purpose here, this view of nation-building is more appropriate.

The post-World War II occupations of Germany and Japan were two of many US experiences with the use of military force in the aftermath of a conflict to underpin rapid and fundamental societal transformation. Both were comprehensive efforts aimed at engineering major social, political, and economic reconstruction. Their success demonstrated three things: that democracy was transferable; that societies could, under certain circumstances, be encouraged to transform themselves; and that major transformations could endure. Both Germany and Japan set a standard for post-conflict nation-building that has not been matched since.[310]

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[308] For a discussion of the definitional issues, see: Alan Whaites, *State in Development: Understanding State-building* (London: Department for International Development, Working Paper, 2008), http://www.dfid.uk/pubs/files/Expert-feedback.pdf

[309] The United Nations uses the term "peace-building" for this mission. The Bush administration labeled it "stabilization and reconstruction." Others prefer to call it "state-building," although that term is equally applied to assistance efforts that have no military component, whereas 'nation-building,' in American parlance, normally involves the use of both military and civil instruments.

[310] James L. Payne, "Did the United States Create Democracy in Germany?" *The Independent Review* XI, no.2 (Fall 2006).

Unfortunately, the expertise developed in these early post-war years has largely dissipated over succeeding decades, during which there were few occasions for nation-building. Throughout the Cold War US military interventions were either undertaken in the midst of ongoing wars, as in Korea or Vietnam, or they were short-lived, as in the Dominican Republic, Lebanon, Grenada, and Panama. It was imperative for American policy throughout these years to maintain a global equilibrium with the Soviet Union without allowing any local dispute to escalate to the level of East-West confrontation. Local conflicts were thus either frozen, or allowed to simmer as proxy wars, but were rarely permanently resolved.[311] And UN peacekeeping throughout this period consisted largely of separating combatants, patrolling and monitoring ceasefire lines, and freezing conflicts, not resolving them.

With the demise of the Soviet Union it became possible to secure international mandates, assemble broad coalitions, and employ armed force to do more than simply freeze conflicts and police ceasefires. International military interventions became more frequent and more ambitious in scope. Of the sixty-three peace operations mounted by the UN since 1945, forty-nine came after 1989. And the US, that intervened approximately once per decade throughout the Cold War, sent its troops into Kuwait, Somalia, Haiti, Bosnia, and Kosovo within a single decade.

These troop commitments were cumulative, many missions lasting longer than half a decade or still continue. But meanwhile, the objectives for these operations have expanded to include reuniting divided societies; disarming combatants and demobilizing armies; building new military, police, and judicial establishments; organising elections; installing representative governments; and promoting democratic reform and economic growth. However, as the frequency, scope, and cost of these operations grew exponentially, so did the controversy over nation-building operations.

Over the past 15 years, developed countries have 9 times deployed armed forces in the service of nation-building. And nine times they have, to one degree or another, failed to build stable, self-sustaining nations. The litany consists of Somalia, Haiti, Bosnia, Kosovo, Sierra Leone, East Timor, Liberia, Afghanistan and Iraq.[312] The best one could say is that they are work in progress. The worst: too many of them still cannot function on their own, and continue to pose threats to their own citizens, to key neighbours and the international community at large. While genuine good, both humanitarian and security-related, has come out of these efforts, the results have fallen far short of the professed objectives of the intervening powers, consumed enormous resources and political capital, and left uncertainty about the international commitment.

Nation-building is a method of unifying disparate groups into a national consensus that aims at creating a shared consciousness and experience. It

[311] James F. Dobbins, *Nation-Building and Counterinsurgency after Iraq* (Washington DC: The Century Foundation, A Century Foundation Report, 2008), 4.
[312] Devvy, "Congress' August Recess: Mobilize America!" *NewsWithViews.com*, 30 July 2007.

attempts to bring into a coherent and convergent form what was opposite and diffuse. But as the conflicts in Iraq and Afghanistan show, nation-building confounds its architects' designs with almost predictable regularity, despite the enormous investments in resources, time, and specialised knowledge. All efforts to enable large-scale political engineering have failed. Instead, nation-builders have been frustrated by a proliferation of unintended consequences and their inability to elicit societal participation in these projects. Both examples also show that results depend more upon initial conditions prior to an intervention than the nation-builder's exertions upon arrival. Forces trying to impose regime change and raise new state structures immediately grapple with societal inertia and own deficits in understanding local politics.

These patterns raise doubts about the chances of success in even well-intentioned endeavours of regime-change. They demarcate clear limits to the projection of state power abroad, whether for humanitarian or security purposes. The failures of imposed regime-change lead to the conclusion that indigenous gradual political development may be a more appropriate path for sustainable democratization and state-building – despite its potential for authoritarianism and civil unrest. Local government plays a vital role in the nation-building process. Being the closest institution to the citizens, local government must espouse the principles upon which a nation is to be built. And it has to support the nation-building aims. When it does not, it will amount to an ostensible threat to the nation-building premise.[313]

A more productive direction for nation-building may be found by reassessing the core problem of weak states and the limits of foreign intervention. To ensure a positive impact on the country of intervention requires a reorientation of the enterprise – away from the takeover of state functions toward the short-term provision of aid and support to local communities. Instead of applying coercive power or making an impact as infrastructural power a third kind of influence should be envisioned: regenerative power – as exercised during relief efforts, such as emergency assistance following natural disasters. Regenerative power involves neither the adoption of domestic state functions nor physical coercion but denotes the ability of a state to develop infrastructure under the direction of the local population. Regenerative power turns contemporary nation-building on its head. Participants in the intervention must respond to the needs of the affected community instead of imposing a blueprint from outside and from above. Thus, it is restorative rather than transformative. There is no pre-existing master plan for what the "final product" will be, but rather an organically evolving process in which the majority of assisting groups serves at the direction of the people they are assisting.[314]

Applying regenerative power is more limited in scale because it builds on local engagement rather than elite planning. While inimical to macro-level ambitions, it is capable of acquiring a bounded effectiveness that is obviously lacking in

[313] Jason M. Brownlee, "Why Nation Building Is a Known Unknowable," *Encina Columns, FSI Stanford, CDDRL Op-ed,* 8 January 2005.
[314] Ibid.

imposed regime-change. In contrast to nation-building, which aims first at overwriting existing organisation and only subsequently at incorporating local understanding and ownership, disaster relief efforts and regenerative projects are from the very beginning based on the assumption that local communities know best their own needs. Existing social networks and patterns of authority are an asset, not a hindrance, and local know-how offers the principal and often only tool for resolving local crises. Thus, regenerative power starts from an interest in using state power for constructive purposes, and a sober assessment of the limits of that aim rather than pursuing the often destructive delusion of interventionist state transformation. By following the regenerative power approach, the assisting foreign groups serve under the direction of indigenous political leaders toward the achievement of physical reconstruction and emergency service provision.[315]

The ongoing operations in Iraq and Afghanistan support this insight. Proponents of nation-building or shared sovereignty arrangements have exaggerated the ability of powerful states to foster institutions in developing countries. The empirical record, from successful outcomes in Germany and Japan to dismal failures across the global south, shows the societies alleged to be most in need of strong institutions have proven the least tractable for foreign administration. Rather than transmitting new modes of organisation, nation-builders should rely upon existing structures for governance.

Nation-building has become quite controversial because the US-led occupation of Iraq has been marked by a myriad of unforeseen challenges and hastily improvised responses. Yet, Iraq was the seventh major US intervention in more than a decade, having been preceded by operations in Kuwait, Somalia, Haiti, Bosnia, Kosovo, and Afghanistan. Of those seven societies, six are Muslim, Haiti being the sole exception. At the commencement of the Iraq occupation, therefore, no military of developed states had more experience managing large nation-building enterprises than did the US. Unfortunately, neither the US armed forces nor the government had made a systematic attempt over more than a decade to reflect on the experiences of those earlier operations and apply the lessons for what was the biggest and most difficult challenge: Iraq.

This attitude has changed by now. The US administration has acknowledged early missteps in Iraq, and has begun to put in place institutional arrangements designed to ensure a more professional approach to such contingencies in the future. Other governments have set up similar structures, so the UK, the Canadian, and the Australian government. And the UN has established the Peace-building Commission for the same purpose. These initiatives are premised on the view that nation-building has become an unavoidable burden, that its practitioners and all those participating in nation-building need to do a better job of applying the lessons from prior missions to an evolving doctrine for the conduct of future ones, and that enough cadres of experts must build that are available to go from one operation to the next. A RAND study contributed to that effort by reviewing the lessons learned in US nation-building efforts,

[315] Ibid.

comparing seven cases: Germany, Japan, Somalia, Haiti, Bosnia, Kosovo, and Afghanistan.[316] This study on the lessons learned came to eight conclusions:

(1) Several factors influence the ease or difficulty of nation-building: prior democratic experience, the level of economic development, and national homogeneity. However, among controllable factors, the most important determinant is the level of effort – measured in time, manpower, and money.

(2) Multilateral nation-building is more complex and time-consuming than unilateral efforts, but is also considerably less expensive for each participating country.

(3) Multilateral nation-building can produce more thorough transformations and greater regional reconciliation than can unilateral efforts.

(4) Unity of command and broad participation are compatible if the major participants share a common vision and can shape national institutions accordingly.

(5) There appears to be an inverse correlation between the size of the military stabilization force and the level of risk. The higher the proportion of stabilizing troops, the lower the number of casualties suffered and inflicted. Indeed, most adequately manned post-conflict operations suffered no casualties.

(6) Neighbouring states can exert significant influence. It is exceptionally difficult to put together a fragmented nation if its neighbours are trying to tear it apart. Every effort should be made to secure their support.

(7) Accountability for past injustices can be a powerful component of democratisation. It can also be among the most difficult and controversial aspects of any nation-building endeavour and should, therefore, be attempted only if there is a deep and long-term commitment to the overall operation.

(8) There is no quick route to nation-building. Five years seems the minimum required to enforce an enduring transition to democracy.

In any post-war mission, there is a hierarchy of military and civilian tasks that need to be performed. Those leading the intervention will need to: (1) establish a secure environment; (2) begin building down the army and building up the police force; (3) begin addressing basic human needs for food, medical care, and shelter; (4) restore basic public services to include power, water, hospitals, schools, and sanitation; (5) reopen markets, resume domestic and international trade, stabilize the currency, and create an indigenous capacity to gather and spend revenue; (6) promote political reforms leading eventually to elections and the formation of a

[316] James Dobbins, et al., *America's Role in Nation-Building: From Germany to Iraq* (Santa Monica: RAND Corporation, 2003).

representative government; and (7) initiate longer-term economic development, including the improvement of physical infrastructure.[317]

These tasks are listed in priority order, but they are not necessarily sequential. Indeed, given adequate manpower and money, they may all take place simultaneously. It is essential to provide adequate resources to higher-level tasks before turning to the lower, however, since money spent on the latter will ultimately be wasted if the former are not adequately funded and manned.

The ultimate objective of any nation-building mission is to leave behind a society likely to remain at peace with itself and its neighbours, once external military and security forces are removed and sovereignty is fully restored. Some level of democratization and economic development is essential for achieving this desired result. However, neither endeavour can ensure peace, and both, if pushed injudiciously, can exacerbate rather than ameliorate the tendency toward renewed violence so prevalent in post-conflict societies. If peace is to be created, the maintenance of security is essential. Only when a modicum of security has been restored do prospects for democracy and sustained economic growth brighten. There are two setbacks that must be avoided. If the military stays too short a time, expectations of a dependable peace for the foreseeable future may not develop, and thus it is unlikely that people will invest in the future. If, on the other hand, the foreign armed and security forces stay too long, people will rely on the security provided by outsiders and fail to develop their own institutions for providing it.[318]

Most nation-building operations have fallen into two categories. One is peacekeeping missions that have been undertaken on the basis of prior agreement among the warring parties. Constituting the second category are peace enforcement operations that have been launched despite the opposition of one or more indigenous factions. Interventions of the first type have typically been led by the UN while those of the second type have been led either by a major global power or by a regional power. The difference between these categories is that peace enforcement operations may require up to ten times more personnel and financial means than do peacekeeping operations.[319]

Full-scale peace enforcement actions are feasible only when the authorities of the intervening forces really care about the outcome, and even then only in relatively small countries and societies. Thus, the efforts needed to stabilise Bosnia and Kosovo have proved difficult to replicate in Afghanistan or Iraq, nations that are between eight and twelve times more populous. It would be more difficult to launch a peace enforcement operation in Iran, a country three times more populous than Iraq. And it may well be nearly impossible to do so in Pakistan since that country is three times more populous than Iran. Considerations of scale therefore suggest that the transformational objectives of intervention in larger

[317] James F. Dobbins, *Nation-Building and Counterinsurgency after Iraq* (New York: The Century Foundation, A Century Foundation Report, 2008), 15–16.
[318] James F. Dobbins, Seith G. Jones, Keith Crane & Beth Cole DeGrasse, eds., *The Beginner's Guide to Nation-Building* (Santa Monica: RAND Corporation, RAND History of Nation-Building, 2007), xxxvi–xxxvii.
[319] Ibid., xxxvii.

societies need to be sharply restrained on account of the more modest resources, relative to the population, likely to be available for a really successful outcome.[320]

3.5 Individual rights versus collective security

It is notoriously difficult to balance individual rights with collective security needs. There is an unavoidable tension between the two. The task of finding this balance is rendered more crucial by the emergence of new sources of tension in security sector governance, largely, though not exclusively, springing out of the "Global War on Terror." 9/11 has triggered a paradigm shift towards the protection of citizens as first priority – their lives rather than their rights. Ever since the delivery of security seems increasingly at odds with the rule of law, transparency, and the protection of human rights, especially with regard to immigration policies and violation of civil liberties, such as infringements of the right to privacy, discrimination policies, detentions, etc. But as grave the terrorist threat is, it is essential to remember that human rights remain inalienable, and that the fight against terrorism must always be fought with legal means used to combat all forms of crime. And equally important: international humanitarian law must be applied in all situations and without exception by all parties to armed conflict and also by private individuals.

The core institutions of American democracy continue to grapple with the issues raised by the Bush administration's counterterrorism agenda, particularly the assertion of enhanced authority by the executive branch. While actions of the US administration have met with scepticism from different quarters, the most significant pushback has come from the media and the judiciary. The media continues to ask probing questions about the consequences of antiterrorism policies, publicize acts of injustice against individuals or groups, and assess the effectiveness of administration efforts. For its part, the judiciary has forced the US government to adjust or even reverse course on some aspects of counterterrorism policy while at the same time validating other initiatives. Congress, though at times sharply critical of the policy of the administration, in contrast, has been reluctant to challenge the president on national security issues.[321]

Yet even now, nine years after 9/11, the impact of the Bush administration's policies on the civil liberties of Americans remains unclear. This is due in part to attempts by the US administration to limit public knowledge of its actions on national security grounds. At the same time, the proposition that, as some critics have said, counterterrorism policies are placing fundamental freedoms in jeopardy, and leading to massive violations of civil liberties, seems to be an overstatement of current conditions, especially when viewed in historical context. Constitutional protection of civil liberties, including the rights of immigrants, is proving much more resilient than in past periods of conflict. Despite a high degree of political polarisation, critics of the US administration's policies have been free to express their views in the media, on the Internet, and through many public protests. Civil

[320] Ibid., xxxviii.
[321] Freedom House, *Today's American: How Free?* (London: Freedom House Report, 30 May 2008).

libertarians and other critics have not been subject to prosecution, surveillance, or witch hunts. Indeed, careful scrutiny of civil liberties in the US reveals how much the country has changed since earlier times of war or crisis.

In assessing America's performance since 9/11, one must also keep in mind the dramatically new nature of the challenge that America and other democracies are facing in the rise of jihadist terrorism: an amorphous, stateless and stealthy enemy that cannot be dealt with using military means alone. Even if we put aside the American case, it is clear that the new breed of terrorists is forcing all democratic societies around the world to consider adjustments in both the law and the techniques of national security. Aggressive police and intelligence techniques are needed to deal with this threat – techniques that are more intrusive and clandestine in nature, and likely to abrogate individual liberties. Throughout Europe, democratic governments have responded to the terrorist threat, although in various degrees, by tightening antiterrorism laws, expanding the surveillance powers of the state, adding restrictions to the asylum and immigration process, and enabling the deportation of immigrants who, through action or word, seem to support terrorism.

Taking into account the nature and likely longevity of the terrorist threat, it is incumbent upon all facets of society to insure that a delicate balance between civil liberties and security is upheld, such that security is maintained and liberties are not trampled on. The government, the media, civil society, and the public have roles to play in this quest. The executive branch has to ensure that the public understands that the nation faces a different threat, and thus needs new methods to deal with it. It needs to convince the people that there is a premium to pay for protecting them, a premium that may require some curtailment of liberties.[322] The executive as well as the legislature have to develop counterterrorism programs and techniques that are effective and narrowly tailored, thus not unnecessarily affecting large segments of society. And these need to be reviewed constantly to insure effectiveness and impact. The legislative can play a critical role in making laws, by reviewing the programs through its oversight process, and undertaking investigations they feel necessary to ensure that the program is carried out efficiently and effectively to protect the citizens while safeguarding their liberties. The courts also have an important role to play as the protectors of the constitution. Judicial review of government programs is essential to ensure that civil liberties are not unnecessarily affected.

The search for new methods and techniques to counter terrorism is resulting in a steadily growing range of means which improve surveillance. Years ago, surveillance meant trench-coated detectives following people down streets. Today's detectives are more likely sitting in front of a computer, and the surveillance is electronic. It is cheaper, easier, and safer. But it is also much more prone to abuse. It is therefore essential to strike the right balance between a country's concept of freedom and its need for security. In a world of cheap and

[322] See: Neil Robinson, Dimitris Potoglou, Chong Woo Kim, Peter Burge & Richard Warnes, *Security, At What Cost?,* Quantifying people's trade-offs across liberty, privacy and security (Santa Monica: RAND Corporation, RAND Europe, Technical Report, 2010).

easy surveillance, this raises the question of the extent to which guarantees of security in a society may entail restrictions on fundamental freedoms.

Surveillance is the monitoring of the behaviour, activities, or other changing information, usually of people and often in a surreptitious manner. Surveillance refers to the observation of individuals or groups by government agencies, law enforcement, or private security organisations from a distance by means of electronic equipment, interception of electronically transmitted information, human intelligence agents, and postal interception, etc. Surveillance is useful for maintaining social control and public security, for recognizing and monitoring threats, and for preventing or investigating terrorist, criminal, and other harmful activities. There are at least fourteen different types of surveillances, ranging from computer and network surveillance; telephone interception; surveillance cameras; social network analysis; biometric, aerial and satellite surveillance; data mining and profiling; corporate surveillance; identification and credentials; geolocation devices; human operatives; and other surveillance devices like malicious software or bugs.

Computer and network surveillance involves in vast majority the monitoring of data and traffic on the Internet.[323] Since there is far too much data on the Internet for investigators to manually search through all of it, automated Internet surveillance computers sift the intercepted Internet traffic, and filter out those bits of information which are interesting – by use of certain key or "trigger" words and phrases, visiting certain types of websites, or tapping into e-mail, chat or VoIP communications. In the US, for example, under the "Communications Assistance For Law Enforcement Act", all phone and Internet traffic – e-mails, web traffic, instant messaging – are required to be available for unimpeded real-time monitoring by law enforcement agencies. To various degrees this is also the case in other democratic countries. Computers communicate over the Internet by breaking up messages – e-mails, images, videos, files, web pages, and so forth – into small chunks called "packets." These are routed through a network of computers, until they reach their destination, where they are reassembled into a complete message. All US telecommunication providers are required to install "packet sniffing" programmes to intercept all of their customers' broadband Internet traffic. Computers are also a surveillance target because of the personal data stored on them. Surveillance by TEMPEST means can read electromagnetic emanations from a distance of hundreds of meters.[324] Another method is "cracking" into the computer and install surveillance malware remotely.

Official and unofficial *tapping of telephone lines and mobile phones* is widespread in most countries. Human agents are not required to monitor most calls. Speech-to-text software creates machine-readable text from intercepted audio, which is then processed by automated call-analysis programs searching for certain words or phrases to decide whether to dedicate a human investigator to the call. Law enforcement and intelligence agencies in a number of countries possess

[323] Whitfield Diffie & Susan Landau, "Internet Eavesdropping: A Brave New World of Wiretapping" *Scientific American* (August 2008).
[324] Joel McNamara, "Complete, Unofficial Tempest Page", http://www.eskimo.com/~joelm/tempest.html

technology to remotely activate the microphones in cell phones, by accessing the phone's diagnostic or maintenance features, in order to eavesdrop into conversation that take place nearby the person holding the phone.[325] Cellular phones are also commonly used to collect location data. The geo-location of a mobile phone, and thus the person carrying it, can be determined easily, whether it is in use or not, using a technique known as multilateration to calculate the differences in time for a signal to travel from the phone to each of several cell towers near the owner of the mobile.[326]

Surveillance cameras are video cameras used for observing and monitoring public and private spaces, especially through the application of closed circuit television CCTV. These are often connected to a recording device, IP network, or watched by a law enforcement officer or a security guard. Analysis is made easier by automated software that organises digital video footage into a searchable database, and by automated video analysis software. The amount of footage can be drastically reduced by motion sensors which only record when motion is detected. Use of surveillance cameras by governments and businesses has dramatically increased. In the UK, for example, there are more than 4.2 million surveillance cameras[327] – one camera for every fourteen people. CCTV cameras enhanced with facial recognition capacities, such as the Mandrake system in south London, can identify terrorists, subversives, extremists, criminals, and hooligans. Already at the Super Bowl XXXV in January 2001, police in Tampa Bay, Florida, used Identix's facial recognition software *FaceIt,* to scan the crowd for potential criminals and terrorists in attendance at the event, and found nineteen people with pending arrest warrants.[328]

Another common form of surveillance is to create *maps of social networks*. A social network is a social structure made of individuals or groups called "nodes", which are tied or connected by one or more specific types of interdependency, such as friendship, kinship, financial exchange, dislike, sexual relationships, or relationships of beliefs, knowledge or prestige. Maps are based on data from social networking sites such as *Facebook* with over 350 million users, *MySpace*, *Twitter*, *Bebo*, *Orkut*, *Skyblog*, *Friendster, QQ, His.com*, and so forth, on blogs, Internet chats as well as from traffic analysis information from phone call records and Internet traffic data, or groups that regularly visit certain sites. These social network "maps" are then data mined to extract useful information such as personal interests, friendships and affiliations, want, beliefs, thoughts, and activities.[329] Many US government agencies and the intelligence community are investing

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[325] Declan McCullah & Anne Broache, "FBI taps cell phone mic as eavesdropping tool," *CNet News,* 1 December 2006; Kevin Coughlin, "Even if they're off, cellphones allow FBI to listen in," *The Seattle Times,* 13 December 2006; Joshua Miller, "Cell Phone Tracking Can Locate Terrorists – But Only Where It's Legal," *FOX News,* 14 March 2009.

[326] Kim Zetter, "Privacy, Crime and Security Online Feds 'Pinged' Sprint GPS Data 8 Million Times Over a Year" *Wired Magazine: Threat Level*, 1 December 2009.

[327] Anonymous, "Britain is surveillance society," *BBC News*, 2 November 2006.

[328] K. Bonsor, "How Facial Recognition Systems Work," http://computer.howstuffworks.comFacial-recognition.htm. See also: Scott McNealy, "Privacy is (Virtually) Dead," http://www.jrnyquist.com/aug20/privacy.htm

[329] Christian Fuchs, *Social Networking Sites and the Surveillance Society. A Critical Case Study of the Usage of studyVZ, Facebook, and MySpace by Students in Salzburg in the Context Of Electronic Surveillance* (Salzburg and Vienna: Forschungsgruppe Unified Theory of Information, 2009).

heavily in research involving social network analysis because they believe that the biggest threat to US power comes from decentralised, leaderless, geographically dispersed groups of terrorists, subversives, and extremists. These types of threats are most easily countered by finding important nodes in the network, and removing them. To do this requires a detailed map of the network.[330]

Biometric surveillance refers to technologies that measure and analyze human physical and behavioural characteristics for authentication, identification, or screening purposes. Examples of physical characteristics include fingerprints, iris-retina data, DNA, and facial patterns, while examples of behavioural characteristics include gait – a person's manner of walking – or voice. Another form of behavioural biometrics, based on affective computing, involves computers recognizing a person's emotional state based on an analysis of their facial expressions, how fast they are talking, the tone and pitch of their voice, their posture, and other traits. This is used to see if a person is acting "suspicious."[331] Facial thermographs are currently in development, which allow machines to identify certain emotions in people such as fear or stress, by measuring the temperature generated by the blood flow to different parts of the face.[332]

Aerial surveillance is the gathering of surveillance, usually visual imagery or video, from satellites and airborne vehicles, such as unmanned aerial vehicles UAV, helicopters, or spy planes. Digital imaging technology, miniaturized computers, and numerous other technological advances over the past decade have contributed to rapid advances in aerial surveillance hardware such as micro-aerial vehicles, forward-looking infrared and high-resolution imagery capable of identifying objects at long distances. For example, the MQ-9 Reaper, a US UAV or drone currently used for domestic operations by the Department of Homeland Security, carries cameras that are capable of identifying an object of the size of a milk carton from altitudes of 10,000 meters, and has forward-looking infrared devices that can detect the heat from a human body at distances of up to 60 kilometres.[333] Such UAV are used to patrol the skies over the US for the purpose of critical infrastructure protection, border patrol, "transit monitoring", and general surveillance of the population. Law enforcement use UAV for traffic control and in SWAT operations. Satellite, aircraft, and UAV sensors are able to penetrate cloud cover, detect chemical traces, and identify objects in buildings and underground bunkers, and provide real-time video at much higher resolutions than the still-images available on Google Earth.

Data mining is the application of statistical techniques and programmatic algorithms to discover previously unnoticed relationships within the data, while data profiling is the process of assembling information about a particular individual or group in order to generate a profile: a picture of their patterns and behaviour. Data profiling can be an extremely powerful tool for psychological and

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[330] Paul Marks, "Pentagon sets its sights on social networking websites" *New Scientist* (9 June 2006); Dawn Kawamoto, Is the NSA reading your MySpace profile?" *CNET News*, 9 June 2006.

[331] James Vlahos, "Surveillance Society: New High-Tech Cameras Are Watching You," *Popular Mechanics*, January 2008.

[332] Randy Dotinga, "Can't Hide Your Lying … Face?" *Wired Magazine*, 14 October 2004.

[333] Michael Fickes, "Automated Eye In The Sky" *GovernmentSecurity.com*, 1 October 2004.

social network analysis. A skilled analyst can discover facts about a person that they might not even be consciously aware of themselves.[334] Every use of a bank machine, payment by credit card, use of a phone card, call from home, checked out library book, rented video, or otherwise complete recorded transaction generates an electronic record. Public records – such as birth, court, tax and other records – are increasingly being digitized and made available online. Electronic record-keeping makes data easily collectable, storable, and accessible, so that high-volume, efficient aggregation and analysis is possible at significantly lower costs. In addition to its own aggregation and profiling tools, governments are able to access information from third parties – banks, credit companies, employers, driver's licensing agencies, hospital and school records, and so forth, – by requesting access informally, by compelling access through other procedures, and also by purchasing data from commercial data aggregators or data brokers.

Corporate surveillance is the monitoring of a person or group's behaviour by a corporation. The data collected is most often used for marketing purposes or sold to other corporations, but is also regularly shared with government agencies. Database marketing is a multi-billion dollar industry that seeks personal data on consumers' spending habits, preferences, and lifestyles in order to profile and track current and potential customers in many distinct realms of life. It can be used as a form of business intelligence, which enables the corporation to better tailor their products or services to be desirable by their customers. Or it can be used for direct marketing purposes, such as the targeted advertisements on *Google* and *Yahoo*, where ads are targeted to the user of the search engine analyzing their search history and e-mails. Google, for example, the world's most popular search engine, stores identifying information for each web search. An IP address and the search phrase used are stored in a database for up to 18 months. Each page containing Google ads adds, reads, and modifies "cookies" on each visitor's computer. These cookies track the user across all of these sites, and gather information about their web surfing habits, keeping track of which sites they visit, and what they do when they are on these sites. Governments even gather information from "discount card" programmes, which track customers' shopping patterns and store them in their databases, in order to look for terrorists by analysing shoppers' buying patterns.[335]

A simple form of identification is the carrying of *credentials*. Some nations already introduced biometric passports or have an identity card system to aid identification while others, such as Britain, face public opposition to the introduction of identity cards. Other documents, such as driver's licenses, library cards, bank or credit cards are also used to verify identity. If the form of these cards is machine-readable, usually using an encoded magnetic stripe or identification number such as the social security number that corroborates the subject's identification data, then it creates a document trail when it is checked and scanned, which can be used in profiling.

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[334] Mireille Hildebrandt & Serge Gutwirth, *Profiling the European Citizen: Cross Disciplinary Perspectives* (Dordrecht: Springer, 2008).

[335] Kelley Vlahos, "Store Customer Cards a Source for FBI?" *FOX News*, 1 August 2002.

As mentioned, cell phones can easily be geolocated. *Radio Frequency Identification* (RFID) tagging can be used for the same purpose: very small electronic devices which are applied to, or incorporated into, a product, animal or person for identification and tracking using radio waves. The tags can be read from several meters away. They are so cheap that they can be inserted into many types of everyday products without increasing the price, and can be used to track and identify these objects for a variety of purposes. Many companies are "tagging" their workers, who are monitored while on the job. In some countries, police forces plant hidden GPS tracking devices in vehicles of suspects to monitor their movements with the help of satellites.

Human operatives are used for the infiltration and surveillance of terrorist groups, or to put pressure on certain members of the target organisation to act as informants. The information recovered from operatives can often be verified by wide-reaching electronic surveillance tools. Hidden surveillance devices or 'bugs' are used to capture, record and transmit data to a receiving party such as a law enforcement agency. And *interception of post* is still an available option for law enforcement and intelligence agencies, in certain circumstances.

Billions of dollars per year are spent by agencies such as the US National Security Agency, the US Geospatial Intelligence Agency, the Defence Advanced Research Projects Agency, the Information Awareness Office, the Information Processing Technology Office, the Department of Homeland Defence, and the FBI, to develop, purchase, implement, and operate systems such as *Carnivore*,[336] *NarusInsight,*[337] *Echelon,*[338] the *Total Information Awareness* program,[339] *Advise*,[340] *Talon*,[341] and so forth, to collect, intercept and analyze all of this data, and extract only the information which is useful to intelligence and law enforcement agencies. Such programmes have led individuals and groups to fear that society is moving towards a state of mass surveillance with severely limited personal, social, and political freedoms. Some critics believe that in addition to its obvious function of identifying and capturing individuals who are committing undesirable acts, surveillance also functions to create in everyone a feeling of always being watched, so they become self-policing. This allows the state to control the populace without having to resort to physical force, which is expensive and otherwise problematic.

Numerous civil rights and privacy groups oppose surveillance as a violation of people's right to privacy. This has led to recommendations of the Council of Europe Parliamentary Assembly on Democratic oversight of the security sector in member states.[342] Moreover, acting upon mounting critiques, the UN Human

[336] Designed to monitor e-mail and electronic communications using packet sniffers.
[337] A supercomputer system used by NSA for mass surveillance of Internet communications.
[338] Signals intelligence collection and analysis network operated by Australia, Canada, New Zealand, the UK and the US, capable of interception and content inspection of phone, fax, e-mail, microwave and satellite communications globally.
[339] In-depth research on strategies to analyze social networks to determine whether or not citizens are political threats.
[340] Analysis, Dissemination, Visualization, Insight, and Semantic Enhancement: a massive data mining program within the US Department of Homeland Security Threat and Vulnerability Testing and Assessment portfolio, which can store one quadrillion data entities.
[341] Threat and Local Observation Notice: a database maintained by the US Air Force to collect and evaluate threats to personnel and overseas military installations.
[342] See Recommendation 1713 of 2005, http://assembly.coe.int/Documents/AdoptedText/ta05/EREC1713.htm

Rights Council published a critical report that highlights several concerns regarding the protection of the right to privacy in the fight against terrorism.[343] The report states that article 17 of the International Covenant on Civil and Political Rights is flexible enough to enable necessary, legitimate and proportionate restrictions to the right to privacy, but it should be interpreted as containing elements of a permissible limitations test. It calls upon states to justify why a particular aim is legitimate justification for restrictions upon article 17, and upon the Human Rights Committee to adopt a new general comment on the article.

The report states that the erosion of the right to privacy is taking place through the use of surveillance powers and new technologies, which are used without adequate legal safeguards. States have endangered the protection of the right to privacy by not extending pre-existing safeguards in their cooperation with third countries and private actors. These measures have not only led to violations of the right to privacy, but also have an impact on due process rights and the freedom of movement – especially at borders – and can have a chilling effect on the freedom of association and the freedom of expression. Without a rigorous set of legal safeguards and means to measure the necessity, proportionality and reasonableness of the interference, states have no guidance on minimising the risks to privacy generated by their new policies.[344]

The report further states that the Special Rapporteur is concerned that what was once exceptional is now customary. First, states no longer limit exceptional surveillance schemes to combating terrorism and instead make these surveillance powers available for all purposes. Second, surveillance is now engrained in policymaking. Critics of unwarranted surveillance proposals must now argue why additional information must not be collected, rather than the burden of proof residing with the state to argue why the interference is necessary. Third, the quality and effectiveness of nearly all legal protections and safeguards are reduced. This is occurring even as technological change allows for greater and more pervasive surveillance powers. Most worrying, however, is that these technologies and policies are being exported to other countries and often lose even the most basic protections in the process.[345]

International legal standards must be developed to ensure against these forms of abuse. This would be aided by adherence to principles outlined in the UN report, including ensuring that surveillance is as unintrusive as possible and that new powers are developed with appropriate safeguards and limitations, effective oversight and authorization, regular reporting and review, and are accompanied by comprehensive statements regarding the impact on privacy. The general public and legislature have rarely had the opportunity to debate whether anti-terrorism

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[343] Martin Scheinin, *Promotion and Protection of all Human Rights, Civil, Political, Economic, Social and Cultural Rights, including the Right to Development. Report of the Special Rapporteur on the promotion and protection of human rights and fundamental freedoms while countering terrorism* (Geneva: Human Rights Council, 13th session, agenda item 3, A/HRC/13/37, 28 December 2009); Anonymous, "Uno-Kritik an Terrorabwehr, Ruf nach Schutz der Privatsphäre" *NZZ*, 22 January 2010, 7.

[344] Ibid.

[345] Ibid.

powers are necessary or reasonable. The emergent good practices and the recommendations contained in the report may prove beneficial to all.[346] But it will take time to establish the proper relationship between security and liberty in a time of terrorism and growing organised crime.

Moreover, on 26 January 2010, two independent UN experts on counterterrorism and torture, and two UN expert bodies on arbitrary detention and enforced or involuntary disappearances issued a wide-ranging study on states' use of secret detention in connection with counterterrorism activities.[347] The 222-page study, while stressing that it is 'not exhaustive,' lists a total of sixty-six states. Some are mentioned in the context of a historical analysis of secret detention practices prior to 9/11, but most in connection with secret detention and related activities – including so-called "proxy detention" and "rendition or extraordinary rendition" – over the past 9 years of the "Global War on Terror."

The UN experts conclude that "secret detention is irreconcilably in violation of international human rights law including during states of emergency and armed conflict. Likewise, it is in violation of international humanitarian law during any form of armed conflict." Secret detention effectively takes people outside the legal framework and renders the safeguards contained in international instruments, including *habeas corpus*, "meaningless." It also notes that "in spite of these unequivocal norms, secret detention continues to be used in the name of countering terrorism around the world." The report makes a series of recommendations that cover both law and practice, and are designed to improve transparency and accountability, as well as to provide judicial remedies, reparations and rehabilitation to victims, and in some cases to their families.[348]

3.6 Effective multilateralism in development cooperation

Multilateralism is a term in international relations that refers to multiple countries working in concert on a given issue. Threats spill across borders. Just as the world's people have become more interdependent, so have the issues. No nation can deal with them alone. What is needed is a new multilateralism – one that couples power with pragmatic principle, recognizing that in an interconnected world the well-being of any one nation depends, to an increasing degree, upon the well-being of all. When nations agree on and coordinate policies, there is a greater sense of international legitimacy. Sanctions, peacekeeping, and other international actions are more effective when multiple countries participate. And never has the world needed effective multilateralism more than today. As governments around

[346] Ibid., 60-74.

[347] *Joint study on global practices in relation to secret detention in the context of countering terrorism of the Special Rapporteur on the promotion and protection of human rights and fundamental freedoms while countering terrorism, the Special Rapporteur on torture and other cruel, inhuman or degrading treatment or punishment, the Working Group on Arbitrary Detention and the Working Group on Enforced or Involuntary Disappearances,* Geneva: Human Rights Council, 13th session, Agenda item 3, A/HRC/13/42, 26 January 2010, http://www2.ohchr.org/english/bodies/hrcouncikl/docs/13session/a-hrc-13-42.DOC

[348] Ibid.

the world struggle to cope with the effects of the global economic and financial crises, it has become obvious that global solutions are required.

Multilateral cooperation in development can be made much more successful if all the participants agree on the following issues: Aid is just one element of the larger process of development. It needs to be managed in parallel with other elements, such as trade and foreign investment. Sustainable economic growth is a key criterion. Moreover, local capacity-building, ownership and empowerment are imperative for the success of development. And budget support is the most effective way of disbursing large-scale aid to recipients, while keeping in mind and controlling the potential for corruption. It is the recipient countries that must be held fully responsible for coordinating donors and developing themselves. Donor countries must coordinate their aid policies with other domestic priorities, and with other donors before disbursing their funds. Coordination among donors remains important, especially between the US and the EU with its member states, which together provide 80 percent of all international development aid. By coordinating within a donor country before money is disbursed, and then by common international agreement funnelling this money through one place at the recipient end, a lot of wastage can be eliminated.

The Millennium Development Goals should be reaffirmed at both the donor and the recipient ends. Even though the goals have limitations and are not easily deliverable, their appeal is an important political motivation.[349] Competition and coordination among donors have to be encouraged in order to raise standards. To ensure future support, focus should be placed on adequately demonstrating successes to donor country tax-payers. Politicians in donor countries need to convince their own voters on the significance of development aid. And the growth of mechanisms whereby recipient country citizens can hold their governments accountable should be supported by all. The 'aid business,' however, must be eradicated. Particularly those parts in which too large a percentage of available funds go to foreign staff, overheads, and marketing in donor organisations, which is wasteful and undermines local ownership. Furthermore, all should take a long and hard look at the performance and role of multilateral agencies.[350]

Donors should take care, first of all, to do no harm in the particular local context. They have to implement strategies that have already been agreed, for instance the Paris Declaration and the Accra Accord. They have to recognize the differences between countries and avoid inflexible models. They should also be prepared, at least some of the time, to take risks to achieve better results. And they should concentrate on fewer recipients, reflecting their interests, and thereby manage their development aid funds more efficiently across a narrower range.[351]

It is clear that development policies and practices need thorough re-examination. However, aid to developing countries remains vital and cannot be phased out.

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[349] *United Nations Millennium Declaration*, General Assembly resolution 55/2, 8 September 2000, http://www2.ohchr.org/english/law/millennium.htm

[350] Is development aid producing effective results? A Note by the Director, Ditchley 2009/07, 11–13 June 2009, http://www.ditchley.co.uk/page/347/developmen-aid.htm

[351] Ibid.

There are different ways of making it more effective, but the most important first step is to hand responsibility and ownership clearly over to the recipient. External assistance is never going to be as significant a factor as the capacity of each country or community to drive itself forward.

Multilateralism is also working and ever more important in domains beyond direct development aid. International organisations are multilateral in nature, and able to mobilize resources and expertise on a scale and at a cost that no individual country can provide. The main proponents of multilateralism have traditionally been middle powers such as Canada, Australia, the Benelux and the Nordic countries. Larger states too often are temped to act unilaterally, while the smaller ones may have little direct power in international affairs aside from participation in the UN.

The promotion of effective multilateralism is a key element in the external relations of the EU. The European Security Strategy called for Europe to contribute to a more effective multilateral order around the world. Since 2003, the EU has strengthened partnerships in pursuit of that objective. The US is the key partner for Europe in this and other areas. Where they have worked together, they have been a formidable force for good in the world.[352]

For the EU, the UN stands at the apex of the international system. Everything the EU has done in security and development has been linked to UN objectives. Since a number of years the EU and the UN work closely together in key theatres like Kosovo, Afghanistan, the Democratic Republic of Congo, Sudan, Chad, and Somalia, and the EU has improved institutional links in line with the joint EU-UN Declaration of 2007.[353] Moreover, the EU supports all sixteen current UN Peacekeeping operations.

But the international system, created at the end of World War II, faces pressures on several fronts. Representation in the international institutions has come under question. Legitimacy and effectiveness need to be improved, and decision-making in multilateral fora made more efficient and transparent. This means sharing decisions more, and creating a greater stake for others. Faced with common problems, there is no substitute for common solutions, particularly in development cooperation.

The EU is continuing reform of the UN system begun in 2005, and is willing to maintain the crucial role of the Security Council and its primary responsibility for the maintenance of international peace and security.[354] The EU needs to mould the IMF and other financial institutions to better reflect modern realities. The G-8 should be disbanded, and the G-20 should be enlarged and thoroughly transformed to attain the required legitimacy and acceptance.[355]

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[352] EU, *Report on the Implementation of the European Security Strategy – Providing Security in a Changing World* (Brussels: December 2008, S407/08).

[353] Tierry Tardy, *UN-EU Relations in Crisis Management, Taking Stock and Looking Ahead* (Geneva: Geneva Centre for Security Policy, October 2008).

[354] Morten Knudsen, *The EU, The UN and Effective Multilateralism: The Case of UN Reform* (Brussels: Council of the European Union, 2008).

[355] EU, *Report on the Implementation of the European Security Strategy.*

The EU and NATO have worked together on the ground in the Balkans and in Afghanistan, even if formal relations have not really advanced. But with NATO and EU security sliced into groups of members with diverging interests, the West's ability to respond to Russian ambitions jointly is hampered. This lack of purpose, cohesion, and trust is a key weakness in achieving a relationship with Russia that is productive and safeguards European security interests. Both need to strengthen this strategic partnership in service of their shared security interests, with improved operational cooperation, in full respect of the decision-making autonomy of each organisation, and both should continue to work on optimising their military capabilities.

The EU has deepened its relationship with the OSCE and is working more closely with regional organisations, in particular with the African Union. Through the Joint Africa-EU Strategy, the EU is supporting enhanced African capacities in crisis management, including regional stand-by forces, and early warning.[356] The EU has also deepened links with its Central Asia partners through the Strategy adopted in 2007, with strengthened political dialogue and work on issues such as water, energy, rule of law, and security.

Elsewhere, the EU has developed engagement with ASEAN,[357] over regional issues such as Myanmar and Sri Lanka, with SAARC,[358] and also with Latin America.[359] Its experience gives the EU a particular role in fostering regional integration.

All these issues cross boundaries, touching as much on domestic as foreign policy. Moreover, they demonstrate how in the 21st century, more than ever, sovereignty entails responsibility. With respect to core human rights, the EU continues to advance the agreement reached at the UN World Summit in 2005, that all hold a shared responsibility to protect populations from genocide, war crimes, ethnic cleansing, and crimes against humanity.

Key priorities are climate change[360] and completion of the Doha Round in the WTO. The EU can showcase considerable achievements. It has successfully promoted the agenda of sustainable development and climate change at the global level. It has focused on the root causes of conflicts and crises, and put in place a range of instruments for conflict prevention and post-conflict stabilization. It provides, together with its member states, critical funding to a range of global and regional organisations, from the UN to the African Union. And it has by and large pursued an intermediate course between extreme versions of the free market and public regulation.

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356 Joint Declaration of the African Union Commission and the European Commission on the Occasion of the Launch of the EU-Africa Partnership on Infrastructure, Addis Ababa, 24 October 2007, http://consilium.europa.eu

357 Joint Declaration of the ASEAN-EU Commemorative Summit, 13th ASEAN Summit, 18–22 November 2007.

358 The EU and South Asian Association for Regional Co-operation (SAARC), European Commission, External Relations, 12 December 2009.

359 Communication from the Commission to the European Parliament and the Council, The European Union and Latin America: Global Players in Partnership, {SEC(2009)1227}, Brussels, 30 September 2009; EU-Latin America: 10 years of Strategic Partnership (Brussels: Memo/09/426, 30 September 2009).

360 Joint ACP-EU Declaration on Climate Change and Development (Brussels: ACP-EU, 28–29 May 2009), http://europafrica.net/2009/06/08/1889/

Thus, in principle, the EU is equipped with the right baggage of values and policy tools to make a difference in helping to bring about a smooth transition of the international system to a new configuration of international relations, and strengthening multilateralism. This is also at the core of the very mission of the EU to build sustainable peace well beyond its borders. In practice, however, the ability of the EU to deliver in a multi-polar world of great powers, at a time when its economic growth as well as its political and social cohesion is wavering, is under question.

On many issues, the EU does not come across as a single international actor to its major global partners, but as a loose grouping of states often with diverging policies. The way in which the EU and its member states are represented in international organisations and informal summits is ineffective and ultimately unsustainable. Furthermore, the external policies of the Union will be put to ever more serious test in the years to come, as interdependence deepens, competition grows, and power shifts towards emerging countries and to Asia in particular.

Whether and how the EU will shape up to become a central pole of power and cooperation, thereby effectively engaging major global actors, supporting the emergence of a multi-polar system and promoting effective multilateralism, will be of decisive importance for its own future and for the shape of the international system to come. This is why this problem should become the subject of more serious political debate and innovative research.[361]

3.7 International coordination of efforts: the example of disaster relief

International coordination remains a widespread problem in almost all areas of international cooperation and interaction. Though there are many initiatives and agreements, international coordination is much easier to advocate than to implement. International coordination of efforts is probably the most discussed issue in situations where their engagement is time critical, such as in international disaster relief and emergency responses. Failures in this area remain a constant complaint both among international actors and between international actors and their domestic counterparts in affected states. Subjects of complaints are regularly three: (1) lack of coordination by government; (2) lack of coordination among international actors – including with, and among, NGOs; and (3) the failure of international actors to coordinate with domestic authorities.

There exist a number of instruments that seek to improve coordination. However, for the most part, the international community has preferred to address such issues by less formal means, and this may very well be for the best. On the other hand, at the national level, many states lack robust legal and institutional arrangements for the coordination of international actors providing assistance in their territories. And the negative consequences of this lack of preparations have

[361] Giovanni Grevi, "The Multipolar World: A New Scenario," (European Union Institute for Security Studies, Occasional Paper No. 79, June 2009), 34.

been apparent in almost all recent disaster relief and emergency response operations.

At the international level, many coordination problems flow from the well-documented contest for market share among relief actors, particularly during high-profile disasters. For political reasons, assisting states need to be seen to be doing something, and therefore demand maximum visibility for their assistance. Humanitarian actors, in permanent competition for fickle funding from donor states and the general public, must be seen to be the first and the best amid a growing pack. Also private actors wish their charitable donations and activities to be publicly known. At the same time, many new and inexperienced actors have become involved that are either ignorant of international coordination systems or lack any institutional loyalty to them. All of these factors were painfully illustrated in the international response to the tsunami of 2004, after the unusually large outpouring of funds led to enhanced opportunities for new international actors, a reduction of mutual interdependence among them, and competition for beneficiaries.

Global coordination policies and structures have been mainly developed through non-binding instruments, such as the UN General Assembly Resolution 46/182 and the Principles and Rules for Red Cross and Red Crescent Disaster Relief. On the other hand, a number of sectoral treaties, such as the Nuclear Assistance Convention, the Chemical Weapons Convention, and the Tampere Convention as well as some regional instruments, such as the CDEMA[362] Agreement, the ASEAN Agreement, the Arab Agreement, and EU Council Decision 2001/792/EC, provide specific coordination roles for particular intergovernmental entities. For some of these instruments, that role is primarily to channel requests and offers of assistance. However others, such as the CDEMA and ASEAN Agreements, foresee a much more active part for the respective secretariats in coordinating international operations on the ground. These various roles have the potential for overlap, depending on the location and kind of disaster.

The good news is that there has been no attempt to install a command and control structure over the entire disaster response community. Indeed, even within the UN system, the Emergency Relief Coordinator and his country level representatives, the humanitarian coordinators, who are primarily charged with coordinating humanitarian assistance, lack command authority over operational agencies. This state of affairs has the salutary effect of preserving the independence of actors such as the International Red Cross, the Red Crescent Movement and NGOs, which has been acknowledged as a crucial element of their successes in providing rapid and effective humanitarian assistance. It allows for innovation and different approaches to the complexities and particularities of different disasters in different countries. It is also quite likely to remain this way if

[362] Agreement establishing the Caribbean Disaster Emergency Response Agency, CDERA, an interregional supportive network of independent emergency units formed in September 2005, underwent a name change to Caribbean Disaster Management Agency, CDEMA, September 2009.

only because donor and assisting states show little interest in constraining their own options.

Nonetheless, it is widely acknowledged that improved interoperability is needed within the relief sector. Some important steps have recently been taken toward this end. Largely as a result of a disappointingly slow initiation of international assistance to the Darfur crisis in 2004, Jan Egeland commissioned an independent review of the humanitarian response capacities of the UN, NGOs, International Red Cross and Red Crescent Movement, and other key actors. The Humanitarian Response Review, published in August 2005, identified a number of gaps in the capacities and practices of the international humanitarian community, in a number of sectors, and many failures of coordination.[363] Among its recommendations was the creation of sectoral clusters with lead organisations responsible for global coordination among its partners.

In response to these recommendations, the creation of nine sectoral clusters has been approved in September 2005 in the areas of nutrition, water, sanitation, health, camp coordination and management, emergency shelter, protection, logistics, telecommunications, early recovery, and assigning lead agencies for each. The clusters are comprised of international humanitarian organisations and are designed to improve their collaboration, capacity, and overall effectiveness as well as to enhance accountability. In addition to actively participating in a range of clusters, the International Red Cross has agreed to serve as cluster lead for emergency shelter in disasters. Though still beset by pains, the cluster approach has now been successfully employed in a number of emergencies, and has the potential not only to address international coordination, but also coordination between the international community and domestic actors.

More recently, in July 2007, representatives of the UN, the International Red Cross and Red Crescent Movement, and a number of NGOs agreed upon a set of 'Principles of Partnership'[364] designed to emphasize equality, transparency, a result-oriented approach, responsibility, and complementarity among these different sectors of the humanitarian community.

A desk study of the International Federation of Red Cross and Red Crescent societies contains a whole chapter on the many flaws of coordination, particularly between international and domestic actors.[365] Among other things it notes that many states have struggled to implement effective systems of disaster response coordination that adequately take into account the multiple concerned ministries, departmental and local levels of government, and civil society. Problems in these domestic systems often have a spill-over effect on coordination with inter-national actors.

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[363] UN Emergency Relief Coordinator and Under-Secretary-General for Humanitarian Affairs, *Humanitarian Response Review* (New York & Geneva: UN Office for the Coordination of Humanitarian Affairs, August 2005).

[364] *Principles of Partnership*, A Statement of Commitment, Endorsed by the Global Humanitarian Platform, 12 July 2007, http://www.icva.ch/pop.html and www.globalhumanitarianplatform.org

[365] International Federation of Red Cross and Red Crescent Societies, *Law and legal issues in international disaster response: a desk study* (Geneva:, 2007), Chapter 14.

In many states it is either unclear which governmental entity is truly in charge of coordination of international actors, or this task is entrusted to institutions lacking full authority or capacity. For instance, when the 2005 earthquake struck Pakistan, there was no provision in national law designating a responsible institution for the coordination of relief. After Tropical Storm Stan in Guatemala, it was reported that the central disaster management authority did not appear to perceive its role as extending to coordination of the total relief effort, thereby leaving most NGOs to decide where to go and what to do. After the great damage caused by the tsunami in Sri Lanka the government did implement a number of structures and initiatives to improve coordination of the relief, but these were not immediately functional. Thus, the various relief organisations – both domestic and foreign – initially dealt directly and independently with local authorities. Similarly in Indonesia: repeated institutional reshuffling led to gap periods during which international actors were unsure as to their proper liaison, and the entity eventually placed in charge of reconstruction coordination lacked any policymaking authority.[366]

There are also cases where some international actors deliberately bypass national coordination structures and fail to inform domestic authorities of their activities. In addition, local civil society is often left in the dark. Thus, it was reported that a consequence of the swamping of local capacity by the large international presence in Aceh and Sri Lanka was the poor representation of, and consultation with, local NGOs and coordinators in consultation meetings. Contrary to the rules, foreign National Societies had failed to seek their approval before responding to disasters in their countries, and failed to share information with them about their activities.[367]

Already in 1971, the UN General Assembly invited potential recipient governments to appoint a single national disaster relief coordinator to facilitate the relief of international aid in times of emergency, and a large number of subsequent instruments, both at the global and regional levels, have reiterated this call. Many of these instruments also call on international actors to recognize governmental coordination procedures.[368] The ASEAN Agreement is typical in providing that the 'Requesting or Receiving Party shall exercise the overall direction, control, coordination and supervision of the assistance within its territory.'

Hence, governments should review their domestic legal and administrative systems for the coordination of relief, and ensure that they are adequately clear and robust with respect to a potential large international operation, including not only foreign states and intergovernmental bodies, but also non-state actors. In particular, a focal point agency or entity should be designated with adequate capacity and mandate to address common problem areas. And governments should ensure that regional and international coordination mechanisms created by

366 Ibid.

367 International Federation of Red Cross and Red Crescent Societies, *Law and legal issues in international disaster response,* Chapter 14.

368 Secretary-General, *General Assembly, Implementation of the International Strategy for Disaster Reduction* (New York & Geneva: UN General Assembly, Sixty-fourth Session, A/64/280); UN, *2009 Global Assessment Report on Disaster Risk Reduction: Risk and Poverty in a Changing Climate* (New York: United Nations, 2009).

treaties to which they are a party are themselves prepared to reconcile with each other in case of overlapping application. Moreover, international humanitarian organisations should place appropriate emphasis on coordination with domestic authorities and civil society in their programs. And this should include the clusters, which should take on local capacity building as a key goal.[369]

3.8 Multilateral donorship versus local ownership

Both donors and recipient countries generally agree on what has been obvious for some time: that aid is still underperforming in terms of development effectiveness. It has long been clear that what matters in reaching development goals is not just the amount of aid but the quality of that aid. Decades of development assistance have shown, for instance, that if countries are to become less dependent on aid, they must be able to determine their own priorities, and rely on their own systems to deliver that aid. Donor-driven aid does not lead to sustainable results. Moreover, asymmetries in the aid relationship, whereby donors respond to their own constituencies rather than to citizens' needs in developing countries, have distorted the accountability of domestic institutions in recipient countries.

Experience has also shown that if donors do not channel funds through recipient country institutions, these countries will neither be able to develop nor to strengthen the governance structures and capacities to pull themselves out of poverty. In addition, disparate actors and interests have led to the uncoordinated delivery of aid – again putting severe strain on local government systems.

Faced with these hurdles, donors and partner countries have finally committed to transform the way aid is delivered. The goal was to improve the quality of aid and achieve greater development impact. Over one hundred donors and developing countries endorsed the Paris Declaration on Aid Effectiveness at the High-Level Forum in Paris in March 2005.[370] In doing so, they agreed for the first time to measure their success, or failure, and at making aid more effective through a set of fifty-six commitments. Following the endorsement of the Paris Declaration, the way in which aid is delivered was set to undergo wide-ranging reform. Expectations were high: "aid would be better coordinated, increasingly aligned with country priorities, and delivered in a harmonized way; donors would commit to support national ownership; development results would be measured; and donors and countries would be mutually accountable."[371]

However, problems continue to abound. Already the institutional complexity of the global governance of aid presents real difficulties, given that more than 280 bilateral donor agencies, 242 multilateral programs, twenty-four development banks, and about forty UN agencies are working in the development business.

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[369] International Federation of Red Cross and Red Crescent Societies, *Law and legal issues in international disaster response*, Chapter 14.

[370] Anonymous, *Paris Declaration on Aid Effectiveness*, Ownership, Harmonisation (Paris: Alignment, Results and Mutual Accountability, High Level Forum, 28 February to 2 March 2005).

[371] Eckhard Deutscher & Sara Fyson, "Improving the Effectiveness of Aid" *Finance and Development* 45, no.3 (September 2008).

Adding to the complexity is the increasing number of private foundations and numerous NGOs. The proliferation of donor activities – including an estimated 340,000 development projects around the world – leads to question current ways of managing the aid business.

A slew of other factors combine to make aid effectiveness less than optimal. These include the lack of aid predictability, issues of coordination among the large numbers of donors, and aid fragmentation,[372] all of which have real implications at the country level. As to the lack of predictability: A 2008 OECD-DAC survey on the Implementation of the Paris Declaration[373] showed that in any average country only 45 percent of aid arrives on time, as scheduled by donors. This lack of predictability implies that government authorities in developing countries will have difficulties in planning and responding to citizens' needs if funding does not arrive when new hospitals or schools were promised.[374]

Lacking coordination also creates problems. Examples given in the OECD-DAC survey show that in 2005, government authorities in Vietnam received 791 visits from donors – more than two a day, including weekends and holidays. And in Tanzania, health workers in some districts spent more than 20 days a quarter, almost 25 percent of their working days, writing reports for different donors. Thus, in view of the lack of capacity at the country level and the precedence given to responding to donor demands, it is difficult to imagine how civil servants can focus on things that really matter.

And there is increasing fragmentation of aid at the country level. Fragmentation occurs not only with the increase in the number of donors but also with the proliferation of donor-funded activities. This imposes a heavy burden on developing countries and their capacities, and reduces the sustainability and value of aid received.[375]

Among the most promising approaches of improved interaction at the country level is the creation of governance mechanisms that result in greater dialogue and coordination between donors and recipients. Joint assistance strategies should identify donors' comparative advantages and enable an independent review of progress in delivering on both donor and recipient commitments. Included in these strategies should be the channelling of a higher proportion of aid through a country's own budget systems, which will enhance the country's ownership over these funds. At the same time, this type of governance mechanism also fosters increased accountability between the partners.

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372 Emmanuel Frot & Javier Santiso, "Crushed aid: Why is fragmentation a problem for international aid?" *VOX Research-based policy analysis and commentary from leading economists,* 18 January 2010.

373 *2008 Survey on Monitoring the Paris Declaration – Effective Aid by 2010? What it will take. Key Findings and Recommendations,* 3rd High Level Forum on aid effectiveness (Accra, Ghana, 2-4 September 2008); OECD, *Better Aid 2008 Survey on Monitoring the Paris Declaration, Making Aid More Effective by 2010* (Paris: OECD, 2008).

374 Deutscher & Fyson, "Improving the Effectiveness of Aid"

375 Reality of Aid Network, Management Committee, *The Reality of Aid 2008 Theme Statement: Aid Effectiveness, Democratic Ownership and Human Rights*, 29 January 2008.

Issue-specific governance networks can equally respond to the need for greater focus on the country level. New funds and foundations can provide substantial new resources to the chosen area of intervention, be they malaria, AIDS, primary education, or other. They can also contribute to upstream harmonisation through initiatives such as the Fast Track Initiative for Education, and they can improve the coordination of health sector agencies.[376]

Accountability is still perceived as the weakest link because it lies at the crux of the good governance of aid. Domestic accountability of recipient countries to their own constituencies depends crucially on aid passing through country systems, such as budget execution mechanisms and parliamentary review processes. Mutual accountability between donors and recipients requires that development goals are shared, that answerability mechanisms are created, and that soft or hard sanctions are put in place should parties fail to deliver.[377]

Finally, despite the creation of a number of governance mechanisms at the international and national levels, a significant transparency gap still exists between public announcements and how decisions are made about the delivery of aid. Transparency is often lacking at the country level, especially about how public finances are spent, how contracts are procured, and how results are monitored. On the donor side, communications around the definition of conditionality and decisions regarding the use of country systems are all too often weak.

Ownership and conditionality are the core issues in aid effectiveness. While ownership is the defining issue in development, donor conditionality poses one of the gravest challenges to country ownership. The use of aid as a policy tool to impose economic policy and other conditions has no place in an aid paradigm rooted in a commitment to local ownership. A main lesson from past development cooperation is that aid will remain ineffective unless development is carried out by those most directly concerned.[378]

Civil society organisations play a crucial role by supporting and encouraging active involvement of disadvantaged and marginalized population groups in development. Public and private donors can only assist, not replace development processes. Their purpose is to help reduce poverty and social injustice, and to further human rights, gender equality, democracy and environmental sustainability. These goals are achievable only in conjunction with civil society organisations. Their legitimacy and driver's role make them central actors in development, and hence vital partners in development cooperation.[379]

The problem is that the Paris Declaration largely overlooked the roles of civil society.[380] Donors and partner governments hardly take them into account in implementing the Declaration. They still regard development cooperation as

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376 Deutscher & Fyson, "Improving the Effectiveness of Aid"
377 Ibid.
378 Charles Mutasa, *A critical appraisal of the Paris Declaration* (African Forum and Network on Debt and Development (AFRODAD), CIVICUS 404, 29 August 2008).
379 *NGO Platform of Swiss Development Organizations: Position on the Paris Declaration and Accra Agenda for Action* (Berne: NGO Platform of Swiss Development, 24 June 2008).
380 Ibid.

mainly a matter between governments. The Declaration implicitly defines ownership as ownership by the partner-country government, not by society as a whole. Thus, it misses one of the essential tasks of development cooperation, that of furthering democracy and participation. Besides, it jeopardizes the sustainability, quality, and effectiveness of development cooperation, as these are dependent on broad-based popular support. Only in the fewest of instances do partner governments allow civil society organisations to participate at eye level in the formulation of strategies for poverty reduction and national development. One consequence is that many strategies neglect the needs of large sections of the population, especially women and minorities, and hence the purpose of development cooperation.

Civil society organisations are welcome to act as executive entities for individual parts of the programs at best. They can fulfil a significant part in this regard, thanks to their knowledge and close connection to the beneficiaries of the aid. However, their participation in the monitoring and evaluation of both national strategies and international programmes would lead to much more effective development. If their involvement is restricted to executing aid programs and projects prescribed by the government, this is tantamount to instrumentalise civil society organisations for the implementation of the Declaration.

Governmental and multinational donor agencies as well as partner governments circumvent civil society organisations with respect to a second central principle of the Paris Declaration: that of accountability. Accountability occurs mostly between partner governments and donor entities. Civil society organisations often have restricted or no access at all to necessary information. Moreover, they often lack capacities and resources for carrying out their watchdog function. The same goes for monitoring and evaluation.[381]

When it comes to implementing the Declaration, civil society organisations are sidelined in two ways. First, they are excluded as discussion partners in the formulation, implementation, monitoring, and evaluation of national strategies and donor programs. This implies, among other things, a loss of knowledge that is invaluable to the effectiveness of development cooperation. Second, they are also marginalized as development actors in their own right. Donor agencies are increasingly channelling resources directly to partner governments while at the same time cutting back their contributions to civil society organisations. Thus, they are buttressing the power of central government while weakening local and decentralised actors, hence preventing any balancing of forces. In short, there are three major gaps in the Paris Declaration with respect to civil society: Lack of recognition, lack of participation, and lack of transparency. To a great extent, these shortcomings also affect other essential actors of development and development cooperation in partner countries such as parliaments, local authorities or the private sector.[382]

[381] Ibid.
[382] Ibid.

To remedy the shortcomings, a clear redistribution of roles is needed between governmental and multilateral donor agencies, partner country governments, and civil society organisations from donor countries and particularly those in partner countries. Without recognition of the roles, the real needs, and the autonomy of civil society, democratic and local ownership can never be achieved. One of the main lessons from past development cooperation is that aid will remain ineffective unless development is carried out by those most directly concerned. Civil society organisations play a crucial role by supporting and encouraging the active involvement of disadvantaged and marginalised population groups in development processes. Their solidarity with these groups and their anchorage at grassroots level gives them the legitimacy to play a variety of roles at different levels. The bottom-line is still that only the local populace holds the answer to success.[383]

3.9 Pandemics

A pandemic is an epidemic of infectious disease that is spreading through human populations across a large region, a continent or ever worldwide. A widespread endemic disease that is stable in terms of how many people are getting sick from it is not a pandemic. According to the World Health Organisation, WHO, a pandemic can start when three conditions have been met: (1) emergence of a disease new to a population; (2) agents infect humans, causing serious illness; and (3) agents spread easily and sustainably among humans.[384] Throughout history there have been a number of pandemics. In the 20th century, three influenza viruses caused major pandemics: the 1918 H1N1 virus, the 1957 H2N2 virus, and the 1968 H3N2 virus.[385] These pandemics were initiated by the introduction and successful adaptation of a novel hemagglutinin subtype to humans from an animal source, resulting in antigenic shift.

One of the fears haunting the public is the appearance of a pathogen, man-made or natural, able to devastate mankind, as the Black Death did in the Middle East and Europe in the middle of the 14th century. Within barely a year, approximately one third of Europe's population died. The second- and third-order effects of the pandemic on society and economics were devastating. In effect, the Black Death destroyed the sureties undergirding Medieval European civilisation.

It is less likely that a pandemic on this scale will devastate mankind over the next quarter century. Even though populations today are much larger, more concentrated, and more mobile, increasing the opportunities for a new pathogen to spread, the fact that mankind lives in a richer world with greater knowledge of the world of microbes, the ability to enact quarantines, a rapid response capability, and medical treatment, suggests that authorities could control even the most

[383] International Civil Society Steering Group, *Better Aid: A Civil Society Position Paper for the 2008 Accra High Level Forum on Aid Effectiveness*, 15 January 2008.
[384] WHO, *Avian influenza frequently asked questions* (Geneva: World Health Organisation, 5 December 2005).
[385] For other pandemics like HIV, Smallpox, Measles, Plague, Cholera, Yellow fever, etc., and their history see: Pandemic, Wikipedia, http://en.wikipedia.org/wiki/Pandemic

dangerous of pathogens. The crucial element in any response to a pandemic may be the political will to impose quarantine, and to restrict travel and trade.

The rapid identification and response to the 2009 H1N1 flu strain and the quick termination of the 2003 Severe Acute Respiratory Syndrome – the SARS pandemic – do provide hope that current medical capabilities could handle most pandemic threats successfully.[386] In the case of SARS, after initial reports surfaced from East Asia in February of an atypical respiratory disease, medical authorities reported more than 8,000 cases in thirty countries. The disease itself was highly contagious and life-threatening: nearly 10 percent of reported cases died. However, once doctors identified the disease, the combined efforts of local, national, and international authorities contained it within 5 months. Newly reported cases increased rapidly in March and April 2003, peaked in early May, and thereafter rapidly declined.[387]

On 11 June 2009, the World Health Organisation, WHO, raised the worldwide pandemic alert level to Phase 6 in response to the ongoing spread of the novel influenza H1N1 virus, a mutation of four strains of the A virus subtype: one endemic in humans, one endemic in birds, and two endemic in pigs. A Phase 6 designation indicates that a global pandemic is underway that reflects the fact that there are ongoing community-level outbreaks in multiple parts of the world. At the same date, WHO reported more than 94,500 laboratory-confirmed cases in more than seventy-four countries that caused 429 deaths. However, on 16 July, WHO announced it would stop tracking pandemic H1N1 cases and deaths around the world due to the rapidly increasing numbers of infected. The 2009 influenza pandemic has spread internationally with unprecedented speed. In past pandemics, influenza viruses have needed more than 6 months to spread as widely as the new virus has spread in less than 6 weeks. But the swine flu, while more contagious than the normal flu, is less dangerous than the normal flu. This suggests that the risk is not as great as some fear. However, an uncertainty that remains is that the virus might mutate, and thus create a new situation.[388]

Infectious diseases are the second leading cause of death worldwide. About half the people in the world are at risk of several endemic diseases. More than 42 million people are living with HIV/AIDS, and 74 percent of these infected people live in sub-Saharan Africa. Over the past 40 years, thirty-nine new infectious diseases have been discovered. In the last 5 years, more than 1,100 epidemics have been verified, and the world faces twenty drug-resistant superbugs, including deadly skin infections (MRSA). Old diseases have reappeared. Massive urbanisation, increased encroachment on animal territory, and concentrated livestock production could trigger new pandemics. Looking forward, the emergence of an H5N1 pandemic, bird flu, remains a real possibility. And pandemics are likely to become harder to control, due to climate change and the increasing, more complex patterns of migration through globalisation. Moreover,

386 *Basic Information About SARS*, 3 May 2005, http://www.cdc.gov/ncidod/sars/factsheet.htm
387 US JFC, *The Joint Operating Environment 2010, JOE* (Norfolk: United States Joint Forces Command, 18 February 2010), 33.
388 WHO, *Pandemic (H1N1) 2009 – update 69,* Geneva: World Health Organisation, http://www.who.int/csr/don/2009_10_09/en/index.html

climate change is altering insect and disease patterns. In addition, new kinds of diseases may accidentally come from future synthetic biology laboratories unless new international regulations for laboratories are created and enforced.[389]

The dangers posed by the natural emergence of a disease capable of launching a global pandemic are serious enough, but the possibility also exists that a terrorist organisation might acquire a dangerous pathogen. Terrorists can design and optimise pandemics for the greatest amount of casualties, terror, and financial damage, specifically against a free democratic society. Compared to other weapons systems, pandemics have the greatest advantages for an enemy wanting to inflict damage in affluent societies. Simultaneously, these bio-weapons have the fewest risks for the terrorists, whether measured via their cost of execution or the risk of detection. The deliberate release of a deadly pathogen, especially one genetically engineered to increase its lethality and virulence, would present greater challenges than a naturally occurring disease like SARS or swine flu.[390] While the latter are likely to have a single point of origin, terrorists would seek to release the pathogen at several different locations, so that it would spread faster. This would seriously complicate both the medical challenge of bringing the disease under control, and the security task of fixing responsibility for its appearance.

Decision-makers would be confronted with unfamiliar and complex technical issues that have the potential for catastrophic outcomes if the wrong judgments were made. National leaders would have to decide whether to impose martial law and quarantine, ban trade and travel, close schools, sport and other public venues for large gatherings, and authorize emergency seizure and diversion of private assets. Possible mass psychological trauma would be aggravated by any perception that a biological incident is mismanaged or out of control. And the near certainty of irresponsible actions by the media could augment public panic and civil disorder.

The implications for the armed forces of a biological terrorist attack, or of a pandemic as widespread and dangerous as that of the 1918 influenza, would be profound.[391] National and global medical capabilities would soon find themselves overwhelmed. National armed forces may have to conduct relief operations beyond assisting in law enforcement, maintaining order, and imposing quarantine. They would have to take severe measures to preserve the health of their forces, and protect medical personnel and facilities from public panic and dislocations. They would also be required to maintain essential services, and to address the problem of mass disposal of corpses.

Effective and rapid quarantine is a necessary attribute of a bio-defence strategy for response for any nation facing a biological pandemic terrorist threat. The medical system should be based on a new paradigm that integrates all present resources in

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[389] Jerome C. Glenn, Theodore J. Gordon & Elizabeth Florescu, *2009 State of the Future* (New York: The Millennium Project, 1 August 2009).

[390] For Biological and Toxin Weapons see: Fred Schreier, *WMD Proliferation – Reforming the Security Sector to Meet the Threat* (Dulles: Potomac Books, Inc., 2009), 41–58.

[391] The Spanish Flu,1918–19, had spread to become a worldwide pandemic on all continents, and eventually infected one third of the world's population or some 500 million. Unusually deadly and virulent, it ended nearly as quickly as it began, vanishing completely within 18 months. In 6 months, some 50 million were dead.

the healthcare system into a common information network that connects response organisations and medical personnel and citizens across the country, regardless of geography. This new system will mean that each neighbourhood will be equipped with medical clinics that can access experts nationwide or worldwide via videoconferencing and other technologies like telemedicine: a "cybercare" system – a short name for health care delivered via cyberspace. The key element of a cybercare bioresponse system[392] for quarantine is holding the victims in place where they are sick and connect through telemedicine and technology to resources at distant sites that are available. A new national healthcare defence system to combat pandemics will have to combine private, public, and national medical defence in one dual-use, resilient, networked system. It will have to incorporate both quarantine and evacuation doctrines.

3.10 Cyberspace

Cyberspace[393] – a concept that stands for the fusion of all communication networks and sources of information into a tangled blanket of electronic interchange – has been created with the establishment of the World Wide Web, the most popular and widespread incarnation of which is the Internet: when computers started to communicate with each other, and began to become both a target and a means of attack.[394] The information technology revolution quietly changed the way businesses and governments operated. Without a great deal of thought about security, advanced nations shifted the control of essential processes in manufacturing, utilities, banking, and communications to networked computers. As a result, the cost of doing business dropped and productivity skyrocketed. Ever since, economies and national security have become dependent upon information technology and the information infrastructure. Networks of networks directly support the operations of all economic sectors – energy, transportation, finance and banking, information and telecommunications, defence industrial base, public health, emergency services, water, food, agriculture, postal and shipping, and so forth. However, the reach of these computer networks exceeds the bounds of cyberspace. They also control physical objects such as electrical transformers, trains, pipeline pumps, chemical vats, air and ground traffic control, radars, and so forth.

Globalisation and mass popularization of the Internet provide non-traditional actors today with capabilities that were previously only available to the largest, most powerful states, challenging the power and steering capacity of major actors. In the meantime, the Internet has developed in such an extent that nobody is able

[392] J. Rosen et al., "The future of command and control for disaster response" *Engineering in Medicine and Biology Magazine* 21, no.5 (Sept/Oct 2002): 56-68.

[393] The US Department of Defense (DoD) defines cyberspace as: A global domain within the information environment consisting of the independent network of information technology infrastructures, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers. JDD, *Joint Publication 1-02, DoD Dictionary of Military Terms* (Washington DC: Joint Staff, Joint Doctrine Division, J-7, 17 October 2008).

[394] Cyberspace is not part of the physical world, but is detached or "virtual," existing where there are telephone wires, coaxial cables, fiber-optic lines, or electromagnetic waves—an environment inhabited by knowledge in electronic form.

to fully control everything that is taking place in it, not even the twelve states practicing pervasive censorship.[395]Adding more users makes the Internet more vulnerable and dangerous. Today, there exist over 1.3 billion personal computers, most connected to the Internet.[396] In early 2008, the number of cellular telephone owners worldwide surpassed the number of non-owners, the significance of which lies in the fact that every digital cell phone is also a door into cyberspace as mobile phones are becoming handheld computers.[397] This is why governments are concerned about attacks from individuals and groups with malicious intent, such as criminals, terrorists, and adversarial foreign nations, which target government and private sector networks to gain a competitive advantage, or to disrupt and destroy them in case of conflict. Hence, there is no doubt that cyberspace and information have become the 5th dimension of warfare after land, sea, air, and space, and that a major effort must be made for their control and defence.

As information technologies advance and applications multiply, high-speed always-on broadband access is a critical platform for business activity of all kinds: the delivery of services ranging from entertainment, interpersonal interaction to education and health. This is why the tool is bringing with it a number of risks. The proliferation of always-on connections is creating a vast global network of open conduits which can carry all kinds of malware, not just viruses and Trojan horses, but also spyware that installs itself on a computer and transmits personal information: through secretly logging keystrokes, recording web browsing history, or scanning information on the computer's hard disk. Indeed, most of today's viruses are not designed to disable a machine or destroy data, but rather to enlist computers into a vast network of "zombies", which cyber-criminals can use for nefarious purposes without the user's knowledge. Up to 80 percent of all spam is now believed to be sent by such zombies. This not only helps spammers avoid detection, it dramatically cuts their cost, since the computer's owner unwittingly pays for the bandwidth.

Two global trends within the IT environment, while providing greater efficiency and services to users, potentially increase vulnerabilities and the consequences of security failures. The first is *network convergence*: the merging of distinct voice and data technologies to a point where all communications – for example, voice, facsimile, video, computers, control of critical infrastructure, and the Internet – are transported over a common network structure, which will come to completion in the next 5 years. This convergence amplifies the opportunity for, and consequences of, disruptive cyber attacks and unforeseen secondary effects on other parts of the critical infrastructure. The second is *channel consolidation*, the concentration of data captured on individual users by service providers through e-mails or instant messaging, Internet search engines, Web 2.0 social networking means, and geographic location of mobile service subscribers, which increases the potential and consequences for exploitation of personal data by malicious entities. The increased interconnection of information systems and data inherent in these

[395] China, Cuba, Egypt, Iran, Myanmar, North Korea, Saudi Arabia, Syria, Tunisia, Turkmenistan, Uzbekistan, Vietnam.
[396] Siobhan Chapman, "Worldwide PC Numbers to Hit 1 billion in 2008, Forrester Says," *CIO.com*, 11 June 2007.
[397] Kirstin Ridley, "Global Mobile Phone Use to Hit Record 3.25 billion," *Reuters*, 27 June 2007.

trends pose potential threats to the confidentiality, integrity and availability of critical infrastructures, and of secure credentialing and identification technologies.[398]

Today, cyberspace has become the media for three sorts of wars: (1) war against information, that attacks the integrity of computer systems to disrupt or interrupt operations; (2) war for information, which aims at penetrating networks to retrieve information that may travel or is stored; and (3) war through information, which uses the cyber vector for the purpose of propaganda, disinformation, or political action. The speed of cyber attacks and the anonymity of cyberspace greatly favour the offence in all three cases. This advantage is growing as hacker tools become cheaper and easier to employ by adversaries whose skills are steadily growing in sophistication.[399] Mobile devices are considered in this context as a rising and critical problem to the integrity of networks, and therefore as a facilitator to wage cyber war. The targets considered are the sites and services accessible to the public; operational systems, including operators with their systems; military systems; and the holders of sensitive information.

Cyberspace criminals are a rising threat as they operate a pervasive, mature on-line service economy in illicit cyber capabilities and services, which are available to anyone willing to pay. Their attacks come in the forms of identity theft, deny access to websites, compromise sensitive information, or introduce botnets that spread viruses, and covertly co-op computers to carry out data theft and espionage. Widespread cyber-facilitated bank and credit card fraud has serious implications for economic and financial systems. The cyber criminal sector has displayed remarkable technical innovation with an agility presently exceeding the response capability of network defenders. And criminals are developing new, difficult-to-counter tools. In 2009, they deployed self-modifying malware, which evolves to render traditional virus detection technologies less effective. The Conficker worm, which appeared in 2008 and created one of the largest networks of compromised computers identified thus far, continues to provide a persistent and adaptable platform for other malicious enterprises. Criminals are targeting mobile devices such as smart-phones, whose increasing power and use in financial transactions make them potentially lucrative targets. Criminals are collaborating globally and exchanging tools and expertise to circumvent defensive efforts, which makes it increasingly difficult for network defenders and law enforcement to detect and disrupt malicious activities.[400]

While the primary business of cyber criminals is fraud, crime gangs may soon begin to offer services that threaten national security to terrorist organisations and rogue countries. Crooks and spies using the Internet to commit crimes against individuals, businesses, and to attack government networks, are getting more sophisticated. The increasing number of these crimes not only impacts the economy, but threatens the critical national infrastructures, and national security.

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[398] Dennis C. Blair, *Annual Threat Assessment of the US Intelligence Community for the Senate Select Committee on Intelligence* (Washington DC: Senate Select Committee, 2 February 2010), 3.
[399] US DoD, *Quadrennial Defense Review Report* (Washington DC: Department of Defence, February 2010), 37.
[400] Blair, *Annual Threat Assessment of the US Intelligence Community,* 3.

The first victim of failure of key infrastructure will be the economy, whose ability to work in a degraded information environment is poor to nonexistent. A shutdown of electric power to any sizeable region for more than 10 days would stop over 70 percent of all economic activity in that region.[401]And it must be expected that a paralysis of the society has profound psychological consequences, able to deeply affect individual and collective behaviour, since great disorder could erupt in the event of a prolonged failure of key services.

Moreover, there are terrorist groups that are getting more sophisticated in using cyberspace for their purposes, and systematically better in fully exploiting what the Internet offers: easy access; little regulation, censorship or other forms of control; potentially huge audiences spread throughout the world; relative anonymity of communications; fast flow of information; inexpensive development and maintenance of a web presence; a multimedia environment with the ability to combine text, graphics, audio, video, and to allow users to download films, posters, instructions, songs, and so forth; and the ability to shape coverage in the traditional mass media. Hence, terrorists excel in the use of the Internet for publicity and propaganda; data mining; psychological warfare; fundraising; recruitment and mobilization; networking; the sharing of information; for disinformation and deception; and for planning and coordination of attacks. They too use denial-of-service attacks, viruses, logic bombs, Trojan horses, TEMPEST monitoring devices, and most up-to-date spyware and malware. And terrorists may support and amplify their attacks with the engagement of radio frequency weapons and munitions, transient electromagnetic devices, and electromagnetic bombs.

Virtual gangs of groups of "hacktivists" are a growing threat as well. Banding together to pool their expertise and carrying out coordinated news and propaganda wars, they turn cyberspace into a kind of ethereal war zone in which 'soft war' is waged through the use of electronic images and words. In hacktivism, the Internet is mainly used to draw attention to a cause, helped by the news media that report readily and regularly on such incidents. Transnational subcultures spontaneously coalesce online, and influence myriad political agendas. These virtual gang members do not need to physically meet to commit their crimes. They are a growing concern already because of their sheer numbers.[402] If just one percent of the 1.3 billion Internet users misbehave for pathological reasons, the world will be confronted with 13 million cyberspace problems.

There are numerous examples of hacktivism incidents. Various NATO servers were attacked and disrupted during the Kosovo conflict by denial-of-service or e-mail spamming attacks, and viruses. After the bombing of the Chinese embassy in Belgrade, Chinese hackers joined the online war, targeting US government sites including the White House site, which was unavailable for several days. Pro-Chechen and pro-Russian hacktivists have waged a virtual war on the Internet

[401] Greg Bruno, *The Evolution of Cyber Warfare*, Backgrounder (Washington DC: Council on Foreign Relations, 27 February 2008).

[402] According to the French Defence White Paper of June 2008, the projection sees 1.41 billion Internet users by the end of 2010, which is 22 percent of the world population.

simultaneous to their two conflicts on the ground. In the Middle East, hacktivism onslaughts broke out in October 2000, shortly after the Intifada erupted on the ground. More than ninety Israeli sites, mainly business and governmental, and twenty-five pro-Palestinian sites had been attacked, defaced or disabled. And in April 2007, Estonian government, law enforcement, banking, media, and Internet infrastructure endured three weeks of cyber attacks. This, because the Estonian government moved a Soviet World War II memorial out of the centre of its capital, Tallinn, in a move that inflamed public opinion both in Russia and among Estonia's Russian minority population. This attack was so severe that Estonia requested assistance from NATO's computer security experts. Cyber offence has also been integrated with conventional warfare to enhance the effectiveness of military operations. So in Operation Orchard, the Israeli air strike in September 2007 on a Syrian bunker suspected to house a plutonium production plant, which included conventional radar jamming supplemented with network hacks that allowed Israeli warplanes to successfully disable Syrian radars and to enter Syrian airspace undetected. Moreover, the Russian-Georgian war in August 2008 demonstrated that cyber attacks can be timed to coincide with a conventional military offensive, and be aimed primarily at influencing global public opinion.[403]

A number of countries have developed an aggressive interest in penetrating government networks of other countries. Increasingly, governments around the world complain publicly of cyber espionage.[404] On a daily basis, anonymous computer hackers secretly copy vast quantities of computer data and network communications. Today, it has become possible to conduct devastating intelligence-gathering operations even on highly sensitive political and military communications remotely from anywhere in the world. The elegance of computer hacking lies in the fact that it may be attempted for a fraction of the cost – and risk – of any other information collection or manipulation strategy. Also 'data modification' is extremely dangerous, because a successful attack can mean that legitimate users will make important decisions based on maliciously altered information. Such attacks range from website defacement to database attacks intended to corrupt weapons and command and control systems. The maze-like architecture of the Internet offers cyber attackers a high degree of anonymity, and enables attackers to obfuscate their identities, locations, and paths of entry. And worse: governments face the prospect of losing a cyber conflict without ever knowing the identity and location of their adversary.[405]

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[403] Eneken Tikk et al., *Cyber Attacks Against Georgia: Legal Lessons Identified* (Tallinn: Cooperative Cyber Defence Center of Excellence, 2008). See also: Stephen W. Korns & Joshua E. Kastenberg, "Georgia's Cyber Left Hook," *Parameters* (Winter 2008-9): 60-76.

[404] In its annual congressionally mandated report on the Chinese military, the US Department of Defense cited a number of examples demonstrating the global reach of Chinese cyber intrusions. In Germany, the Vice President of the Office for the Protection of Constitution, Remberg, openly accused China of carrying out computer network intrusions on an "almost daily" basis. In September 2007, French Secretary-General of National Defense, Delon, publicly admitted that French government websites had been targeted by Chinese cyber attacks. In November 2007, the Director of the British security service MI5 warned representatives of financial services companies that they were targets of Chinese "state-sponsored computer network exploitation." See: *Military Power of the People's Republic of China 2008*, Office of the Secretary of Defense, US Department of Defense, 3 March 2008.

[405] Kenneth Geers, "Strategists must be aware that part of every political and military conflict will take place on the internet," http://www.scmagazineus.com/cyberspace-and-the-changing-nature-of-warfare/article

The advances in communication and information technologies significantly enhance also the capabilities of the armed forces. But those same advances will be available to opponents, and they will use them to attack, degrade, and disrupt communications as well as the flow of information. Adversaries take ever more advantage of computer networks and the power of information technology not only to directly influence the perceptions and will of states, their decision-makers and population, but also to plan and execute cyber war. Thus, it is essential that the armed forces be capable of functioning in an information hostile environment, so as not to create an Achilles' heel by becoming too network dependent.

As the Internet reaches more distant parts of the globe, and national economies of a rapidly increasing number of countries become integrated into the World Wide Web, interest in acquiring both offensive and defensive cyber capabilities by states and non-state actors will only grow. In this regard, China, Russia, the US, and Israel as major global exporters of IT and depositaries of IT talent, could pose the gravest threats. China has dramatically expanded its level of effort in computer network operations worldwide for intelligence collection and military use over the past years. Information warfare has become a pillar of China's military modernization program and war planning. China sees the dependence of highly developed nations on IT systems as critical to their military operations, but also as potentially their greatest vulnerability. Thus, it sees cyber warfare as an attractive way to offset its military's technological disadvantages. Of primary concern is the threat of organised cyber attacks capable of causing debilitating disruptions to critical national infrastructures, the economy, and national security. Such capabilities should not be dismissed as minor nuisances. Many scenarios can be envisioned in which concerted cyber attacks could inflict irreparable damage on critical infrastructure and national security.[406]

As the Internet continues to expand, and computer systems continue to be assigned more responsibility while becoming more and more complex and interdependent, sabotage or terrorism via cyberspace are becoming more serious threats. The severity of security challenges posed by cyber warfare to any given country is largely proportional to the degree of its dependence on modern information and communications technology. Thus, countries that are more advanced in terms of Internet accessibility, e-commerce, e-banking, and so forth, are more vulnerable to cyber attack. The dynamic, asymmetric and still-evolving nature of cyber attacks makes all aspects of cyber defence – deterrence, detection, analysis, investigation, prosecution, retaliation, and more – critical questions for national security planners to answer. Cyberspace vulnerabilities place more than transactions at risk; they jeopardize intellectual property, business operations, infrastructure services, and consumer trust, thereby undermining confidence in information systems and in the very information these systems were intended to convey. Conversely, cyber security investments result in more than costly overhead expenditures. They produce a return on investment. Although the likelihood of suffering a severe cyber attack is difficult to estimate, the costs

[406] "Recent Events Suggest Cyber Warfare Can Become New Threat," *WMD Insights* (December 2008/January 2009).

associated with a successful one are likely to be greater than the investment in a security program to prevent it.

To counteract the threat of potentially catastrophic cyber attacks against critical infrastructure, policymakers are contemplating the use of deterrence strategies to supplement cyber defence. Deterrence has traditionally focused primarily on threatening an attacker with a punishing response in order to deter attacks from occurring.[407] But deterrence does not work in cyberspace. Deterrence becomes meaningless when the identity of an attacker is unknown. While nuclear weapons deterred a potential aggressor, cyber weapons do not. It is the result of the uncertainty that reduces the credibility of a deterrent threat against an opponent in cyberspace. This is particularly true for non-state actors, which are much less likely than government leaders to be deterred by the threat of retaliatory attack.[408] They have no capital city or infrastructure to threaten, and their willingness to accept risk will likely be much greater than that of nation-states. They do not face the same political constraints that apply to state action in cyberspace. Some opponents may even welcome retaliation, as it could provide justification and expand support for their cause. The potential collateral damage inflicted may not be contiguous with a target, and may not even be located in the target country, while uncertainty about collateral damage will affect decisions by national decision-makers, who may be unwilling to incur the risk of a cyber attack that could widen or escalate a conflict, or create unfavourable political consequences.[409]

Increased attention to defence and resilience could change an attacker's decision in ways that are not achievable by threatening reprisal or retaliation, by decreasing the chances for successful attack and increasing the costs of detection.[410] Broad improvement in cyber security inter-nationally requires nations to undertake a larger strategic calculation to determine the balance among offensive, defensive, and multilateral efforts that best reduce the risk and increase the cost of cyber attack. Very few nations seem to have yet done this. As Lewis puts it: "The notion of cyber deterrence is appealing because it is unilateral, and it justifies building offensive capabilities. But real security may require exactly the opposite approach – multilateral agreements and emphasis on defence."[411]

No single strategy can completely eliminate cyberspace vulnerabilities and their associated risks. Nevertheless, nations must act to manage risk responsibility, and to enhance their ability to minimize the damage that results from attacks that do occur.[412] Reducing these risks requires an unprecedented, whole-of-government approach, active public-private partnership among diverse components of the country, and global partners. Governments have to focus greater attention on

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[407] K. A. Taipale, *Cyber-Deterrence* (New York: Center for Advanced Studies in Science and Technology Policy, February 2009).

[408] John Markoff, David E. Sanger & Thom Shanker, "In Digital Combat, US Finds No Easy Deterrent," *The New York Times,* 25 January 2010, http://www.nytimes.com/2010/01/26/world/26cyber.html

[409] Taipale, *Cyber-Deterrence*.

[410] Martin C. Libicki, *Cyberdeterrence and Cyberwar* (Santa Monica: RAND Corporation, 2009).

[411] James A. Lewis, "The Fog of Cyberwar, Discouraging Deterrence" (Zürich: ETH, International Relations and Security Network ISN, 29 March 2010).

[412] *GFI White Paper, Targeted cyber attacks, The dangers faced by your corporate network* (GFI Software, 2009).

addressing the global aspects of cyberspace. The legal, technical and institutional challenges posed by cyber attacks and cyber crime are global and far-reaching, and can only be addressed through a coherent strategy taking into account the role of different stakeholders and existing initiatives, within a framework of international cooperation. Because cyber threats are a global problem, they need a global solution.

Taking into account newer threats to critical infrastructure in the financial, health, energy, transportation, telecommunication, defence and other sectors, the impact of cyber threats is becoming ever greater. Because the Internet has blurred the line between military and civilian targets, an adversary can cripple a country – say, freeze its credit markets – without ever taking aim at a government installation or a military network. The risks are evolving in line with the technologies. For example, one emerging menace is the shift in strategy by hackers from a central command-and-control model for controlling botnets to a peer-to-peer model with a distributed command structure, capable of spreading to compromised computers located in different countries. This practice makes it very difficult to pinpoint any single geographical location as the origin of cyber attacks using botnets, and consequently makes it more difficult to identify them and shut them down. This shift in strategy is not just aimed at delivering spam and malware, but can also be used to disseminate inappropriate content, such as child pornography, without the knowledge of the hijacked computer owners that they are hosting and disseminating such content.

Toolkits and applications for phishing, spam, malware, scareware and snoopware can today be acquired relatively easily from underground sites or even purchased legally. This is lowering the financial and intellectual entry barriers to acquiring tools to facilitate unauthorized access to information and communication systems to manipulate or destroy them. Moreover, snoopware is going mobile, threatening user privacy through the possibility of voice/data call monitoring, with devastating consequences, especially for the growing number of corporate users who rely on their smart-phones for confidential discussions and data exchanges with their corporate IT systems. With the phenomenal growth in mobile telephony together with convergence, which is bringing down the walls between networks, cyber threats can now spread easily to all platforms and to all countries. International law remains immature for determining when a cyber event crosses the threshold triggering use of force.[413]

In May 2008, NATO established the Cooperative Cyber Defence Centre of Excellence in Estonia.[414] In June 2009, the US announced the formation of a new Cyber Command to coordinate cyber security and direct cyber attacks. The US is also establishing an Office of Cyber Security, and will hire up to 1,000 cyber security experts to ramp up the nation's defences. And the Department of Defence plans to boost its number of "white hats" from eighty to 250 by 2011.

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[413] Stephen W. Korns, "Cyber Operations – The New Balance," *Joint Forces Quarterly*, no.54 (3rd Quarter 2009): 101.

[414] *NATO opens new centre of excellence on cyber defense*, 14 May 2008, http://www.nato.int/docu/update/2008/05-may/e0514a.html

The US is now implementing the Comprehensive National Cybersecurity Initiative,[415] which was designed to mitigate vulnerabilities being exploited by adversaries and provide long-term strategic and operational and analytic capabilities to US government organisations. In October 2009, the International Partnership Against Cyber Threats, IMPACT, called for governments around the world to set up dedicated agencies to address the growing dangers of cyber threats. Singapore announced the formation of a new cyber security authority, the Singapore Infocomm Technology Security Authority, SITSA, which will be responsible for safeguarding the country's ICT technology assets under the Ministry of Home Affairs. The UK set up the Centre for Secure Information Security, CSIT, to keep crime off the Internet and combat anti-social behaviour. Abu Dhabi and South Korea are in the process of kicking off similar initiatives, with the South Korean government planning to train 3,000 cyber sheriffs by 2010 to protect businesses after recent attacks on state and private websites. Countries with cyber security agencies have the advantage of having experts under one roof to ensure the speedy execution of plans to counter cyber threats as these are now occurring at an alarming rate.

There are many challenges facing the formulation and regular revision of cyber security policy. The rapidly evolving nature of technology implies that by the time institutions respond, the treats will have changed. The approach to cyber security over the past 15 years has failed to keep pace with the treat. This is reason enough for the intelligence community to integrate cyber security with counterintelligence in order to improve their ability to understand, detect, attribute and counter the full range of threats to cyber security. A number of nations are actively involved in developing treaties, establishing standards, and pursuing international agreements addressing cyber security and cyber crime, and work towards building consensus on a global cyber strategy. ITU, the International Tele-communications Union, is in the process of drafting an international protocol on cyber security and cyber crime, as proposed in November 2008.[416] These efforts should be joined by as many nations as possible, because viable security of the cyberspace can only be achieved at the universal level.

Cyber Security, regardless of its different permutations, should be achieved for all in line with the notion of human security. After all, in the information age, information is the basic commodity.[417]

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[415] John Rollings & Anna C. Henning, *Comprehensive National Cybersecurity Initiative: Legal Authorities and Policy Considerations* (Washington DC: Congressional Research Service, R40427, 10 March 2009).

[416] *ITU Global Cybersecurity Agenda (GCA) – A Framework for International Cooperation in Cybersecurity* (Geneva: International Telecommunication Union, 2008). See also: ITU, *ITU Toolkit for Cybercrime Legislation* (Geneva: International Telecommunication Union, Draft April 2009); ITU, *Understanding Cybercrime: A Guide for Developing Countries* (Geneva: International Telecommunication Union, Draft April 2009).

[417] Mely Caballero-Anthony, Nur Azha Putra & Kevin Punzalan, *NTS Alert on Cyber Security, The Final Frontier: Non-Traditional Approaches to Cyber Security* (Consortium of NTS Studies, October 2002).

3.11 Technological progress and innovation

The current change in science and technology is revolutionary, resulting in a radical increase in the rate of development and innovation. But the present and continuing wave of technological innovation is different even from the information technology revolution of the 1990s in two ways. First, it is generating a vastly more profound transformation, particularly due to the synergy of the emerging technologies of bioengineering, nano-engineering, and robotics combined with artificial intelligence,[418] but also due to the convergence with significant evolution in materials technology, power sources, space science, and particular weapons technologies. Second, it is a revolution occurring at a speed never experienced before.

Biotechnology, the application of understanding about living things, is producing a number of revolutionary advances. Driven by genomics, the sequencing of the human genome which gave access to the blueprints for constructing a biological entity, bioengineering is in the early stages of learning how to make constructive modifications to that entity. The knowledge gained is paving the way for progress in the diagnosis and treatment of human disease, both chronic and infectious, in biological energy sources, pollutant control, and agricultural productivity, through genetic modification of organisms. This will lead to patient-customized antibiotics, vaccines, and antiviral agents, likely to contest the current trend towards the resurgence of infectious diseases, to tissue and organ engineering, non-invasive surgery, improved prosthetics, neural, sensory and bionic implants,[419] and countless other, currently inconceivable possibilities. Resulting is an increase in the quality and length of human life, a reduction of infectious and chronic diseases, improvements in most areas of human performance,[420] and second-generation 'functional foods' with additives such as vitamins and edible vaccines.

These developments will have many implications for defence and security. Biological weapons are likely to proliferate further, despite regulatory mechanisms, among both state and non-state actors, particularly because so many of the basic technologies are dual-use. Biological agents may become more sophisticated and tuneable with respect to persistence, survivability, lethality, transmission, resistance to medical countermeasures, and target specificity. At the same time more effective countermeasures will become available in terms of detection, protection, and treatment, though there may likely be a lag before such countermeasures can be derived. Agricultural products and the food chain may become more often targets for low-intensity economic warfare. While cognitive science will allow improvements in human-machine interfaces, potentially speeding and simplifying battlespace decision-making and execution, new behaviour-controlling chemicals, bionics, and germ line engineering may become available to enhance the fighting power of military forces in new ways.

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[418] Janie Fouke, Trudy E. Bell & Dave Dooling, eds., *Engineering Tomorrow: Today's Technology Experts Envision the Next Century* (New York: Institute of Electrical and Electronics Engineers, 2000).

[419] See: *Report Antiviral Therapeutics* – technologies, markets and companies (Global Information, Inc., February 2010), http://www.the-infoshop.com/report/jai70939-therapeutics_toc.html

[420] Philip S. Anton, Richard Silberglitt & James Schneider, *The Global Technology Revolution: Bio/Nano/Materials Trends and Their Synergies with Information Technology by 2015* (Santa Monica: RAND Corporation, 2001), 15.

Nanotechnology, an amalgam across the disciplines of biology, physics, mathematics, chemistry and engineering, is the emerging field of nano-scale engineering: the rapidly expanding arena dealing with structures and machines on atomic and molecular scale,[421] leading to unprecedented understanding and control over fundamental building blocks of all physical things. These nanostructures include electrical, mechanical, mechanical-electrical, and quantum devices, which are revolutionizing the ways technology can be developed, manufactured, and is interacting with the environment. Applications using nano-particles significantly stronger than traditional materials have already made an impact in the car and packaging industries. Microelectromechanical systems, the next size up from nanotechnology, are currently used in a variety of applications, among them the triggering of auto airbags, the switching of data moving over fibre-optic cables, and the direct integration of data in analogue and digital circuits on silicon chips as in a cellular phone. Hardware advances for exponentially smaller, faster, and cheaper semiconductors that have fuelled information technology will continue to 2015 as the transistor gate length shrinks to the deep 20–35 nanometer scale. This trend will increase the availability of low-cost computing and enable the development of ubiquitous embedded sensors and computational systems in consumer products, appliances, and environments. Potential capabilities include the provision of greater processing capacity by engineering more into the same space; the proliferation of sensors and actuators leading to clothes that respond to the weather, interface with information systems, monitor vital signs, deliver medicines, and automatically protect wounds; airfoils that respond to airflow; buildings that adjust to the weather; bridges and roads that sense and repair cracks, and so on. Alongside the generic advantages of computer processing speed and miniaturization, more specific applications may include stealth materials, and autonomous micro vehicles. The domain of micromechanics will change the paradigm of what machines are, how and where they are used, what they cost, and how they can be designed. This will bring society on the verge of a new industrial revolution driven by a new and completely different class of machines.[422] By 2015, nano-materials, such as semiconductor quantum dots,[423] could begin to revolutionize chemical labelling, and enable rapid processing for drug discovery, blood assays, genotyping, and other biological applications.

Nanotechnology can bring great achievements and solve great problems, but it will likewise present opportunities for enormous abuse. Though unlikely to mature already within a decade, it will lead to artificial photosynthesis systems for clean energy; molecular crystal growth for new generations of more efficient solar cells; tiny robotic systems for space exploration; selective membranes that can fish out specific toxic or valuable particles from industrial waste or that can inexpensively desalinate sea water.

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[421] The nanotech realm is defined as being between 0.1 and 100 nanometers – a nanometer being one billionth of a meter, or one millionth of a millimeter.

[422] David Bishop, Peter Gammel & Randy C. Giles, "The Little Machines That Are Making It Big" *Physics Today* 54, no.10 (2001): 45. See also: Kip P. Nygren, "Emerging Technologies and Exponential Change: Implications for Army Transformation," *Parameters* 32 (2002).

[423] Mason Inman, "Quantum dot memory may be 'Holy Grail' of computing," *NewScientist* (7 March 2008); Alexander E. Braun, "Quantum Dot Mapping Points to Unthought-of Application," *Semiconductor International* (5 November 2009).

Nanotechnology will have significant implications for military technology, defence and security, particularly in the fields of faster information systems, new sensor devices, smaller mechanical systems, and improved material properties. It will enable chameleon-like camouflage that changes shape and colour to blend in anywhere. Devices to transmit electromagnetic signals – including radio and laser signals – will shrink in size while becoming inexpensive and more powerful. Aircraft designed with lighter and stronger nano-structured materials will be able to fly longer missions and carry more payloads. Among other things, bulletproof vests are already woven out of nano-tubes.

Information Technology: The emergence of modern IT has presented endless possibilities for match-ups involving various old and new technologies, and between new and advanced technologies. It also provides a new approach to the relationship between man and technology. Computer processing power is still getting faster and cheaper. Since current silicon based systems may soon reach their physical limitations, new technologies based on molecular and biological sciences, quantum physics, and the use of new materials with novel properties will likely replace silicon. Chemical, fluidic, optical, mechanical, and biological components will be integrated with computational logic in commercial chip design. Quantum technology offers the potential to change the laws of the game more fundamentally with new algorithms based on quantum principles. "Plastic electronics" enable computers to be moulded into cloths at low cost, making wearable computers practical and cost effective. Novel material developments produce products, components, and systems that are smaller, smarter, multifunctional, environmentally compatible, more survivable, and customizable. These not only contribute to the growing revolutions of information and biology, but have additional effects on manufacturing and logistics. And they will deliver advantages such as unorthodox electrical, magnetic, and optical properties offering the potential for various ultra-high strength, information storage, and low observational properties. Smart materials may allow integrated self-monitoring of the conditions of the materials, thus increasing safety.

The implications for defence and security are that the increase in speed, connectivity, and pervasiveness of information and communications technology will continue unabated, requiring continual adaptation by the armed forces of their systems. The commercial lead in these areas may mean that the comparative advantage that developed countries have in individual C4ISR[424] components will decline as equivalent or better capabilities become available 'off the shelf'. However, the command system as a whole will remain a key force multiplier − an advantage that opponents will seek to contest through electronic warfare, computer network attack, and asymmetric techniques. Another aspect of the implications is that the advances in knowledge management tools, self-monitoring and repairs, and more intuitive human-machine interfaces, are likely to ease the demand for the numbers of skilled technicians in the armed forces. Increases in materials performance for power sources, sensing, and actuation could also enable

[424] System of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance.

new and more sophisticated classes of robots and remotely guided vehicles, perhaps based on biological models.

For modern armed forces, remotely controlled weapon systems will become prevalent in all environments, and may be weaponised in the near future. More important, artificial intelligence, long anticipated to bring radical change, will be of use in a variety of ways. Apart from providing sensible answers to browsing inquiries in the Web, it has the potential to soon enable fully autonomous tactical decision-making by unmanned weapons systems. The US is investing significantly in the development of unmanned combat vehicles with the capability to choose targets autonomously.[425] Autonomous land, sea, and air vehicles capable of complex strategic reconnaissance and attack missions with intelligent capabilities will proliferate due to casualty intolerance of developed countries, rising cost of manned systems, continuing cost reduction in computer systems, and digitization of the battlespace. While the principal challenges to their employment will likely be legal and ethical, the feasibility of their widespread use may depend more on solutions being found for compact, high-energy power sources. Effective hydrogen fuel cells have been developed that convert hydrogen to electricity, thus providing a realistic alternative to combustion technology. The defence and security implications are that these developments will have an impact on the conduct of war and the nature of combat.

Space technology developments are making space more accessible through reduced launch costs, resulting from miniaturisation and scramjet propulsion. Near earth space exploitation continues to be commercialized. 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.[426] The development of micro- and nano-sized satellites is bringing a shift from the deployment of several large satellites to constellations of many small satellites with more distributed functionality,[427] offering a low cost alternative to contemporary large and very expensive space systems. Continuous all-weather global surveillance of the earth's surface is now militarily and commercially achievable.

Notable among the defence and security implications of the developments in space technologies is that space exploitation will become more crowded and contested militarily, that the US comparative advantage in space systems such as satellite imagery, communications, and precision targeting may diminish, and that the traditional military monopoly on surveillance will become more closely matched by commercially operated systems.[428] While the militarization of space has so far concentrated on sensor and communication system rather than purely

[425] See the fully autonomous US combat aircraft LOCAAS, and MANTA, the new underwater vehicles.

[426] *Strategic Trends. The Science & Technology Dimension*, Designed and Produced by the Joint Doctrine and Concepts Centre (London: MoD of the United Kingdom, March 2003), 4–19.

[427] The US DARPA, in conjunction with the Aerospace Corporation, has already successfully trialed picosatellite swarms in low orbit

[428] Total revenues for commercial space products and services in 2008 reached an estimated 91 billion USD, 10.4 percent more than in 2007. The largest revenue producer within the commercial satellite service sector was direct-to-home television, which generated 69.6 billion USD. *The Space Report 2009* (Washington DC: Space Foundation, 2009), 5–6.

offensive ones, this may change with increasing funding of US space programs. Opponents may in turn develop their own anti-satellite capabilities to offset perceived disadvantages. Some countries already have systems, such as satellite laser range-finding devices and nuclear-armed ballistic missiles, with inherent anti-satellite capabilities. A few countries have programs that could result in improved space object tracking, electronic warfare or jamming, and kinetic or directed energy weapons. Other states and non-state entities are pursuing more limited, though potentially effective, approaches that do not require large resources or a high-tech industrial base. These include denial and deception, signal jamming, and ground segment attack.[429]

Specific military technologies: high power electromagnetic pulse generation techniques as well as High Power Microwave technology have matured to the point where non-nuclear E-Bombs have become technically feasible.[430] Russia has begun selling radio-frequency weapons, a class of threat that can fry or disrupt just about anything that runs on electricity.[431] These could become the weapon of choice for military forces since they offer high pay-off with a modest commitment of resources, and without the politically damaging loss of life. Equally maturing are Directed Energy Weapons technologies where work to improve their effectiveness and efficiency is continuing in many nations. Continuing is also the development and improvement of small volumetric weapons, such as enhanced blast weapons, thermobaric,[432] and fuel-air explosives, the availability and use of which have expanded over the past decades. Their proliferation challenge traditional protective mechanisms, which are currently optimized to defeat fragmentation and penetration weapons. The defence and security implications of these advances are that they now lead to wider deployment and employment of electromagnetic and blast effect weapons.

Great strides are being been made in so-called non-lethal weapons, explicitly designed and employed to incapacitate personnel and material, whilst minimizing fatalities, undesired damage to property and the environment. On the offensive side, developments focus on acoustic,[433] sonic, microwave,[434] laser and flash-bang devices, as well as on riot-control agents and substances causing either somnolence, lethargy, dopey hallucinations, unconsciousness, or paroxysm, itch, nausea, diarrhoea, and so forth. More on the defensive side, developments aim at limiting mobility or interdicting movement, focusing on glues and sticky barrier materials, nets, and on glitch-foams, as well as on all kinds of chemicals designed

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[429] Lowell E. Jacoby, *Current and Projected National Security Threats to the United States*, Statement For The Record, Senate Select Committee on Intelligence, 11 February 2003, 17.

[430] See www.infowar.com/mil_c4i/mil_c4i8_html.ssi

[431] Rosoboronexport's Ranets-E and Rosa-E. Ranets-E is a mobile radio frequency defence system against high-precision weapons, working in the centimeter-wave frequency range, producing impulses of 10 to 20 nanoseconds with an output exceeding 500 megawatts over a range of 20 miles in a 60-degree arc. Rosa-E is designed to break the electronics of radar systems. It can be launched from aircraft or short-range missile.

[432] Wikipedia, "Father of all bombs," Wikipedia, 10 February 2010, http://en.wikipedia.org/wiki/Father_of_all_bombs

[433] The most prominent of these is a powerful megaphone capable of emitting a piercing tone so excruciating to people that it reportedly drives off intruders and causes crowds to disperse. For most people, even if they plug their ears, this device will produce the equivalent of an instant migraine which will knock some on their knees.

[434] In 2001, the US Joint Non-Lethal Weapons Directorate unveiled a vehicle-mounted active denial system with which a transmitter fires two-second bursts of focused microwave energy that causes burning sensations on skin up to 650 miles away. This system can break up an unruly mob without killing or maiming.

to destroy gasoline, lubricants, and rubber tires. The appeal of such systems lies in their ability, at least in theory, to repel instead of maim, and to incapacitate rather than kill. This can be particularly desirable in urban environments where civilians and combatants may be intertwined, and the capacity to differentiate them is difficult.

As to the defence and security implications of these technologies: despite the legal and ethical challenges[435] that their use presents, non-lethal weapons can be expected to play a greater role in military operations in the future, especially as armed forces take on more peace support operations and are in closer contact with large numbers of civilians. Nonetheless, there are some concerns: that their non-lethal nature might tempt politicians in some nations to task military forces to use them directly against civilian targets, particularly in public order situations, and that non-lethality can allow decision-makers to avoid tough choices associated with using force. Moreover, in democracies, such technologies could lead to demands that they are used in preference to lethal weapons.[436]

Communications technologies: great strides are also being made regarding means of communication and exploitation of the frequency spectrum. One development that will solve the problem of the now antiquated and uneconomical system of frequency allocation is the atomic clock. Using microelectromechanical systems technology on a single chip reduces the size and power consumption of an atomic clock by factors of 200 or 300.[437] This will greatly improve the mobility and robustness of military communication and navigation devices. Frequency references from atomic clocks will improve communications channel selectivity and density, and will also enable ultra-fast frequency hopping for improved security, jam-resistance and data encryption. In GPS receivers, they will greatly improve the jamming margin and help continuously track positions and quickly reacquire a GPS signal, while in surveillance, atomic clocks will improve the resolution of Doppler radars and locate radio emitters.

Next-generation communications do not only promote more effective spectrum use but will also effectively change the rules of the game. This, because it is

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[435] Non-lethal alternatives are, on the surface, a welcome approach to ease human suffering during armed conflict and give military planners additional options in responding to threats. On closer examination, however, these systems present legal and ethical challenges that outside observers, like the International Committee of the Red Cross, contend have not been adequately dealt with to date. Not only is the non-deadly nature of any weapons system questioned, but also the manner in which they are employed, and the intent. Traditional weapons are said to have a lethality rate of approximately 25 percent in combat. Rates for so-called non-lethals could be similar: some 15 percent of the people inside a Moscow theater died in October 2002 when Russian security forces used a chemical incapacitation agent to diffuse a hostage drama with Chechen separatists. Moreover, states are obliged to ensure that their weapons systems comply with the laws of armed conflict. But current conventions do not differentiate between lethal and non-lethal weapons. Accordingly, both types are subject to the same restrictions. While certain non-lethal systems like blinding lasers, biological, and chemical agents are prohibited by specific agreements, the rest must be judged on principles such as whether the weapon would cause unnecessary suffering and whether an operator could discriminate in using the weapon to target only combatants and not civilians.

[436] See for example "The promise and the peril of non-lethal weapons" *Jane's Defense Weekly* (6 August 2003): 23, which reported: "Before the smoke had cleared from the ruins where Qasay and Uday Hussein died in battle with US forces on 22 July 2003 in Iraq, outside observers began to ask why the US had not done more to take the brothers alive. Included in the speculation was the question whether the US actions were 'overkill' and if non-lethal capabilities could have disoriented, subdued or otherwise incapacitated the Husseins to allow for their capture."

[437] Preston Marshall, *Next-Generation Communications*. DARPA. Advanced Technology Office. Briefing given in spring 2006 at a Seminar in Washington DC

premised on a notion that challenges conventional wisdom about the spectrum: that the spectrum demand overwhelms the fixed supply. On average, only 2 percent of the spectrum is actually in use in the US at any given moment, even though the full spectrum is allocated – a percentage that may be even lower in other countries. The dynamics of how that spectrum is used, or how it might be shared, have not been seriously considered. Thus, the key technology question becomes whether the unused spectrum can be exploited while ensuring that foreign systems do not interfere or that one's own systems do not interfere with those of foreign states. To answer that question, four key technologies are in development. The first is to embed low-power and compact spectrum sensing capability within next-generation systems. Low-power use is key to highly mobile applications. Second, the spectrum use is to be characterised by classifying the signals sensed in order to understand how to coexist with them: is it being used for military systems or for television? Which cellular technology is it using? And is there frequency, time, or code space available to share? The third technology in development is the ability to react to the other spectrum users through selection and coordination of frequencies, bandwidths, spreading codes, and so forth. The goal is to make the next-generation systems operate without interference from, or to, other users.

Media access controls are developed that support a range of physical waveforms and best exploit the features of each: looking at optimised waveforms that can best exploit next-generation capabilities through non-contiguous waveforms, highly spread water-filling underneath other signals, and other adaptive waveform technologies. Finally, the next generation needs to adapt to changes in spectrum use by developing, coordinating, and disseminating new spectrum planning. These changes could be caused by radar scanning the region, new mobile devices entering the area, or the next-generation communications network moving and encountering a new environment. By integrating the frequency assignment function into the network operations, a battlespace can be developed where networks detect, coordinate, and manage spectrum using common protocols automatically and autonomously. Because the networks do not depend on pre-assigned spectrum, they will greatly reduce the amount of spectrum needed to operate. This will change the nature of battlespace communications. What is envisioned is nothing less than a new generation of intelligent, situationally aware, network radio – one that takes on more and more of the resource management within itself. Today, there might be as many as 8,000 separate networks simultaneously operating, each of them needing its own, individually assigned spectrum. With the next-generation communications, there will be a generic wireless Internet that can be accessed simply by turning on a radio or communications device. The network detects other systems operating in the region. It automatically places and coordinates the network or sensor devices to appropriate frequencies. As forces move or other participants join, the system automatically adapts. When two mobile networks overlap, one automatically and seamlessly shifts to a new frequency. And because the next-generation communications is a dynamic system, adjusting itself to the spectrum available, it allows the priority user to adapt spectrum use as circumstances warrant.

Thus, the military will be able to deploy systems without the months of meticulous planning that characterises spectrum assignment today. In fact, while next-generation communications will be indispensable to military applications, it has equally significant advantages in civilian use. Wireless, autonomous communications networks will not only transform battlefield radios and radar, but also can transform similarly the next generation of sophisticated cell phones, digital devices, and mobile communicators that are flooding the public markets.

Implications of the accelerating speed of innovation: what are the implications of a revolution occurring at a speed never experienced before? Current technological change is accelerating, or evolving exponentially, as observers of change over the past century confirm.[438] A known example of massive exponential growth is the increase of computers connected to the Internet, which has grown at a rate of close to 70 percent per year for more than 30 years. The rate of economic growth of the biotechnology industry is the most rapid of all industrial sectors.[439] But only the summation of the change brought about by all technologies can give an overall picture of accelerating change. In the last decade of the 20th century, more technological progress occurred than was experienced in the entire first nine decades of the century. The doubling period for technological evolution during the 20th century is considered to be about ten years. In the first half of the last century, technology evolved over five doubling periods to become thirty-two times more advanced, or more complex, or more important in the life of humans in 1950 than it was in 1900. By the year 2000, technology had become about 1,000 times more advanced than in 1900. And by 2010, technology has doubled again to become 2,000 times more advanced than in 1900 – which implies the same level of technological change in the first decade of the 21st century as the world experienced in all of the 20th century.

Such acceleration is not without its costs. While part of the world is beginning to adjust to incessant change, which is reflected in the revolutionary ways in which business organisations and business cultures have evolved over the past two decades, it makes staying abreast of all the developments much more difficult. Thus, the fact that technological innovation has always been a double-edged sword might more easily get lost. While becoming more capable of providing positive benefits for society, technology also acquires ever more potential for injury and destruction. In the wake of 9/11, public safety considerations in the innovation of new technologies have become of higher priority because the assumptions have changed. The terrorist attacks brought home the realization that even non-military technology can be turned into devastating weapons in ways that were never considered during the design of that technology. A fundamental

[438] See: Ray Kurzweil, *The Law of Accelerating Returns*, 7 March 2001, http://www.kurzweilai.net/articles/art0134.html?printable=1 And: Predictions made by Raymond Kurzweil, Wikipedia, at: http://en.wikipedia.org/wiki/Predictions_made_by_Raymond_Kurzweil 31 January 2010.

[439] There is a revolution in biotechnology in the sense of the revolution in computer and information processing power. The US Militarily Critical Technology List reports technological doubling rates of 6 months for basic genetic engineering, the Human Genome Project, bio-regulators, and other biotechnical applications. This can result in enhanced infectivity and virulence, novel toxins and regulatory peptides, greater antibiotic resistance and novel genetic weaponry as a distinct possibility. *Militarily Critical Technologies List*, Pentagon: Department of Defense, Undersecretary of Defense, Acquisition, Technology and Logistics, January 2009.

assumption for designing safe technology has always been that the operators of these tools would not do anything to knowingly jeopardize their own existence. That assumption no longer applies. The implications are that the design of all future technology must consider the possibility of deliberate attempts to convert the new tools into impromptu weapons. The dark side of these new technologies almost certainly offers the greatest uneasiness for the armed forces' ability to provide for national security.

Growing interdependence: the geostrategic environment shaping national security in the information age is dominated by four critical new developments: (1) the emergence of cyberspace as an operational environment for business, politics, and warfare; (2) the impact of digital convergence, in which essentially any form of information can be expressed digitally and then combined, changed and re-used in ways the originator has no control, and little or no awareness of; (3) the growth of global omni-linking; and (4) the increasing control of key societal infra-structures by computerized systems. The result is an intensification of global interconnectedness – economic, political, social, cultural and military.

Connectivity between computer systems will increase in the world's leading economies through digital, wireless, wideband connectivity and voice, data and video convergence to the extent that connectivity is no longer perceived as a limiting factor with many systems online all the time. Not only will this produce significant change in the nature of work and social life; concomitantly it will also introduce new critical infrastructure, as developed societies become dependent on constant interconnectivity. Use breeds dependence, and dependence breeds vulnerability. These vulnerabilities create the battlespace in which cyber threats to the economy and the critical infrastructures upon which developed nations depend pose a strategic threat to national security in the information age.

Ever more governments, societies, economies, and enterprises become reliant on well functioning networked information systems for communication purposes, the exchange of information, the supply of energy, power, and water, for the stock and insurance markets, banking and financial transactions, trade, commerce, and transportation, for traffic and air traffic control, health care, emergencies and first responders, as well as for the regulation of dams, river flow, and wastewater disposal, and for a myriad of other necessities and needs. Thus, the vulnerability of such systems to attack either from hostile states, or from criminals, terrorists, vengeful non-state actors, and all sorts of opposition groups will increase. Easy access, use, and insufficient protective measures increase the risks to states, societies, and their critical infrastructures and facilitate the manifold forms of information operations and cyber warfare.

One of the pressing problems in implementing protective policies is the requirement for intelligence on attacks. At present, the state of the art in detection technologies and intelligence mechanisms is unable to fulfil this requirement. Even as nations work to improve their capabilities, the transnational nature of information and communication networks such as the Internet will make it impossible for any nation to be electronically self-sufficient. Whether states treat

such attacks as criminal activities or national security threats, they will need to put in place collaborative mechanisms for joint investigations and sharing of intelligence on attacks and attackers. Given the lack of warning time inherent in electronic attacks, this sharing will come to resemble the sort of sharing required in an operational combat zone: it will have to be real-time and allow the instantaneous integration of intelligence with operations to enable victims of attack to react appropriately. Hence, the vulnerabilities growing with the ever-greater dependence on information and communication systems have major defence and security implications. The challenges of protecting these infrastructures pose the problem of international intelligence cooperation in its most extreme form. The global nature of cyberspace means that cooperation needs to be as broad as possible; states will have to risk sharing sensitive data on their vulnerabilities; and cooperation will have to be real-time.

The need for collaboration, whether between governments or enterprises, will continue to increase in importance, thus will enlarge global interdependence. In the research and development field alone, companies worldwide have entered into more than 5,100 known multi-firm R&D alliances since 1990.[440] Access to strategic high technology through collaboration will depend critically on more effective means of protecting information, and enforcing intellectual property rights. Regulatory control of science and technology, combined with corporate self-interest, will continue to protect intellectual property and to guard against the leakage of technology that would threaten security or undermine commercial advantage. However, the challenges will be growing given the increasing volume of research, the general increase in the ease of information sharing, and the more interconnected and less tightly-controlled manner in which research is taking place. The defence and security implications are that there will be an enhanced impetus for regulation on a multinational basis, particularly in weapons and biotechnology. This, however, is unlikely to become sufficiently comprehensive to prevent some leakage to states and non-state actors, or the development of high-threat technologies indigenously by states operating to a different set of ethical standards.

Defence is critically reliant on exploiting advances in science and technology. The technological edge has always been, and continues to be, a key discriminator in military operations. However, the Cold War trend for a flow of innovation from the defence and security sector to the commercial sector has been reversed. Though the defence industry may continue to lead research in some selective key military application-based technologies, particularly in the US, ever more future technological innovations will originate in the commercial sector. Given the commerce-led nature of, and the more globalised market in research, innovation and sales, the average times will shorten between both scientific discovery and technical feasibility, and then between feasibility and commercial application. This will also concentrate follow-on research funding into those areas likely to lead most directly to commercial applications and ensure the rapid evolution of

[440] *Strategic Trends. The Science & Technology Dimension*, Designed and Produced by the Joint Doctrine and Concepts Centre (London: MoD of the United Kingdom, March 2003): 4-3.

commercial technologies once they are mature for product and service differentiation purposes. Thus, for defence, things will get older faster. Maintaining a technical advantage as well as backwards' compatibility between old and newer system components, will therefore become an increasing problem unless the flexibility and capacity to manage graceful obsolescence is factored in. Furthermore, and in parallel to the rapid application of innovation, the use of more mature technologies will also increase in breadth and depth, accelerated by the diffusion of communication systems and global markets. States and societies in the developing world will be able to enhance their technological capabilities by technology leaps, importing mature technologies rather than evolving them indigenously, and will be more available to wide expanses of the world. Implications for defence and security will emerge with the diffusion and easy accessibility of advanced technology for a widening number of military and non-state actors. This may expose the armed forces of developed countries to unplanned vulnerabilities should potential opponents exploit various treaties and other agreements limiting the development and employment of certain types of weapons, or quickly procure modern materials and equipment.

Technological innovation itself could contribute to enhance the vulnerability of developed states in a world of growing interdependence, particularly if innovation is continuing at such an exponential rate – with the rate of exponential growth itself growing exponentially. Technological innovation is the primary cause of the growing stress in society, where the basic desire for the comfort of permanence is getting in ever more accentuated opposition to the need to control and transform the environment in the service of humanity. Though technological innovation is central to the economic process and cultural beliefs – more commonly labelled progress – that drive modern civilization, need for progress is simultaneously the source of relentless destabilisation and disorder experienced by individuals, institutions, governments, and societies.[441] Thus, the vulnerabilities emerging from relentless destabilisation and growing disorder could also become exploitable by future peer competitors or even lesser powers.

3.12 Public-private partnership

The last quarter century has brought a normative shift toward the marketisation of the public sphere: the privatisation revolution – and ultimate representation of neo-liberalism. Privatisation provides the logic, legitimacy, and models for the entrance of markets into formerly public sector domains. Privatisation has gone hand in hand with globalisation. Both dynamics are supported by the belief that comparative advantage and competition maximize efficiency and effectiveness.

Today, all levels of government, seeking to reduce costs, have begun turning to the private sector to provide some of the services that are ordinarily provided by government. The spread of the privatisation movement is grounded in the fundamental belief that market competition in the private sector is a more

[441] Michael M. Crow & Daniel Sarewitz, "Nanotechnology and Societal Transformation"

efficient way to provide these services, and allows citizens more choice. Competition promotes operating cost effectively, and the hoped for greater accountability helps ensure quality products and services. The private sector also excels at using innovative technology to solve problems, while government agencies do not always have the same latitude to innovate or to take risks. Finally, the private sector has vast resources, for example in computer technology, high volume proceeding equipment, and specialized personnel, plus the flexibility to assign these wherever they are needed most.[442]

Proponents of privatisation argue that private firms are more efficient because of economies of scale, higher labour productivity, and fewer legal constraints. They fault government service provision for their monopoly status and inability to be responsive to citizens' needs, resulting in inefficient, one-size-fits-all services. Major arguments supporting privatisation are: government is bloated and inefficient; government employees are allegedly lazy and unresponsive; inserting market-based reforms through the contracting process will increase competition, resulting in improved quality at lower costs; the private sector is more capable of innovations and can help government increase capacity; and less government is better.[443]

Critics of privatisation, however, argue that the nature of government services makes many of them inappropriate for privatisation. They point out that contracting may entail hidden costs, because of lack of information, the need for monitoring, and low-ball bidding. And they note that in some places creating the competition necessary for effective contracting is impossible, and suggest that in practice privatisation is more complicated than it seems. Further arguments against privatisation are: reduction of good government jobs in favour of lower paying jobs with fewer benefits; abdication of government responsibilities to the private sector whose motives are profit, not public good; high potential for corruption, waste, fraud, conflicts of interests and cost overruns; decreases government accountability and citizen participation; inadequate oversight and taxpayer protection; and great temptation to maximize profits by reducing access and quality of services.

Although few empirical studies provide clear evidence on costs and benefits of privatisation, public perception and pressure for improved government efficiency keeps privatisation on the government agenda. While right-wing governments generally have privatised in an effort to decrease the size of government, left-wing governments have privatised either to compensate for the failures of state-owned firms or to generate revenues. In this way, privatisation has spread from Europe to North and Latin America, from Asia to Africa, reaching its zenith with Central and Eastern Europe's transition from socialism to capitalism. Most privatisation projects take the form of contracting, but many are also taking place in the form of Public-Private Partnerships.

[442] Restructuring Local Government, "Privatization," Cornell University, 2006.
[443] Ibid.

A Public-Private Partnership (PPP or P3) is a government service or private business venture which is funded and operated through a voluntary, collaborative partnership of government and one or more private sector companies. There are three essential features of PPPs: (1) a formal agreement between or among public and private parties; (2) mutual sharing of resources, information, risks, and rewards; and (3) formal links between output-oriented performance measures and the allocation of risk and reward among partners. The big advantage of PPP is threefold: (1) the partnership allows government to maintain an active role in developing policy initiatives; (2) the partnership provides a means for the private sector to complement, rather than replace government; and (3) it encourages a valuable exchange of skills and experience between the two sectors.[444]

No single model of PPP has been identified as the unique and widely accepted one.[445] PPP approaches are arrayed across a spectrum. At one end, the public sector retains all responsibility for financing, constructing, operating and maintaining assets, together with the responsibility for assuming all associated risks. At the other end, the private sector assumes all of these risks and responsibilities. But the vast majority of PPP approaches fall into the middle of the spectrum, between the public sector and its private partners according to their strengths and weaknesses.[446]

In some types of PPP, the cost of using the service is borne exclusively by the users of the service, not by the taxpayer. In other types, notably the Private Finance Initiative (PFI), capital investment is made by the private sector on the strength of a contract with government to provide agreed services. The cost of providing the service is borne wholly or in part by the government. Government contributions to a PPP may also be in kind, for example, by the transfer of existing assets. In projects that aim at creating public goods like the infrastructure sector, the government may provide a capital subsidy in the form of a one-time grant in order to make it more attractive to private investors. In other cases, the government may support the project by providing revenue subsidies, including tax breaks or by providing guaranteed annual revenues for a fixed period.

PPP originated from pressures to change the standard model of public procurement, which arose initially from concerns about the level of public dept. Governments sought to encourage private investment in infrastructure, initially with most PPPs negotiated individually, as one-off deals. In 1992, however, the UK as frontrunner of privatisation in Europe, introduced the "Private Finance Initiative", the first systematic program aimed at encouraging PPPs.[447] Because of

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[444] The phenomenon of public private partnerships (PPP) reflects on one of the most important legal developments in the European Union. Public private partnerships have been described as an essential legal instrument for the delivery of public services and as the most innovative interface between the public and the private sectors. Such relations aim at delivering infrastructure projects, as well as many other schemes in areas covering transport, public health, education, public safety, waste management and water distribution.

[445] Myriam Dunn Cavelty & Manuel Suter, "Public-Private Partnerships are no silver bullet: An expanded governance model for Critical Infrastructure Protection," *International Journal of Critical Infrastructure Protection* (August 2009).

[446] Viktorija Bojović, "Public Private Partnership as a Last Resort for Traditional Public Procurement," *Panoeconomicus* 3 (2006): 299-311.

[447] Grahame Allen, *The Private Finance Initiative (PFI)* (London: House of Commons Library, Research Paper 01/117, 18 December 2001).

the focus on avoiding increases in public dept, many private infrastructure projects involved provision of services at substantially higher cost than could have been achieved under the standard model of public procurement based on competitively tendered construction of publicly owned assets. The central problem was that private investors demanded and received a rate of return that was higher than the government's bond rate, even though most or all of the income risk associated with the project was borne by the public sector.

One response to these negative findings was the development of formal procedures for the assessment of PPPs in which the central focus was on value for money rather than reductions in debt. The underlying framework was one in which value for money was achieved by appropriate allocation of risk. These assessment procedures were then incorporated in the PFI.[448] Though the general view that governments should seek value for money has been widely accepted, there have been continued disputes over whether the guidelines designed to achieve these goals are appropriate.

Not only national and local governments use PPPs. Also within the UN system PPPs have developed from a sporadic phenomenon into a number of fully fledged arrangements today, such as the corporate partnership programs maintained by UNICEF, UNIDO, UNDP, WHO and the UNHCR. The UN Fund for International Partnerships, established in 1998, manages grants from the private UN Foundation and facilitates PPPs, including with businesses. In view of the growing number of PPPs, the UN Secretary-General issued in 2000 Guidelines on Cooperation between the UN and the Business Community.[449] The Global Compact provides further guidance on corporate social responsibility in relations to the UN. In 2006, the General Assembly adopted the resolution "Towards Global Partnerships" which calls for PPPs.[450] And the report of the Secretary-General's High-level Panel on UN System-wide Coherence noted PPPs as a dynamic means of realizing sustainable development goals within the context of UN reform.[451] The UN has also provided a guidebook for good governance in PPPs.[452]

What, where, when, and whether to contract out public services to the private sector has been a contentious debate for decades – and still is. Issues of cost, efficiency, access and benefit to the public surround the debate. Privatisation appears to work best in areas where services, which have large equipment and material requirements, are labour intensive, and have capacity utilization problems that are more likely to be contracted out. Within the public work domain, there are several such services, for example: residential solid waste collection; highway

[448] Developed initially by the Australian and the UK governments, PFI has also been adopted, under various guises, among others in Canada, the Czech Republic, Finland, France, India, Ireland, Israel, Japan, Malaysia, the Netherlands, Norway, Portugal, Singapore, and the US as part of a wider program for privatization and deregulation driven by corporations, national governments, and international bodies such as the World Trade Organization, International Monetary Fund, and the World Bank.

[449] See http://www.un.org/partners/business/otherpages/guide.htm

[450] UN General Assembly resolution, A/RES/60/215.

[451] *Delivering as One*, Report of the Secretary-General's High-level Panel, 2006, 74.

[452] UN Economic Commission for Europe, *Guidebook on Promoting Good Governance in Public-Private Partnerships* (New York and Geneva, United Nations, ECE/CECI/4, 2008).

maintenance; street cleaning, repair and street light operations; tree trimming and planting; cemetery administration and maintenance; bus and other public transit system operations and maintenance; water services and wastewater treatment; janitorial and guarding services; parking enforcement; maintenance of buildings; fire and emergency medical services, and many others. These services have common traits: the output is tangible; there is sufficient availability of private firms that could deliver the service; the services are labour intensive; and there are no moral or equity issues involved.

The problem is that privatisation has now gone well beyond straightforward or specialised services such as refuse collection, data and payment processing, or computer system design. It has extended into wholesale outsourcing of complicated government functions such as foster care, child and other welfare services, running prisons, higher education, juvenile rehabilitation, mental health, as well as important military functions. In the US, for instance, large corporate conglomerates such as IBM, Lockheed Martin, and EDS are now bidding to take over the welfare services of entire states. This leads to concerns over maintaining access to necessary government services and the very functions of government itself, in addition to questions on the private sector's ability to provide for the public good, its submission to the rule of law and accountability. The fact remains that governments are more than a business; they reflect collective identity, respond to diversity, and promote social equity.

Governments worldwide have gained experience with the increased involvement of the private sector in the delivery of public services. Today, the US government has become the largest single purchaser of goods and services in the world, with dollar amounts more than doubling from 203 billion USD in 2000 to over 528 billion USD in 2008. Almost 40 percent of every dollar spent by Congress now goes to government contractors. Nearly one of three dollars of the annual 42 billion USD budget of the Department of Homeland Security flows to private contractors. However, leading the way in private contracting is the US Department of Defence,[453] with a whopping 3.1 trillion USD in private contracts since Operation Desert Storm in Iraq, followed by the Department of Energy, and the Department of Homeland Security only ranking sixth in federal contracts in 2008.

In both the US Department of Defence and US Department of Homeland Security, outsourcing defines governmental operations, with private contractors – often led by corporations that dominate all military, homeland security, and intelligence contracting – now doing everything outside of core functions. Helping to safeguard homeland security, contractors are engaged in the management, maintenance, and protection of the critical national infrastructures. They also participate in border protection, surveillance and control, in the collection of intelligence, and are engaged in transborder issues of immigration, trade, and the

[453] In fiscal year 2009, the Department of Defence spent nearly 384 billion USD on contracts. See: US Government Accountability Office, *Defence Acquisitions: Managing Risk to Achieve Better Outcomes* (Washington DC: GAO-10-374T, 20 January 2010).

prevention of smuggling.[454] For the Department of Defence, contractors are engaged in advisory work and consulting; training; logistic support; maintenance; intelligence, reconnaissance, surveillance and monitoring; prisoner interrogation; in demining; running prisons; guarding embassies, command posts, lines of communications, and logistics infrastructure; and supporting the armed forces in fighting the wars in Iraq and Afghanistan.[455]

Critical infrastructure protection is seen as an essential part of national security in numerous countries around the world.[456] One of the key challenges for such protection efforts arises from the privatisation and deregulation of many parts of the public sector since the 1980/90s, which have put a large part of the critical infrastructure in the hands of private enterprises. This created a situation in which market forces alone are no longer sufficient to provide security in most of the infrastructures. At the same time, government is no longer capable of providing the public good of security on its own because no government can afford the financial resources to shoulder all responsibilities for homeland security.[457] A government-alone approach calling for businesses that operate infrastructure to be managed by government, does not work. It is beyond government means to assume the burden of micromanaging every critical business activity of the state or supplying sufficient personnel to guarantee a reduction in the vulnerabilities of these activities. An intrusive market intervention is not a valid option since the same infrastructures that the state aims to protect are also the foundation of the competitiveness and prosperity of the nation. Businesses that own and operate the nation's critical infrastructures have a natural incentive to protect them. The owners and operators are cognizant of the risks they face, including security threats. And they do not need to be told that if a flood or cyber attack destroys their computer systems, they may be out of business.

Consequently, rather than pursuing a government-only approach, homeland defence should favour an alternative strategy that treats the business community as an equal partner in strengthening the security of the nation's critical infrastructure. What is required is to hold businesses accountable, not to micromanage them. Such a partnership model allows businesses to engage in the familiar task of risk management – creating security measures and channelling resources where the need is greatest – rather than being compelled to pursue the quixotic goal of risk elimination.[458] Such an approach seeks to have businesses share in the burden of security enhancement. Instead of requiring commercial enterprises to provide a greater degree of protection for assets they already value,

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[454] *National Strategy for Homeland Security* (Washington DC: Homeland Security Council, 5 October 2007).

[455] Fred Schreier & Marina Caparini, *Privatising Security – Law, Practice and Governance of Private Military and Security Companies* (Geneva: Geneva Centre for the Democratic Control of Armed Forces, Occasional Paper No. 6, 2005).

[456] Critical infrastructures are systems or assets so vital to a country that any extended incapacity or destruction of such systems would have a debilitating impact on security, national public health or safety. The most frequently listed examples encompass the sectors of banking and finance, government services, telecommunication and information technologies, emergency, rescue and health services, energy and electricity, transportation, logistics and distribution, as well as water supply.

[457] See: US Government Accountability Office, *Homeland Security: Despite Progress, DHS Continues to Be Challenged in Managing Its Multi-Billion Dollar Annual Investment in Large-Scale Information Technology Systems* (Washington DC: GAO-09-1002T, 15 September 2009).

[458] See: US Government Accountability Office, *Financial Management Systems: DHS faces Challenges to Successfully Consolidating Its Existing Disparate Systems* (Washington DC: GAO-10-76, 4 December 2009).

this approach affords them the ability to design and implement systems that reduce vulnerabilities, while simultaneously providing the security information and guidance required, as well as the standards and metrics allowing evaluation of progress. The objective is to leverage private-sector capabilities and incentives with government know-how in an effort to achieve maximum risk reduction based on the most efficient use of resources. Thus, PPPs, while only one possible form of cooperation, are widely seen as a panacea for this problem – despite the fact that the PPP model was originally developed in a different context and aimed primarily at enhancing efficiency, not security.[459]

Critical infrastructure protection should be based as far as possible on self-regulating and self-organising networks. Based upon the degree of risk, homeland security can direct companies to achieve specific performance measures. Businesses can be required to complete and submit security vulnerability assessments if they are in the high-risk category, develop site security plans, and implement risk-based measures that support the performance standards. Essentially, homeland security is setting benchmarks that specify outcomes while permitting business to determine the most cost-effective strategies needed to fulfil them. Companies have the right to decide how to reach the security goals set; those falling short can be subjected to penalties that include fines. It is a partnership, utilising accountability, not bureaucracy.

Yet there are unavoidable instances in which government has a much broader and deeper responsibility. The first such instance concerns common goods, meaning critical infrastructure that is publicly owned and managed, serving wider interests beyond a particular manufacturer or business. This category can include bridges, highways, levees or dams – infrastructures, which protect entire communities and are owned and operated by government. In these cases, the government is required to assume full responsibility for ensuring adequate protection of designated infrastructure.

A second area involves infrastructures that are controlled by the private sector but are critical to other businesses and a major segment of the population. For example, companies focused on energy transmission can be obligated not only to ensure that they are protecting their assets and employees, but to recognize that failure to do so will have a cascading effect on other businesses and people. When it comes to securing this privately owned but publicly indispensable infrastructure, government needs to play a greater role. Because the consequences of failure are so dire, and the cascading effects so potentially diverse, an expanded role for government is imperative.

Government agencies should examine the top high-consequence high-risk assets in their efforts to begin planning on how best to reduce vulnerabilities. If each local government also assessed its own infrastructure, the nation as a whole would have a better picture of the protection and maintenance required to ensure continued functioning during natural disasters, emergencies or terrorist attacks.

[459] Myriam Dunn Cavelty & Manuel Suter, "Public-Private Partnerships are no silver bullet," 7. See also: Michael Chertoff, "Preserving Infrastructure: A 21st Century Challenge," *Parameters* (Winter 2008–09): 6–13.

Once the most vulnerable assets are identified, the strategy for maintenance and protection can proceed. This strategy needs to estimate the cost of long-term maintenance on the existing infrastructure, and also whether further building should be limited in naturally vulnerable areas where the cost of protection to society far outweighs the benefit to a small number of individuals.

After this strategy is developed, it has to be funded, implemented, and continued for years to come. The plan to protect the nation's infrastructure is by definition long-term. It will require a sustained commitment and follow through, year after year, for generations to come. By necessity this approach should be a private-public partnership; but when necessary, it may require strong government action to minimize risk. The strategy should reflect a partnership committed to applying every tool available to the matter at hand. In the end, planning is everything.[460]

While PPPs may be a good solution for infrastructure protection, they are more problematic in the domain of defence. Not only does privatising the realms of defence and security, which are at the very core of state prerogative, raise numerous legal, humanitarian, and regulation concerns. The private military and security industry has to be regulated. Lacks of accountability, cost overruns, and contractor performance have become major problems in the privatisation process. When evidence that privatisation was not working as planned mounted in the US, the Senate began hearings to investigate allegations of waste, fraud, and abuse in federal contracts. Among the findings were: Billions of dollars of taxpayer's money had been squandered on government contracts, including 118 contracts worth 745 billion USD that had been found to include significant waste, fraud, abuse, or mismanagement. Reasons for such abuse included poor planning, non-competitive awards, and abuse of contract flexibilities, inadequate oversight, and corruption. Reliance on abuse-prone contract types was increasing, including the use of cost-based and no-bid contracts. And contractor payments and bonuses were often made without review of contractor performance, even in cases where government auditors identified extensive over-charging.[461]

Over-reliance on outsourcing defence functions to private contractors may undermine the organic strength of the military. As contractors' roles broaden in scope and become blurred with military missions, it is imperative to re-evaluate the services that are suitable for outsourcing. An assessment of all contracts is necessary to determine which inherently governmental functions are being performed by contractors. Those critical functions must be retained by government and made ineligible for future outsourcing. Critical improvements must be made to the contracting process and oversight for such services. Contractor immunity in Iraq and Afghanistan has had a devastating effect on coalition legitimacy. Legal accountability for contractors working abroad must be implemented and enforced. Purported savings from outsourcing must be validated and outsourcing must become more transparent to the taxpayer. Lack of

[460] Chertoff, "Preserving Infrastructure"

[461] *Dollars, Not Sense: Government Contracting under the Bush Administration* (Washington DC: Report of the US House of Representatives Committee on Oversight and Government Reform, June 2006); *More Dollars, less sense: Worsening contracting trends under the Bush administration* (Washington DC, US House of Representatives Committee on Oversight and Government Reform, June 2007).

substantial reform to the outsourcing process and lack of a thorough review of what functions are available for outsourcing could result in irrevocable damage to military competency.[462]

There are instances where competitive outsourcing does make good business sense, especially in areas where the government does not have the infrastructure or competence to do the work. The privatisation of public services can result in cost savings and increased quality for the public, under certain circumstances. These include: careful consideration of which functions can safely and effectively be contracted out and which should remain in-house, availability of adequate competitors for contracted functions, use of detailed and concise contracts that include strong performance measures, and rigorous government oversight. More transparency and parliamentary oversight is required if privatisation is to work to the public's benefit.[463]

[462] Michelle M. Williams, *Outsourcing: Reforms Imperative to Restoring Military Capabilities* (Master Thesis Military Studies, Quantico: US Marine Corps Command and Staff College, Marine Corps Combat Development Command, 2008).

[463] Kristi D. Laguzza-Boosman, "Does Privatisation at the Federal Level Serve the Public Good?" (Walden University, MMPA 6350-06, February 2008).

4. Concluding Remarks

The objective of this study was to present an insight into the trends and challenges that will shape international security – and thus the environment in which SSR and SSG policies will have to operate and be further developed in the years to come. The inventory presented does not claim to be complete. One might have included the international financial markets – whose rescue through trillions of dollars of taxpayers money caused an explosion in state indebtedness, caused a crisis of the real economy, and now threatens to provoke a social crisis of unknown duration and severity.[464] Or one might have included in the analysis such important issues as gender, child soldiers, urban violence, or the explosive remnants of war. DCAF and its sister centres – the Geneva Centre for Security Policy (GCSP) and the Geneva International Centre for Humanitarian Demining (GICHD) – have indeed published extensively on many of these subjects.[465] Yet the purpose of this inventory was not to be complete, nor to be exhaustive in the analysis presented in the various chapters. Its purpose is to highlight that in a globalising world a wide – and continuously growing – array of factors shape the world we live in.

We are witnessing a world marked by a constant multiplication of actors, issues and means.[466] There is however not only a quantitative growth of the causes of conflict and violence, of the number of actors in (and factors impacting on) conflict, and of the number of forms conflict can take. There is, above all, the fact that all these elements are interlinked, develop dynamically, and thus trigger chain reactions that ripple through the entire international system.

Thus, climate change will increase the migratory pressure in Sub-Saharan Africa towards both the sprawling urban centres of the South[467] and towards the North. These migrants will reach – from Morocco to Egypt – already fragile countries that serve increasingly as intermediate migratory basins and whose difficult prospects are further shaken by the un-called for influx.[468] And even if the migrants reach the suburbs of Marseille or Paris, their prospects resign themselves, more often than not, to a life marked by temporary jobs, social security, youth criminality, drugs and prostitution. It is a mix that will see many seek relief in religion and another world – rendering some an easy target for religious extremists and terrorists.

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[464] Klaus Schwab, in *Der Bund*, 24 January 2010, 2

[465] *cf.* for instance Marie Vlachova and Lea Biason, eds., *Women in an Insecure World* (Geneva: DCAF, 2005), 335; Megan Bastick, Karin Grimm and Rahel Kunz, *Sexual Violence in Armed Conflict* (Geneva: DCAF, 2007), 214; DCAF, *Gender & Security Sector Reform: Toolkit* (Geneva: DCAF, 2008); DCAF, *Gender and Security Sector Reform: Training Resource Package* (Geneva: DCAF, 2010); David Nosworthy, ed., *Seen but not Heard, Placing Children and Youth on the Security Governance Agenda* (Geneva: LIT Verlag / DCAF, 2009), 314; on mine action *cf.* the extensive publications of the Geneva International Centre for Humanitarian Demining (www.GICHD.ch); for many aspects of security policy *cf.* the publications of the Geneva Centre for Security Policy (www.GCSP.ch).

[466] *cf.* for the concept Curt Gasteyger, "The Multiplication of Actors, Issues and Means," in *International Relations in a Changing World* (Geneva: Graduate Institute of International Studies, 1978).

[467] *cf.* Bailes, Krause, and Winkler, *The Shifting Face of Violence,* 24-27. The slum population is growing more rapidly than urban population as a whole. It is estimated that will double from somewhat over 700 million people in 1990 to close to 1.5 billion people in 2020 (*United Nations Human Settlement Report 2001*)

[468] More than 50 percent of the population of the North African countries is less than 20 years old. The economic prospects are meagre. Religious fundamentalism is growing.

And there is the case of Somalia – a case in which a weak and impoverished state was crushed through conflict and civil war, robbed of its maritime resources through illegal fishing that in turn encouraged piracy of a scale that has obliged the international community to react massively (though somewhat helplessly). Today Somalia risks to slip further down the slope and to become a *"Hinterland"* for extremists threatening another weak state, Yemen. Should the later fully join the growing number of failing states the repercussions would not only affect the Arabian Peninsula (and hence the Gulf), but the world at large.

The number of examples of dynamic chain reactions could be multiplied almost infinitely.

Their repercussions range from new security threats and a shifting face of violence, to the increasing difficulties we face fighting hunger and disease, from rising insurance and shipping rates to raw material scarcities, from religious fundamentalism to child soldiers and the proliferation of small arms and light weapons.

There are three additional factors that are often overlooked, yet crucial to the understanding of the problem:

First, change at the current rate far outstrips the emotional ability of the human being to cope with it. The result can take many forms – from internal isolation leading to depressions, increasing suicide rates, addictions, youth violence and other plagues of modern society to religious fundamentalism that all too often is preparing the stage for terrorism.

Secondly, change at the current rate outpaces (to an even greater extent) the ability of states to react[469] – and thus puts tremendous pressure on the nation state at the very moment when it is in a globalising world paradoxically gaining again in importance. The nation state is today confronted by all the problems described in this inventory, but only partially assisted by the international system. The latter was, during the Cold War, frozen at the global level in its development. The United Nations is making obvious headway, but progress is bound to be slow. Similarly, regional organisations such as the European Union have found it hard in the Post Cold War world to respond to the dual need for both a deepening of the integration process and a geographical widening of it. Regional integration is, outside Europe, still in an embryonic stage. The nation state remains, against this background, key for coping both with old threats and new security challenges – at least until the multilateral world can evolve into a meaningful actor alleviating that burden.

Thirdly, strain is context sensitive. If the challenge posed by new threats (such as, for example, organised international crime that has evolved into a strategic threat) is already stiff for established democracies, it risks becoming overwhelming for weak states (notably, but not only, in Africa). It is no accident that the number of

[469] To illustrate the point requires just one example: a law takes longer to be drafted and adopted than it takes for a computer to become obsolete.

failing or failed states is increasing. It is a trend that cannot be taken seriously enough – and must be addressed as long as there is still time. There is, by the same token, the urgent need to assist Africa in the development of its regional and sub-regional multilateral structures. ECOWAS has been exemplary, while the African Union shows signs of a most welcome dynamism. Yet much more can – and must – be done.

The complex and intertwined nature of the new and complex set of threats cannot be addressed through piecemeal answers. What is needed is what the Germans call a *"Gesamtschau"*, an integrated understanding of the whole of the problem and its internal dynamics.

SSR and SSG are an attempt to find such integrated answers. They address three fundamentals of the overall problem – security, development, and the rule of law – and bring them into a coherent interrelationship. The "Horizon 2015" series, DCAF's analytical effort commemorating its 10th Anniversary, will argue that another step should follow, resulting in a further broadening of our understanding of the components of the security sector. A "whole of government approach", linking and coordinating the action of all government agencies concerned (from development cooperation through defence to justice and police) is indispensable – and so is the coordination and harmonisation of the respective strategies and approaches of the key international actors, most notably the United Nations, the European Union, the key regional and sub-regional organisations and the United States. But there is ever more clearly also cause to include elements of the private sector. The complex set of problems bedevilling us can, in select areas, not be understood, addressed, let alone be solved without new forms of private-public partnerships. In a world in which change is in many areas hyperexponential, and in which consequently vulnerabilities explode, the private sector's role in, and responsibility for, tackling with the issues cannot be ignored.

"Horizon 2015" will focus on these needs of national, international and new public-private coordination and cooperation.

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The Geneva Centre for the Democratic Control of Armed Forces (DCAF) is one of the world's leading institutions in the areas of security sector reform and security sector governance. DCAF provides in-country advisory support and practical assistance programmes, develops and promotes appropriate democratic norms at the international and national levels, advocates good practices and conducts policy-related research to ensure effective democratic governance of the security sector.

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