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Drivers, Trends and Grand Challenges in Security

Overview Brief – EFP Brief No. 248

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Type: Thematic overview on security

Organiser: MIOIR/MBS, University of Manchester

Time Horizon: 2020-2050 **Date of Brief** Dec. 2012

Purpose

This brief gives an overview of the recent trends, drivers and 'grand challenges' in the area of security as they were identified in the mapping and analysis of the *2nd EFP Mapping Report on Security Futures* (Amanatidou et al., 2012). These findings were compiled from 16 different forward-looking activities (FLA), representing four types of FLA, namely: foresight, impact assessment, horizon scanning and forecasting. The selected FLA offer an interesting and complementary mix of national views and European perspectives.

Key global and European Security Issues

The concept of security has changed fundamentally over the last 25 years. The end of the cold war accompanied by a shift in global power distribution, failing states due to corruption, crime and religious fanaticism, risk of climate change and the interconnectedness of global hotspots giving rise to cyber-crime make the range of security challenges we are facing today and in the near future.

However, there is no clear separation between drivers, trends and 'grand challenges'. The analysis of the original sources is not of a generic type but focuses on the security perspective. Some issues are mentioned in more than one group (as both trend and challenge, for instance) while some clustering would also make sense. This is attempted in this brief.

Globalisation is a major driver of evolutions with significant implications for security. Globalisation is likely to raise the level of interdependence between states and individuals within the globalised economy. Resources, trade, capital and intellectual property rely on complex networks of physical and virtual infrastructure that are likely to be vulnerable to physical disruption or cyber-attacks by multiple actors. Consequently, increasing dependency on this infrastructure, and the global supply chains that underpin globalisation, will leave the global economy vulnerable to disruption (DCDC 2010).

One of the main trends mentioned in the security FLAs is the **emergence of new centres of power** and the consequent **redistribution of global power** (EU-GRASP, NIC 2008). Associated to this is the shift of power to Asia as a major trend. In particular, the world of 2030 will be diffusely multipolar and polycentric. Polycentrism will be accompanied by an economic power shift toward Asia where over half of the world's population will be concentrated by 2030. China is projected to be the largest economic power, and India will continue to rise. Both countries will face major structural challenges, however. Brazil may become a successful example of sustainable development during the next two decades. Russia and Japan will lose the great power status they enjoyed in the twentieth century (ESPAS 2012).

A constellation of rising **middle powers**, including Indonesia, Turkey and South Africa, will become ever more prominent (NIC 2008). The international system that is likely to emerge as a result of all these shifts will probably mix balance-of-power politics and multilateralism, with states making issue-by-issue shifts and alliances. This will generate a higher level of unpredictability in international relations and make it harder to attain a broad consensus even on matters requiring urgent global action (ESPAS 2012). This shift of global power is likely to result in a period of instability in international relations, accompanied by the possibility of intense competition between major powers as there will be several states and institutions competing for regional and global influence, cooperating and competing



within the international community (DCDC 2010).

The grand challenges addressed in the security FLAs are climate change, scarcities, global inequalities, changing demographics and migration.

Climate change has a central position in the analysis of trends and challenges. Temperature increases are likely to lead to significant environmental change that may, for example, include desertification in the Saharan margins and changes to rainfall distribution patterns within the monsoon belt of the Arabian Sea and South Asia. The frequency and intensity of extreme weather events will change, possibly with severe impact on low-lying coastal regions. Rapid glacial melt, particularly in the Himalayas, may exacerbate water management problems in China, India, Pakistan and Bangladesh. Disease carriers, such as malarial mosquitoes, are likely to spread into previously temperate zones (DCDC 2010).

Special reference is being made to the consequences of climate change affecting living standards and public safety by exacerbating water and food scarcity with environmental degradation expected to continue to provoke humanitarian disasters, including desertification and floods of increasing magnitude. The severest impact will be felt in China, South Asia and the Sahel where millions of people will be displaced; but no region of the world will be spared (ESPAS 2012).

Scarcity in energy, food and fresh water resources is also separately addressed in relation to the social unrest and conflicts they may cause. The frequency, scale and duration of humanitarian crises are likely to increase. Many states, including China and India, are likely to become more dependent on food imports to feed their large and increasingly affluent populations. A shift in agricultural patterns and the distribution of grain growing areas, coupled with the rise in animal and plant diseases, is likely to disrupt food production, resulting in increased migration. However, improvements and efficiencies in agricultural production are likely to meet much of the increased demand, given likely scientific advances that develop high-yield, disease resistant crop strains, combined with better land usage and improved irrigation. Humanitarian crises due to water scarcity and related food and health emergencies may become recurrent, particularly in some parts of Africa. Competition for resources is likely to exacerbate tensions and trigger conflicts. Energy crises will heighten the sense that the world is entering an 'age of scarcity', putting the prevailing model of development into question (ESPAS 2012).

Inequalities of opportunities is another grand challenge due to globalisation and increased access to more readily and cheaply available telecommunications. This type of inequality is likely to be a significant source of grievance, possibly resulting in an increased incidence of conflict. However, states that experience lower birth rates and increased longevity are likely to benefit from a growing workforce and a falling dependency ratio. The result is a 'demographic dividend', which can produce a virtuous cycle of growth (DCDC 2010).

Demographic trends are also mentioned among the grand challenges as possible causes of tensions. Demographic trends may fuel instability especially in the Middle East, Central Asia and sub-Saharan Africa. The developing world will account for most of the growth, remaining relatively youthful, in contrast to the developed world and China, which will experience little population growth and undergo significant increases in median age. In the West, however, ageing is likely to lead to policies to employ the 'younger old'. This cultural shift may yield a second demographic dividend leading to a lower demand for migrant workers and decreasing the social welfare burden. (DCDC 2010) The populations of several youth-bulge states are projected to remain on rapid growth trajectories. Unless employment conditions change dramatically in parlous youth-bulge states, such as Afghanistan, Nigeria, Pakistan and Yemen, these countries will remain ripe for continued instability and state failure (NIC 2008).

Nevertheless, populations in many affluent societies are likely to decline, encouraging economic **migration** from less wealthy regions. Environmental pressures, economic incentives and political instability will continue to drive population movement from afflicted regions. Conflict and crises will also continue to displace large numbers of people. Such movement is likely to occur in regions of sub-Saharan Africa and Asia (DCDC 2010).

In terms of responses to humanitarian crises, we will witness a world characterised by the diffusion of power. Meeting the challenges of human development will depend increasingly on **non-state actors**, be they private companies, non-governmental organisations (NGOs), or philanthropic institutions. Non-state actors, in particular national and transnational civil society networks and private corporations, will play a critical role in the coming decades. Their power and influence will be greater than that of many states and may lead to new forms of governance and civic action. But not all contributions by private actors will be positive: extremist non-state actors are likely to present a threat to the well-being of human communities (ESPAS 2012).

The **rising power of non-state actors** vis-à-vis the state is a central theme examined from several perspectives. Concurrent with the shift in power among nation-states, the relative power of various non-state actors—including businesses, tribes, religious organisations and criminal networks—is increasing. The global political coalition of non-state actors plays a crucial role in securing a new worldwide climate change agreement. In this new connected world of digital communications, growing middle classes and transnational interest groups, politics is no longer local and domestic, and international agendas become increasingly interchangeable (NIC 2008).

The impacts from the empowerment of individual and non-state actors are addressed. In democratic societies, new forms of protest and anti-establishment politics may emerge in response to a growing expectations gap, deepening income disparities and the power shifts that are limiting the action of countries that have been used to acting as major global players. From the security perspective, it is expected that over the next two decades the cyber

sphere is likely to become an arena of conflict and tension between states of all political stripes and also between individuals or private companies.

The examination of the **role of the individual** in future societies goes even further, indicating that the citizens of 2030 will be much more aware of being part of a single human community in a highly interconnected world. This may signal the rise of a new 'age of convergence.' Democratic aspirations will tend to be perceived as compatible with, even as facilitating, a greater awareness of national and sub-national cultural identities (ESPAS 2012).

The **role of women** is also examined. Over the next 20 years, the increased entry and retention of women in the workplace may continue to mitigate the economic impacts of global aging. Examples as disparate as Sweden and Rwanda indicate that countries with relatively large numbers of politically active women place greater importance on societal issues such as healthcare, the environment and economic development. If this trend continues over the next 15-20 years, as is likely, an increasing number of countries could favour social programs over military ones. Better governance also could be a spinoff benefit, as a high number of women in parliament or senior government positions correlates with lower corruption (NIC 2008).

The **current economic crisis** is referred to as a driver that may reverse the trend of decreasing inequalities due to the emergence of a middle class in Asia, Latin America and also Africa. Overall, however, inequality will tend to increase and **poverty and social exclusion** will still affect a significant proportion of the world population (DCDC 2010). At the same time, increasing social and economic pressures may undermine liberal institutions and the long-term prospects for greater democratisation (NIC 2008).

The **proliferation** of modern weapons' technologies will generate instability and shift the military balance of power in various regions. Nuclear weapons are likely to proliferate. Terrorist groups are likely to acquire and use chemical, biological and radiological or nuclear (CBRN) weapons possibly through organised crime groups (DCDC 2010), but a major conflagration involving CBRN weapons is not likely to happen over the next two decades (ESPAS 2012, NIC 2008).

The possibility of **inter-state conflict** cannot be discounted entirely. Looking ahead to 2030, the border tensions between China and India over water resources have the greatest potential to disrupt international peace. Conflicts are also foreseen due to current tensions between Algeria and Morocco over the Western Sahara, the problems emerging as a result of the possible collapse of North Korea, and unresolved conflicts in Eastern Europe. **Tensions over raw materials** may also cause conflict and require new forms of crisis management. Intra-African and trans-regional **forced migration** due to economic factors, conflicts and environmental degradation will tend to grow. Wars fuelled by **nationalism and extremist identity politics**, and the associated dangers of

mass murder and genocide, will be among the core security challenges of the coming decades (ESPAS 2012).

Despite the emergence of a possible 'age of convergence', **ideologically driven conflicts** are another form that continues to exist. The social tensions caused by intrusive global culture are likely to be most acute amongst those who seek to maintain their indigenous and traditional customs and beliefs, and feel threatened by changes. This is likely to lead to an increasing number of individuals and groups forming around single issues that differentiate them from wider society and becoming marginalised and possibly radicalised. When such conditions exist, particularly when exacerbated by high levels of marginalisation and social exclusion, sections of the populace will develop grievances that may lead to extremism (DCDC 2010).

Urbanisation is also seen as an important trend. By 2040, around 65%, or 6 billion, of the world's population will live in urban areas, attracted by access to jobs, resources and security. The greatest increases in urbanisation will occur in Africa and Asia. As up to 2 billion people may live in slums, these areas are likely to become centres of criminality and disaffection and may also be focal points for extremist ideologies. Rapid urbanisation is likely to lead to an increased probability of urban, rather than rural, insurgency (DCDC 2010).

In addition, **megacities** are also highlighted as possible sources of conflicts as well as important future players. By 2030, the fifty greatest megacities in the world will concentrate more resources than most small and middle-income states, and they will demand more autonomy and exert greater power, even taking on a more prominent international role. Preserving humane living conditions in the world's megacities will be the major challenge facing some states. Cities will also absorb most national security resources (ESPAS 2012).

Trends in **innovation and technology** are also being examined especially for solutions to the major trends and challenges mentioned above. Technology will provide partial solutions for both adapting to and mitigating the effects of climate change. However, it is unlikely that, by 2040, technology will have produced low emission energy sources capable of providing the majority of the energy demanded. Nevertheless, advances in carbon capture technology are likely to be significant, allowing fossil fuel usage to continue in a limited emission regime using more coal. Despite this, resource competition, carbon pricing, increased energy demand and the limitations imposed by climate change are likely to increase the cost of fossil fuels, stimulating the development of cleaner, renewable energy solutions and nuclear power (DCDC 2010).

However, from a security perspective, technology will also facilitate the organisation of protests and high impact terrorist attacks. The future global environment will be defined by physical, social and virtual networks. The physical system will consist of complex interconnections, including extensive resource pipelines, communication cables, satellites and travel routes. The virtual networks will consist of communications servers linking individuals

and objects, many of which will be networked through individual Internet Protocol (IP) addresses. Avenues for protest and opportunities for new and old forms of crime will emerge and may allow hostile groups to form and rapidly create effect (DCDC 2010).

In terms of **defence technologies**, many states are likely to develop ballistic and cruise missiles capable of delivering CBRN weapons as well as conventional payloads (DCDC 2010). The majority of the technological breakthroughs are likely to be driven by the commercial sector,

although technological adaptation in defence will continue at a rapid pace. Nonlethal, directed energy weapons (DEW), space and cyber technologies will be available to a wide variety of actors, both state and non-state (DCDC 2010).

Finally, there is growing demand for multilateral policies in the global and regional arenas for an increasing number of issues from the fight against climate change to disease control. There is, therefore, need for more multilateralism and, arguably, for a larger European role (EU-GRASP).

The Way Forward in European Security Research

In several studies, recommendations address a number of grand challenges from a security perspective, for instance, in the field of energy, the environment or migration. *FORESEC*, for example, recommends developing a common EU energy security strategy – energy policy is still driven by national-level approaches. *FORESEC* also recommends a dialogue with the security and intelligence services across the EU as useful input in formulating counter-terrorism legislation at the EU level.

EU-GRASP places special emphasis on the role of the EU in a multi-polar world and recommends that the EU adapt to changing global multilateralism. The EU must be steady in promoting multilateralism as an ideal but extremely flexible in its multilateral practice; it must find ways to engage with legitimate sub-national, multinational and transnational non-state actors and their networks.

In its recommendations, the *NATO Security Jam* study (Dowdall 2012) focuses on security issues of global concern, managing relations with emerging powers such as establishing a NATO-China Council (NCC) similar to the NATO-Russia Council.

SANDERA produced a long list of suggestions for further research. One suggestion regards the analysis of the portfolio of policy instruments at the EU level in view of defining the potential for strengthening European synergy in defence research.

FORESEC repeats the importance of researching certain definitional and analytical aspects of security (i.e. on societal aspects of security, unintentional threats, external dimension of security and its link to internal security, cultural aspects of terrorism, societal resilience and cultural and social identity). In addition, it suggests assessing impacts of certain challenges on security, i.e. vulnerability of societies in the EU, migration and demographic shifts and security, climate change and security, urbanisation and security.

EFP Mapping Results represent a major step forward in the successful implementation of a new mapping framework (SMART Futures Jigsaw) capable of providing customised forward-looking research and innovation policy intelligence on a wide range of sectors, such as security. Both the *Mapping Environment* (a web-based platform available online at www.mappingforesight.eu) and our mapping work (1st, 2nd and 3rd EFP Mapping Reports) demonstrate the commitment of EFP to the mapping of FLA practices, players and outcomes. Thus, our FLA mapping work will almost certainly continue beyond EFP.

Sources and References

Amanatidou et al. (2012): 2nd EFP Mapping Report on Security Futures. Towards a Fully-Fledged Futures Mapping: Results of Mapping 16 FLA on Security, available for download at http://www.foresight-platform.eu/wp-content/uploads/2011/01/Deliverable_2-4_2nd_EFP_Mapping_Report_Security_Futures.pdf

DCDC – Development, Concepts and Doctrine Centre (2010): Global Strategic Trends – Out to 2040, available for download at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/33717/GST4_v9_Feb10.pdf

Dowdall, Jonathan (2012): The new global security landscape. 10 Recommendations from the 2012 Security Jam, available for download at <http://www.securitydefenceagenda.org>

ESPAS – European Strategy and Policy Analysis System (2012): Global Trends 2030 – Citizens in an interconnected and polycentric world, available for download at <http://www.espas.europa.eu/home/>

EU-GRASP, <http://www.eugrasp.eu/>, last access 15 January 2013

NIC – National Intelligence Council (2008): Global Trends 2025: A Transformed World, available for download at http://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/2025_Global_Trends_Final_Report.pdf

About the EFP: Policy professionals dealing with RTD, innovation and economic development increasingly recognize a need to base decisions on broadly based participative processes of deliberation and consultation with stakeholders. Among the most important tools they apply are foresight and forward looking studies. The EFP supports policy professionals by monitoring and analyzing foresight activities and forward looking studies in the European Union, its neighbours and the world. The EFP helps those involved in policy development to stay up to date on current practice in foresight and forward looking studies. It helps them to tap into a network of know-how and experience on issues related to the day-to-day design, management and execution of foresight and foresight related processes.