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STRATEGY PAPERS

Global Risks 2035:
The Search for a New Normal

Mathew J. Burrows
Foreword by Brent Scowcroft

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The Search for a New Normal

Atlantic Council

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Cover art credit: Clairvoyance by René Magritte, 1936

In La Clairvoyance, a surrealist self-portrait, René Magritte depicts himself painting a still life. Rather than painting the egg immediately in front of him, however, Magritte choses to focus on the future—in this case, a bird taking flight. It is this long range perspective that Dr. Mathew Burrows brings to Global Risks 2035, depicting the long range trends and challenges facing our world twenty years from now. In order to be prepared for world of increasing complexity, the next presidential administration needs to infuse foresight in its strategy-making and everyday operations.

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FOREWORD

To many, we live in dark times. A cursory glance around the world confirms that it is not as safe and prosperous as it could, and perhaps should, be. For the first time in history, a terrorist organization has claimed land as its own sovereign territory. A rising global power threatens its neighbors in the South China Sea. A once-great power purposefully destabilizes Europe at the same time the continent struggles with weak economic growth, an historic influx of refugees, and political upheaval. As the world becomes more interconnected, it is evident that leaders in both the public and private sectors have not thought through or planned for all the risks.

While these are worrisome developments, they conceal the fact that the world is in a better place than it has ever been. Violence continues to decline across the globe as the ages and wages of billions of people increase. Effective governance, while challenged, is prevalent from the state to the municipal level. Technology is empowering a growing global middle class, allowing millions to find opportunity. A power transfer from the West to the East and South will continue to bring many out of poverty and allow those regions to care for their own security. Even in the Middle East, the poster child for instability, a growing private sector and youth bulge may actually prove a positive more so than an impediment to order.

The world certainly faces challenges, and *Global Risks 2035*, one of the most important documents about our global future written in recent years, describes this darkness in detail. Mat Burrows, the Director of the Atlantic Council's Strategic Foresight Initiative in the Brent Scowcroft Center on International Security and author of this paper, was optimistic about our collective future when he wrote the National Intelligence Council's *Global Trends 2030* report four years ago. Today, he fears what is coming next and many of his rationales are compelling. Still, there is much light to behold. The world may be full of risks, but there are many opportunities for the United States, along with its allies and partners, to pursue. As the United States looks to weather the storm of the next twenty years, it would do well to prepare for constant change and find ways to harness it for national advantages.

The task for the next president, whoever it might be, will be tougher than for any previous administration. After all, strategy was easier during the Cold War since we knew who our adversary was, what our goals were, and how we would achieve them. Today, the challenges are many, the goals are disparate, and the paths are either politically challenging or completely new for the Western world. Regardless, leaders around the world must understand the global context that they are navigating and how these circumstances help or hinder progress toward desired strategic goals. Reading this *Atlantic Council Strategy Paper*, and the following two in this series which will outline a strategy for the twenty-first century and how best to implement strategic plans, is where all leaders—including our own—should begin.

Lt. Gen. Brent Scowcroft, USAF (Ret.)
Chairman, International Advisory Board
Atlantic Council

Navigating the Future: A Strategy for our Turbulent World

Strategic Foresight: 100-Day Checklist for the New Administration

1. Incorporate strategic foresight into decision making in an effort to get ahead of the crisis curve.
2. Undertake entitlement reform. Not putting entitlements on a more solid fiscal foundation will endanger the US's long term security.
3. Treat water security for US allies and partners as a national security priority.
4. Put fighting corruption up there with counterterrorism.
5. Develop strategies for ensuring new technologies such as geoengineering, drones, synthetic biology, and nanotechnology don't end up becoming national security threats.
6. Stop the slide towards a segmented internet. There is needs to be rules governing offensive cyber.
7. Identify new areas of joint cooperation with Russia and China so as to prevent further deterioration in ties.
8. Raise public awareness of rapidly changing world. Consider government funding for area studies programs at US universities.
9. Ease barriers to immigration of highly skilled workers.
10. Bolster tech training and vocational education.
11. Help Saudi Arabia and other Middle East countries develop their economic reform efforts.

EXECUTIVE SUMMARY

In the four years since Global Trends 2030 was published, the biggest change in the world is the increased risk of major conflict. In 2012, a large-scale US/NATO conflict with Russia or China was close to unthinkable. Now, the post-Cold War security order has broken down, and the consequences are immense, potentially threatening globalization.

The fracturing of the post-Cold War global system is accompanied by the internal fraying in the political, social, and economic fabric of practically all states. For some time, the Global Trends editions have charted the significant unravelling of societies in the developing world. This unravelling replicates many of the same upheavals associated with the modernization process of any country undergoing rapid change. The spectacular growth of a large global middle class over the last couple of decades is emblematic of the overall success of that modernization process. Never before have so many people been lifted out of extreme poverty and economically empowered, to the point that the future of the middle class now lies in the global East and South. By any calculation, their numbers will dwarf the Western middle classes, even though it will take decades before the per-capita incomes of the global middle class converge with the West's higher standard of living.

Still, the global middle class is encountering many of the same headwinds affecting the Western middle class. We have learned over the past decade that technology spares no one. The job prospects of Western and global middle classes are already affected, and it is just the beginning. Robotics, artificial intelligence, 3D printing, and automation have the potential to upend both skilled and unskilled occupations. The broad social and economic benefits of the products and services provided by emerging technologies could be immense, but there may be few big winners and many more losers in the short term. This is a far cry from the earlier notion that globalization and technological change would "lift all boats."

The West is also facing a new demographic challenge that, over time, will affect the developing world. Aging, health, and pension costs are beginning to balloon. It is not clear how Western societies, including the United States, will be able to afford their social-welfare and entitlement programs without squeezing spending on defense, infrastructure, education, and research and development (R&D). Many Western states are facing a drop-off in working-age populations, at a time when these states are often heavily in debt. This fact makes it even more challenging to avoid sacrificing the future for the sake of meeting current social-welfare commitments. Moreover, the stagnant incomes of many members of the Western middle classes are making them unwilling to compromise on what they see as their "entitlements." The current populist trend in politics looks like it is here for the long haul, undermining the likelihood of decisive action to deal with these challenges.

Developing countries have more time and can learn from the demographic problems facing the advanced economies. But many of the poorest of the developing countries face stiffer, potentially existential, challenges linked to climate change, poor governance, higher incidences of civil conflict, and overpopulation. Climate change will impact everyone in the coming decades, but the poorest areas—sub-Saharan Africa, the Middle East, and South Asia—will be hit hardest by rising temperatures and rising sea levels. Already, the Middle East and North Africa are the driest regions on Earth. Malthusian food and water scarcities could result in the absence of slowing population growth—particularly without good governance and/or peace in many of the areas most affected. This is an avoidable tragedy, except for the fact that the governments and societies do not have the wherewithal to meet the challenge. Richer developing countries, like China and India, will be severely impacted, but have more means to deal with the problem. Unfortunately, the richest countries—such as the United States and European nations—are only beginning to see that the political instability resulting from food and water scarcities cannot be cordoned off. Western security will be profoundly affected by climate insecurity. Syria experienced several years of serious drought before its civil war. Drought was not the sole factor triggering the conflict, but it increased the likelihood of the outbreak. The huge influx of Syrian migrants into Europe in the summer of 2015 should be a vivid reminder that "no man is an island."

Besides the immense internal unraveling, there are other forces at play in the breakdown of the post-Cold War order. The growing resentment of Western dominance by Russia, China, and other powers has been unappreciated. The crisis in relations between Russia and the West over Ukraine shows the degree to which economic interests and cooperation in international security can be sacrificed for the sake of political, geopolitical, and ideological motives. Virtually any part of the post-Soviet space and surrounding regions, as well as the western part of the Asia-Pacific region and northern part of the Indian Ocean, could become the site of serious competition between the main power centers. The situation is more dangerous than the second half of the Cold War era (mid-1960s to mid-1980s), when tacit "untouchable" geopolitical spheres of influence were very clearly delineated, and other zones were considered not worth the risk of a direct military conflict.

Equally important has been the growth of regionalized conflict, especially in the Middle East, which also threatens global peace and security. There, the decades-long unravelling of the economic and social fabric of countries such as Egypt, Syria, Libya, Yemen, and Iraq has played an instrumental role in the rise of civil strife. For various reasons, governments in those countries could no longer provide the needed economic opportunities for growing youth populations. The increasing importance of ethnic and religious identity has helped ignite internecine conflicts. The end of Tehran's isolation has raised Arab fears about growing Iranian and Shia influence. The Syrian conflict was internationalized with the participation of actors from around and outside the region. The rise of the Islamic State of Iraq and al-Sham (ISIS) introduced a new factor—a nonstate group growing so powerful that it has been able to aspire to statehood and, indeed, to the renewal of the old caliphate. The sources of economic and political instability for the region are unlikely to end soon. Civil conflicts tend to last six to nine years, and have a high potential for reigniting. The likely end of high oil prices is a further challenge, forcing Saudi Arabia and other oil producers to find alternative sources of economic growth and state revenue.

For the rest of the world, an unstable Middle East is a growing threat, exporting terrorism and ethnic and religious division. Other regions where conflict might spread include Central and Southeast Asia, as well as equatorial Africa, where a growing number of countries could be drawn into conflict between Muslim and Christian populations. If major states are unable to act together to stop such wars, they might be drawn into them.

Another threat to international stability comes from within the United States and the West, which are responsible for establishing the current global order. As advanced economies, the United States and its NATO allies are seeing the foundations of their societies begin to buckle under pressure from technological change and more economic competition from the rest of the world. Most US and European citizens have grown up expecting governments to provide economic opportunity, or at least a substantial social safety net. For the first time, a plurality of Americans and Europeans believe their children will not have the opportunities they had. Polling shows that some are even beginning to doubt the merits of democracy. In Europe, discontent has increasingly turned into opposition to the European Union. Western pessimism stands in stark contrast to public sentiment in many parts of the developing world, which is very optimistic about the future. Many Americans say they do not want isolationism, but nevertheless believe the United States can no longer be the world's policeman and needs to tend to problems at home. A growing number of Americans and Europeans want to close the gates to Middle Eastern and African refugees, even though migrants have been a source of new jobs and entrepreneurship.

The West's interrelated crises are coming at a time when Russia, China, Iran, and other powers are questioning the legitimacy and tenets of the West's international order. The lag between the diffusion of power in the international system and the distribution of power in the structure of multilateral institutions has fostered resentment. Ironically, what appear most in question are Western policies that are falling out of favor with many Western publics—such as humanitarian intervention, regime change, and democracy promotion. China, Russia, and other emerging powers view international nongovernmental organizations (NGOs) as agents of Western meddling that threaten their national sovereignty and interests. In recent years, China, particularly, has started to establish a network of parallel regional institutions that provide it with more independence from Western-dominated institutions such as Bretton Woods. While the world is not in a state of anarchy, it is also not primed to take on many of the big challenges, such as state failure, underdevelopment, and civil war.

Besides the tectonic shifts at the geopolitical level, the technology revolutions have changed, and will continue to upend, everyday life for most everyone. The political and social responses to the new technological developments are not as linear as once thought. In the early days of globalization and technological breakthroughs, the thinking was that each would reinforce the other. Two decades later, it is becoming evident that what was once thought inviolable—the World Wide Web—could end up being broken up. China's firewall is maybe the first indication of that segmentation. There is an economic cost to the increasing fragmentation, but it may not be as high as previously thought.

Given the broader geopolitical and technological trends, in the best case, the world is looking at multipolarity with limited multilateralism. There would still exist some cooperation where there was strong interest among the great powers. However, fragmentation could easily slide into open conflict. In that worst case, the multipolarity would evolve into another bipolarity—with China, Russia, and their partners pitted against the United States, Europe, Japan, and other allies. In that scenario, conflict would be almost inevitable.

The base-case scenario—here called **Fragmented World**—linearly projects the current trajectory. Globalization would slow appreciably, but not die. It would assume that the Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP) would not pass, or will be significantly truncated. Protectionist forces would strengthen, but not dominate. There would be little forward movement on free trade, but limited backsliding. The one area in which protectionist forces would prevail is immigration policy. Borders along the EU's outside perimeter would harden. There would be no repeat of German Chancellor Angela Merkel's open asylum policy. After two years of negotiations, there would be a soft Brexit deal, allowing the United Kingdom (UK) access to the single market. However, the UK would have to adhere to the EU rules—except those regarding free movement, for which the UK would set its own policies. A harsher settlement would reflect an accelerating fragmentation and fear of breakup in the EU. There would be limited efforts to try to end the Middle East conflicts. Even if a peace settlement is finally reached, Western governments would have difficulty getting public support for marshaling any large-scale peacekeeping efforts. Iraq and Syria would likely remain failing states and relative safe havens for terrorist groups. The conditions would remain for a large-scale war between Sunni and Shia powers. Saudi Arabia would find it more difficult to reform in this lower-growth, less-open economic environment. Global cooperation between the West and the emerging powers would continue on selected issues, such

as climate change. Seeing a more inward West, Russia and China might feel less threatened, and their defensiveness could ease. For the Chinese, a less assertive United States on the world stage might give them hope that they could strike a deal with the United States regarding the South China Sea. Over time, as domestic problems are tackled, there may be more appetite in Western and developing states to boost cooperation.

With the growth of inward-looking regional blocs, there is always the risk that **Fragmented World** would get catapulted into a **New Cold War** scenario. US isolationism and the protectionism of the 1930s increased distrust and suspicion and laid the groundwork for the outbreak of the Second World War. Nazi Germany and Imperial Japan miscalculated Allied reaction to their aggression. A Russia, China, or Iran that sought its own revisionism with a slowly declining West might come in for a rude awakening. Certain sets of conflicts—China vs. the United States, Russia vs. NATO, or Western and Sunni powers vs. Iran, Russia, and China—would greatly accelerate the breakup into bipolar camps. A United States that slaps high tariffs on Chinese goods, breaks with its EU and NATO partners, and picks a fight with its neighbors over immigration could also trigger a more rapid reversal of globalization and an ending of multilateral cooperation. Nations in any variant of this conflict scenario would wage economic war, if not indulge in more kinetic varieties. Cyberspace would be turned into a key battleground, where states and terrorist groups would seek advantage by taking out key infrastructure in each other's territory. There would always be the chance that hybrid warfare would escalate into full-scale conventional or nuclear exchange.

With the rising terrorist capacity for lethality, it is worthwhile to think about the possibility of **Strange Bedfellows**, in which states are forced to band together to counter the growing power of terrorist and criminal groups that are greatly empowered with high-tech weaponry, such as cyber and biotech. In a high-tech world in which the bar to entry has been lowered and the focus of terrorist groups gradually turns from high-casualty events to disabling critical infrastructure, the fight might turn into one between states and nonstate actors. It would be in all states' interests to see high-tech capabilities under their control. Suddenly, the world would see state-run labs having monopolies on bio or cyber technology. This would be close to a Hobbesian world in which security, much more than economic growth, becomes the overriding goal for all regimes. While states may still worry about threats from one another, there would be a big incentive for them to cooperate on a selected basis against nonstate targets, mitigating their differences elsewhere.

Each of the above worlds would be colored, if not driven, by two key social and economic trends.

First, as life expectancy reaches ninety years for advanced economies, how to pay for pensions and healthcare programs will increasingly become the state's focus. Aging and aged societies tend to be conservative ones; a rapidly aging world would favor a West that turns more inward and is hostile to the changes that come with globalization. Brexit, for example, was supported by the older generation. Aging societies are less likely to be interested in going to war, which might prevent the slide into major state-on-state warfare. And all the major powers—the United States, Russia, China, and Europe—will be aging rapidly by the 2020s. There may still be a battleground, but it will be one at home between the young and old. Wealth and income will be concentrated in the older generation. Over time, more intergenerational distribution of wealth may become the norm, in order to avoid an escalation in social tensions and a burst of youthful frustrations.

Growing urbanization may be another feature, adding to the power diffusion in the base scenario, even while moderating any bipolar divisions in the second and third scenarios above. As in previous eras, cities are the focus of technological development and a source of economic growth. Youths are attracted to cities because of the economic opportunities they offer. For as long as cities have been in existence, they have been the places with the most diversity and acceptance of the foreign or "the other." In the most stressful international environments, major cities would band together in a modern-day Hanseatic League, maintaining levels of cooperation on technology, resource management, and free exchange of people and immigration. Cities may never be able to prevent regions' downward spirals into conflict, but they could act as the source for regeneration or renaissance. Given that metropolitan cities encompass many more people than ever before, their clout would be greater, and they could be more efficacious in braking the slide into full-scale protectionism or state-on-state conflict.

Importance of Leadership

The lack of thinking about and action on repairing the international fabric is itself a concern, given the risks of more open conflict. In her magisterial work on the causes of the First World War—The War That Ended Peace—Margaret MacMillan analyzed how slowly the options for not going to war were eliminated in the fifteen or so years before the outbreak in 1914.[1] World War I was not inevitable, but there was little leadership to stop the drift. The assassination in late June 1914 of the Austro-Hungarian Empire's heir—Archduke Franz Ferdinand—shattered the increasingly fragile peace. It would be a pity if, a century later, we had forgotten those lessons.

Global Risks 2035: **The Search for a New Normal**	
Unraveling at Home	
Individual Empowerment: More Unintended Consequences	The global middle class worries about falling back into poverty. Democratization lags and there is a loss of Western confidence in democracy. Citizenship becomes supplanted by self/group identity, spurred by the Internet.
Demographic Crunch	The West's social welfare system is under serious threat, likely deteriorating over this period. China and other middle-income powers risk unsustainable health and pension costs in the next decade. Only raising retirement age and immigration will help mitigate aging and solve the skills gap, but immigration and retirement age increases are both politically sensitive.
Malthusian World for the Very Poorest	Half or more of the world's population lives in areas of water scarcity. Climate change is undermining water and food security. The biggest impact will be in sub-Saharan Africa, which suffers overpopulation, poor governance, and low agricultural productivity. There is an increasing risk of endless poverty cycle for the poorest.
Technology with Increasing Downside	Job churn moves up the skills ladder as robotics, artificial intelligence, and automation become widespread. Terrorists move into higher technology, with devastating effects. The United States will remain the overall tech leader, with China making inroads. Technology increases inequalities within and between nations.

1 "Margaret MacMillan, The War That Ended Peace: The Road to 1914 (New York: Random House, 2013).

Breakdown of the Post-Cold War Order	
Conflict Risk at Highest Level since Cold War	The Ukraine crisis shows that economic interests can be sacrificed for political ambitions. Major state-on state conflict is no longer unthinkable. Virtually any part of post-Soviet space and Asia-Pacific could become areas of serious big-power competition.
No End in Sight of Middle East Instability	Iraq and Syria are unlikely to be put back together. Difficult reform efforts in Saudi Arabia and Gulf states are potentially destabilizing in the short term. Radical Islam and terrorism are not decreasing. A nuclear Iran remains an open question as Sunni-Shia tensions continue to escalate.
China's Swing Role	Whether China gets stuck in the middle-income trap is more than a domestic question. An angry China would be a dangerous regional and global spoiler. Without a growing China, global economic growth would dip.
No Clear Path to Post-Western Order	A United States-led global system was premised on a politically and economically dominant West. Financial regionalization will eat away at the central role of the Anglo-Saxon financial model. The challenge will be to establish a new world order that maintains a modicum of cooperation despite values gaps.

Alternative Worlds	
Fragmented World	A dysfunctional Europe is absorbed in regional threats. Then United States gives up on the policeman role. Protectionism provides an initial domestic economic boost, but leads to lower global growth over the medium term. Russia and China become regionally dominant.
New Cold War	East and West square off after China suffers an implosion and ramps up nationalism. Conflict is only matter of time. The threat spurs Western solidarity and a Russo-Chinese military alliance.
Ageless World	Life expectancy reaches ninety years in Western countries. Human enhancement breakthroughs mean middle age begins at sixty. Retirement ages rise. The young are not being promoted with everyone working longer.
Strange Bedfellows	High-tech terrorism leads to a rebirth of state power, and the United States and China unite to combat the threat.
Urban Oasis	As in the Middle Ages, cities rapidly assume increased importance, as national governments cannot deliver on overall economic growth. Cities are a magnet for the brightest and most talented. Well-run cities spawn and use new technologies, helping to make them self-sufficient in terms of resources. They seek special political privileges and autonomy.

LOOKING BACK AT WHAT THE FUTURE WAS SUPPOSED TO BE

Much of the distress the world has experienced during the last five to ten years has been due to mistaken ideas about what was supposed to happen. With these notions now shaken, it is worthwhile to start by looking back twenty or so years before projecting ahead to 2035. In the 1990s, the United States and the West were enjoying the benefits of the end of the Cold War and the initial burst of globalization. Certainly, the Yugoslav breakup clouded the mid-1990s, but most assumed things were still on track toward a more peaceful, prosperous, and secure future, in which the rest of the world would catch up to and model itself on the West. Four key assumptions shaped the view of the future at that point; all of them now lie in tatters:

1. With increasing economic interdependence, the risks of conflict would go down. Instead, the risk of state-on-state conflict has increased, with new conflicts (e.g., Russia-Ukraine-West; China-Vietnam-Philippines-Japan-United States) and old (India-Pakistan and continued turmoil in the Middle East) proving intractable, despite the clear-cut economic benefits of peaceful relations.

2. Ideology was dead. The *"End of History"* hope that all ideological wars had been won by the West was misplaced. Jihadism is worldwide and is proving attractive to marginalized youths, including women. Authoritarianism is staging a comeback, and state capitalism is now an alternative to laissez-faire liberal capitalism. Citizenship is being supplanted by self/group identity.

3. The liberal order's appeal would be enduring, particularly to nonaligned historic powers. Instead, China and Russia have other ideas about how the international system should be run, rejecting post-Westphalia rule sets and harking back to a period when national sovereignty was respected. And they have adherents in the West: Europe's new right-wing parties want to renationalize European politics and, in the United States, the Tea Party and nativist politicians want to get rid of immigration and downgrade US participation in multilateral institutions. Where does that leave the liberal order?

4. Technological growth would be purely beneficial. Silicon Valley's brain trust has operated under the assumption that, if left alone, technology would solve all of the world's problems. However, in the short term, automation has eliminated—rather than created—more jobs. Authoritarians have been able to use social media for better citizen surveillance. Revolutions in biotech could be a time bomb if left unaddressed.

There is a cautionary tale here for futurologists. Clearly, it is hard to forecast the future, even if there is more need for better planning than ever before. Instead of one favorable future, all must think about events and developments that can reshape the future away from the linear and positive post-Cold War projections. However, the world in 2035 is not destined to turn out badly, if leaders begin thinking about how to steer toward more positive outcomes. The original intent of the *Global Trends* series was to encourage policymakers not to dwell on the current crisis, but to take actions that would help avoid future ones. The innumerable surprises and deceptions over the past decade show the degree to which past planning has been inadequate, pointing to the need to develop better mechanisms for focusing on the medium-to-long term.

Global Trends' Track Record

The National Intelligence Council's *Global Trends* series has never pretended to be a modern-day oracle, but it has held up better than other forecasts—partly because the authors understood that they lived in a *revolutionary* age with change, not continuity, as the overall megatrend. The authors were criticized in 2004 for questioning whether the emerging powers would gravitate to the Western liberal order or want to develop their own rules for how the international order should be run. From the policymaker standpoint, it appeared illogical that China—which had benefitted so much from that Western order—would not end up like Japan or South Korea, which had been integrated into the West. Why also should the NIC raise such

issues as the relative decline of the United States or Europe? In 2004, when the NIC's *Global Trends 2020* questioned whether the EU could or would be a superpower in 2020, the European Commission quickly dispatched a memo criticizing the report for even raising the issue. Less than fifteen years on, the question seems highly relevant.

Before work was started on *Global Trends 2030*, two academics, University of California at Berkeley Professor Steve Weber and then-RAND analyst Eli Ratner, were asked to evaluate the previous four editions. The Weber/Ratner verdict was very positive, praising the works for identifying the key drivers of change and praising the regional analysis. The shortfall was in forecasting the rate of change. Even in subsequent editions after *Global Trends 2010*, the authors underestimated how quickly change was happening. *Global Trends 2025* foresaw, for example, the future international system as becoming multipolar, but not as early as the 2010s. The report assumed that China would be, in the mid-2010s, following Deng Xiaoping's advice of "coolly observe, calmly deal with things, hold your position, hide your capacities, bide your time, accomplish things where possible."[2] It also assumed that Russia would remain mired in its internal problems, not challenge international rule of law by its annexation of Crimea and become again an active player in the Middle East. Over the longer run, the authors did foresee a breakdown of the international system, warning rather presciently in the 2008 edition that "...we cannot rule out a nineteenth century-like scenario of arms races, territorial expansion, and military rivalries."

Another key gap was in ideology. This was a recurrent criticism, and one that the authors found difficult to overcome. Certainly, as everyone acknowledged, the world no longer lived in an ideological age like the Cold War, when communism presented a direct challenge to Western market capitalism and democracy. *Global Trends 2025* (published in 2008) spent some time delving into state capitalism. The possibility of the return of a caliphate was also addressed, featured as one of the four key scenarios in the *Global Trends 2020* volume (published in 2004).

However, it was still difficult to get a fix on the scope and extent of the ideological challenges. Many experts inside and outside the NIC found it hard to imagine that there could be a real challenge to the Western system of market capitalism and democracy. Conservative critics were particularly scathing regarding *Global Trends 2025*'s forecasts of a relative US decline and of the growing clout of non-Western powers. Even those who acknowledged the emergence of an increasingly non-Western world did not see there would be stiff ideological challenges to the Western model.

On jihadism, there was more acknowledgement in the *Global Trends* works of its attractiveness and sustainability, rooted in societal struggles over the Middle East's backwardness, inequalities, and modernization challenges. However, even here, there was perhaps too much optimism about jihadism being eventually vanquished and an assumption that, over time, Western values would prevail. *Global Trends 2030*, for example, talked about "political pragmatism" trumping "ideology helped by a growing civil society and eventually producing a new cadre of pragmatic, entrepreneurial and social leaders." This may still happen. However, that report was certainly too optimistic about the immediate aftermath of the Arab Spring—which, with the possible exception of Tunisia, has only led to more authoritarianism in the region.

The Approach

Because *Global Trends* and its methodology is so well-known, this paper will draw on *Global Trends 2030*'s categorization of megatrends, gamechangers, and scenarios. For the most part, policymakers found that framework useful for helping them think about the future. Where necessary in this study, the author has updated the findings in *Global Trends 2030*, augmenting them with more recent research and greater understanding of the potential futures out to 2035. But, the author has decided to organize this work differently, given the acceleration of many of the more negative trends. Part I groups together the internal megatrends and potential gamechangers that increase the domestic political, economic, and social dislocations and crises out to 2035. Part II focuses on the megatrends and potential gamechangers that are breaking down the Western-dominated global order. Throughout, this report does not ignore that the current workings of internal and external crises could have long-term positive yields. The world has come to the brink before, and out of it has come order and stability. The title—*The Search for a New Normal*—is indicative of the author's view that the world is in a difficult transition, and both positive and negative outcomes are possible. Part III explores where the current megatrends and gamechangers could lead out

2 "Less Biding and Hiding," The Economist, December 2, 2010, http://www.economist.com/node/17601475.

to 2035. Achieving a new "normal" will be difficult. Centrifugal forces are in ascendancy. Leadership will be needed to prevent a more dangerous slide into conflict, and provide a needed breathing space for societies across the world to work out internal problems and begin to stabilize. As pointed out in *Global Trends 2030*, a multipolar world is not inherently unstable.

The *Global Trends* literature has been greatly enriched in recent years as more governmental organizations, businesses, universities, think tanks, and others have begun to study the rapidly changing geopolitical, socioeconomic, and technological landscapes. Since leaving the intelligence community, the author has directed the Atlantic Council's Strategic Foresight Initiative in the Brent Scowcroft Center on International Security. The initiative has undertaken important research and writing on a number of the trends analyzed in this volume. Other units of the Atlantic Council have also contributed important insights to this study. Several chapters indicate the places where the findings of those researches and reports have been used, in some cases extensively so.

There is no substitute for creative thinking—particularly in depicting alternative futures—and the National Intelligence Council has deliberately developed an "Art of the Future" project to solicit short stories and images about what life will be like in 2035. Some of the entries in those contests will be featured in this publication. (A fuller representation will go on the website.)

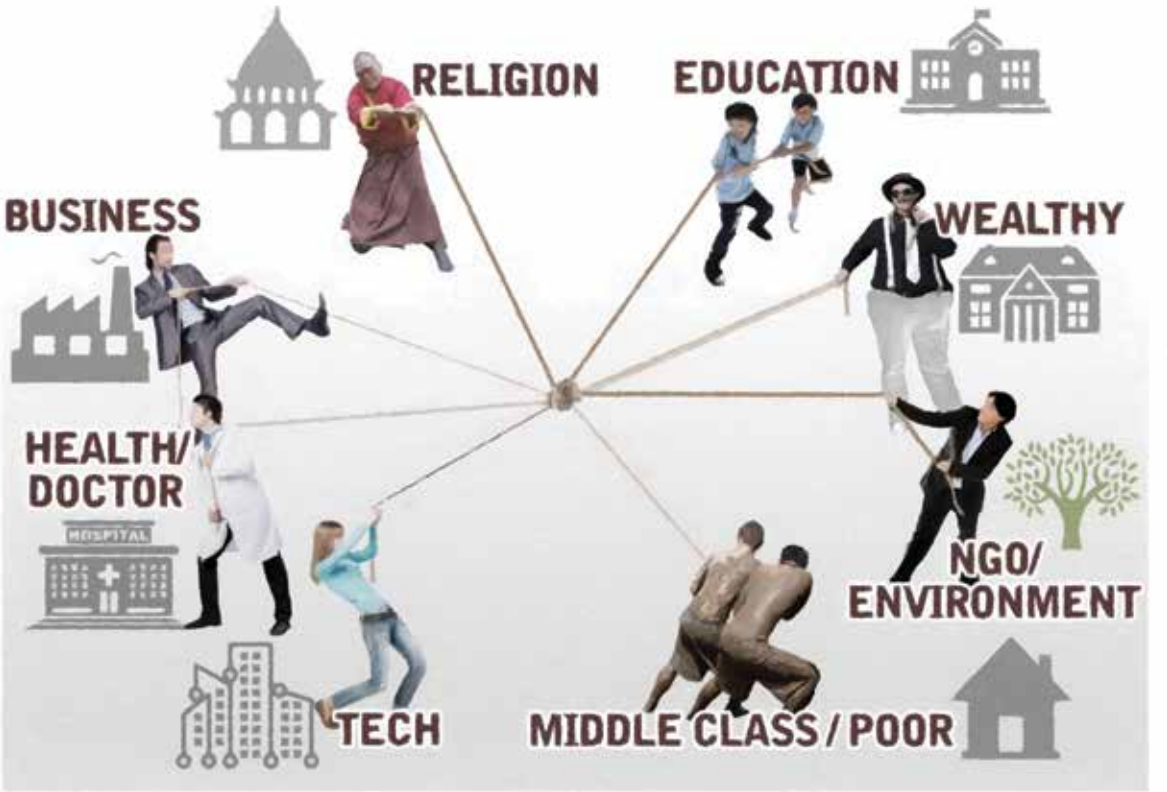
The author wants to stress that this volume has not been produced under the auspices of the National Intelligence Council, from which he retired in 2013. As author of the last three *Global Trends* editions (2004, 2008, 2012), this study uses—as explained above—the methodology and insights of the previous works as a starting point for analyzing the trends and scenarios out to 2035.

PART 1
Unraveling at Home

CHAPTER 1

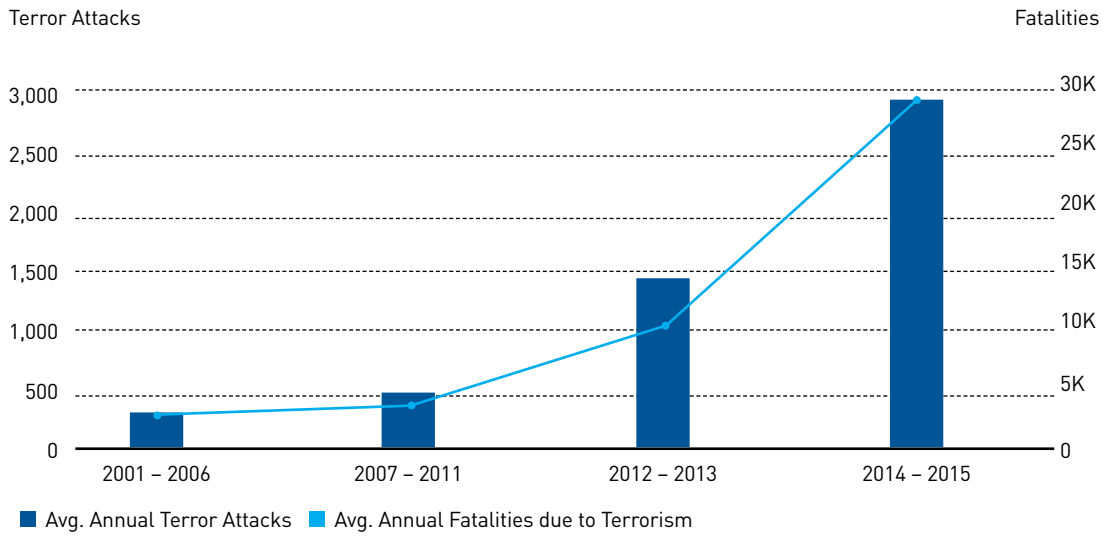
INDIVIDUAL EMPOWERMENT WITH MORE UNINTENDED CONSEQUENCES

The introduction of the "individual empowerment" megatrend was the biggest innovation in *Global Trends 2030*, and the one that has gained increasing traction. Other *Global Trends* editions acknowledged the increasing clout of nonstate actors, but the focus—given it was a government publication—was on states. Every previous *Global Trends* volume led with a discussion of state power, usually about how new powers were rapidly coming onto the geopolitical landscape. In *Global Trends 2030*, individual empowerment was rooted in a number of underlying subtrends, such as the expanding global middle class, growing educational attainment worldwide with a closing gender gap, an expanding role for information technology, and what was labelled a "more conflicted ideological landscape." Increasingly, the second- and third-order effects are seen. This tends to reflect the immediate risks more than the longer-range benefits.

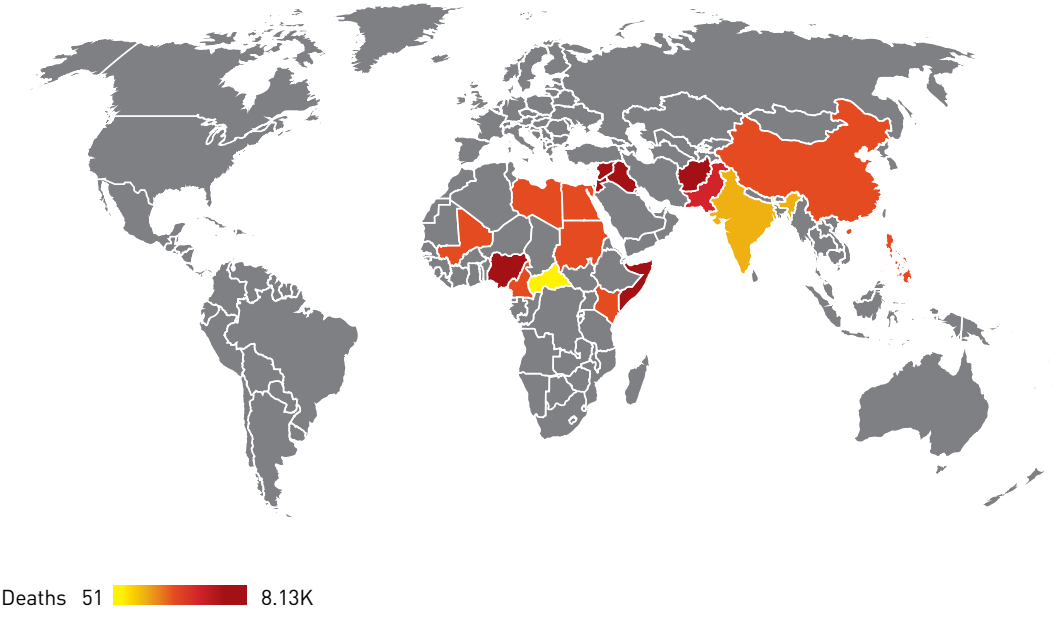


Terrorism has spread with more attacks, particularly in the Middle East and Africa. ISIS and al-Qaeda get much of the attention in Western media for their killings of civilians. Boko Haram, however, has displaced one million Nigerians, killing more than 6,300 civilians in 2014, including two thousand people during one day.[3]

TERROR ATTACKS AND DEATHS DUE TO TERRORISM SINCE 2001



Sources: Investigative Project on Terrorism | Global Terrorism Database. As of March 25, 2016.



3 *Mark Anderson, "Nigeria Suffers Highest Number of Civilian Deaths in African War Zones," Guardian, January 23, 2015, http://www.theguardian.com/global-development/2015/jan/23/boko-haram-nigeria-civilian-death-toll-highest-acled-african-war-zones.*

Though less violent, the more frequent cyberattacks are also evidence of the capability of individuals and small groups to use new information technologies to do increasing harm. In collaboration with Zurich Insurance Group and the University of Denver's Pardee Center, the Atlantic Council recently published a study showing the eye-popping consequences of increasing cybercrime, mostly from nonstate groups and individuals.[4] For advanced economies, the costs of protecting against cyberattacks have begun to outweigh cyber benefits.[5] Although states such as the United States, Russia, China, and European nations have the ability to do even more harm, terrorist networks are becoming more tech savvy and may soon be able to cause large-scale harm.

An Increasingly Frustrated Middle Class

There is no doubt that the rise of the global middle class is a story of epic proportions, contributing greatly to individual empowerment. More and more individuals have the ability to realize their potential, no longer trapped in a day-to-day struggle to survive. The world is on track eliminate most extreme poverty in several decades—a historic achievement in view of the fact that, for much of human history, the vast majority of the world's population was poor. However, the emerging global middle class is waking up to a new reality of lowered expectations, if not frustration. In 2015, the Pew Research Center published a study that saw the emergence of a truly global middle class as "still more promise than reality." The big gains were concentrated in China, South America, and Eastern Europe, with China accounting for more than half the additional middle-class population—203 million—between 2001 and 2011. While the global middle-income population doubled in just a decade, the biggest gains were made by those who had moved from poor to low-income level (defined as $2-10 per day). The low-income population increased from 2.7 billion to 3.4 billion. The share of poor diminished from 29 percent to 15 percent, again all in a decade.[6]

Indeed, the biggest fear for the newly emerged middle class is falling back into poverty. One Kenyan official told the author during the writing of Global Trends 2030, "The middle class is still really close to the lower class. They are vulnerable and prone to go back to the poverty level." One recent economic study estimated that 39 percent of the total population in Latin America is vulnerable; they could see their newly found middle-class status taken away from them as economic growth ebbs in coming years.[7]

Western middle classes are also frustrated. They have seen their household incomes stagnate or decline as there is increasing competition from new globalized labor markets in the developing world. The 2008 financial crisis accelerated the sense of decline. American adults are now as pessimistic as their European counterparts about their children's future. The technological revolution is a new question mark, increasing job insecurity for the middle classes in both the advanced and developing world. (See chapter 4 for more on the impacts of technological revolution.)

The increasing levels of educational attainment are perhaps the most positive element of individual empowerment, which has long-term positive implications. The progress of the developing world toward convergence with the advanced world bears emphasis. "In 1960, the relative distance between the region with the highest average education years and the region with the lowest was a ratio of over 7-to-1 for North America and West Europe compared to the Arab State. Already in 2000, the greatest distance was a ratio of 4-to-1 for North America and Western Europe compared to sub-Saharan Africa."[8] Projections for the Middle East and North Africa state that the average years of completed formal education will rise from 7.1 to more than 8.7 years by 2030.[9] Moreover, the level for women in that region could rise from five to seven years.[10]

4 *Atlantic Council, Frederick S. Pardee Center for International Futures, and Zurich, Risk Nexus: Overcome by Cyber Risks? Economic Benefits and Cost of Alternate Cyber Futures, (Washington, DC: Atlantic Council, 2015), http://www.atlanticcouncil.org/images/publications/risk-nexus-september-2015-overcome-by-cyber-risks.pdf.*

5 *Ibid.*

6 *Rakesh Kochhar, "6 Key Takeaways About the World's Emerging Middle Class," Pew Research Center Fact Tank (blog), July 8, 2015, http://www.pewresearch.org/fact-tank/2015/07/08/6-key-takeaways-about-the-worlds-emerging-middle-class/.*

7 *Michael Penfold and Harold Trinkunas, "Prospects for Latin America's Middle Class After the Commodity Boom," Brookings, February 10, 2015, http://www.brookings.edu/research/articles/2015/02/10-latin-america-middle-class-prospects.*

8 *Janet R. Dickson, Barry B. Hughes, and Mohammed T. Irfan, Advancing Global Education: Patterns of Potential Human Progress (New Delhi: Oxford University Press India, 2010), p. 24.*

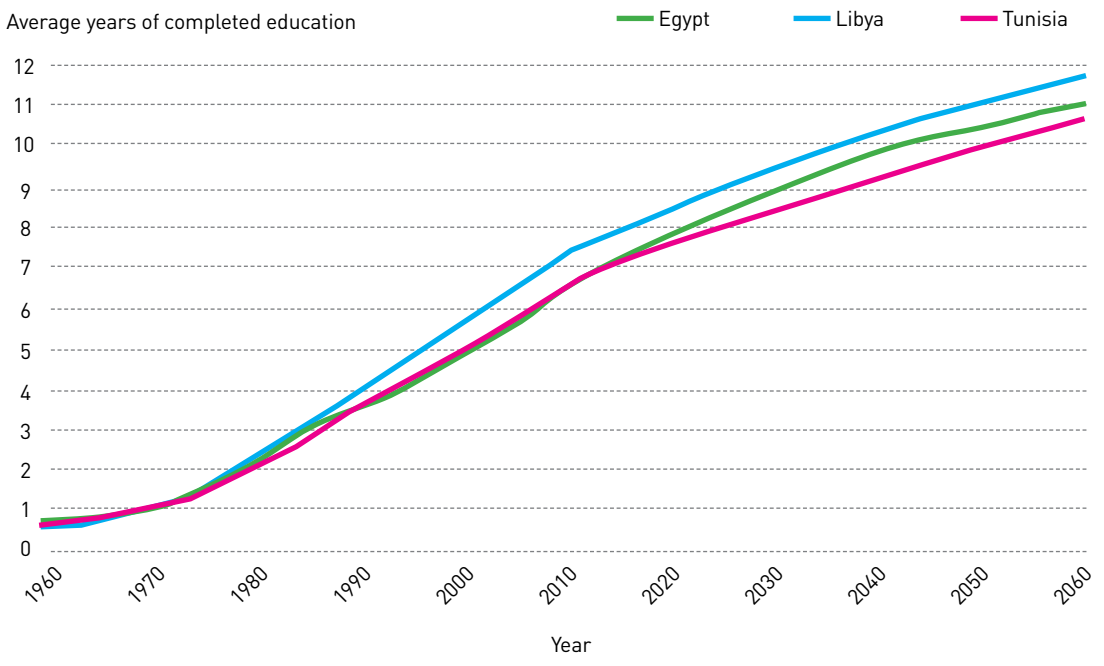
9 *Mathew Burrows, Global Trends 2030: Alternative Worlds (Washington, DC: National Intelligence Council, 2012), p. 11, https://www.dni.gov/index.php/about/organization/global-trends-2030.*

10 *Ibid.*

The highly skilled, wherever they come from, are already in demand—and will be in even more demand in the future. For developing states, the challenge will be to avoid brain drain. More and more students are leaving to get a better education at higher levels. Offering a quality education at home is likely to become a priority if developing states want to keep the "best and the brightest." Asians have taken this message on board; Asian universities are increasingly showing up in the rankings of the top two hundred universities in the world. However, other regions—Africa, Latin America, and the Middle East—are only slowly improving their quality of, and access to, higher education.

Even when they have graduate degrees, including PhDs, some students cannot find relevant employment at home. In many Middle Eastern countries, higher educational attainment surprisingly correlates with rising joblessness. Some of this unemployment is due to women not being encouraged to join the workforce; the new Saudi reform effort—Vision 2030—seeks to increase women's participation in the economy. Educational systems in the Middle East and elsewhere have also struggled to deliver graduates with the skills necessary for finding productive jobs. In Saudi Arabia, few private employers want to hire Saudi graduates, complaining that they are unprepared and lack modern skills and a strong work ethic.

HISTORY AND FORECAST OF AVERAGE COMPLETED YEARS OF FORMAL EDUCATION OF ADULTS IN EGYPT, LIBYA, AND TUNISIA (1950 – 2060)



Note: Population is adults 25 years of age and older.

Source: Historical data from Barro and Lee 2010; forecast from IFs Version 6.68 Base Cse. IFs database variation is EdYearsAge 25, and forecast variable is EDYRSAG25.

Fictional Interlude: New Technology Could Vastly Increase Individuals' Potential Even as State Power is Enhanced

"Fingers on the Scale," a fictional story by Mike Matson that was written for our contest, describes a future in which parents and societies have many more ways of assessing their children's intelligence and future potential. "The side benefit of incessant testing was it provided new massive data sets with deeper level of granularity to allow sports-styled analytics. It was only a matter of time before children were measured like they were athletic prospects."

"But testing-based analytics alone did not create opportunities. It was the accessibility of previously unavailable datasets…Behavioral modeling had resulted in hundreds of precise consumer profiles based on online activity." In this fictional the main character, an economics professor at Northwestern University University, "took his academic research into social mobility and created what was known as the Opportunity Matrix." "Solutions could be tailored to help towns, classrooms, and individuals. The power to take ownership towards achieving the mythological middle class status by revealing the hidden obstacles and showing how to overcome them, was put in the hands of everyone."

Soon there were apps to help parents increase their children's chance of success. One character in the story says, "it's too late for me. But I'm tracking my daughter on a great new app. It gives suggestions for ways to improve her scores based on what she's already done. I'm enrolling her in a dance class next week it found through its search function…How cool is that, the app will go out and find things for me to help her based on her needs!"

Asia was a particularly big market for the professor: parents in China in particular "spent lavish amounts to help their kids gain an advantage. "He had hundreds of private clients in China for whom his company offered boutique plans tailored to an individual child…individual specialization was a massive worldwide industry."

Some of his wealthiest clients are Arab Sheiks and Russian Oligarchs. "These clients were not in the least interested in social mobility or helping others. They were interested in one thing—regime, dynasty, or individual survival."

Finally, when he landed back in the US after a worldwide trip meeting with those clients, he is met by CIA agents, wanting a debriefing. Says one of the CIA agents, "the data from your…clients is just as good. It continues to give us insights into the ruling of elites of a dozen important countries." Indeed, the CIA agents want more. They want to tamper with the formula to ensure other countries cannot develop the caliber of their elites. "Let me tell you a story, says the CIA agent. In 1982, it was the Cold war. We found out the Soviets wanted a specific piece of software to control their gas pipeline. So we let them steal it, but put flaws in the software." "…All we are doing is laying out fingers lightly on the scale to tip the balance in our favor…we just want what's best for our children."

Lagging Democracy, Too

Besides the socioeconomic benefits, rising educational attainment has historically been—along with rising household incomes—a driver of democratic change. While it is difficult to forecast the precise point at which rising incomes and educational level bring about democratic change, there is a strong correlation over time. Education and income growth also have a "strong relationship with governance quality and especially government effectiveness."[11] Education is also strongly correlated with corruption reduction.[12]

The problem has been to identify a particular date when education attainment and higher income levels trigger rapid democratization. *Global Trends 2030* suggested increasing democracy might be closer, with per-capita income levels reaching purchasing power parity (PPP) of $12,000 in emerging middle-income

11 Ibid, p. 157.

12 Ibid, p. 158.

countries, such as China. However, it also said that the "rise of middle classes has led to populism and dictatorship" on the way to greater democracy.

The democratic slippage has not been as great as some democracy activists have made out. The majority of countries in the world profess to be democracies. It is the most democratic age in human history, without question. The number of authoritarians has decreased from what it was only a few decades ago, although those remaining are more resilient, at least for the moment.

Historically, democratic progress has come in bursts or waves, as the late Harvard political scientist Samuel Huntington so brilliantly analyzed. What distinguishes the current moment is the number of semi-democracies or "anocracies." The Polity IV data series—which measures along a 20-point scale of government behavior, with autocracy below 5 and democracy above 15—currently lists about fifty countries falling into the awkward stage. The greatest number of these so-called anocracies are in sub-Saharan Africa, Asia, the Middle East, and North Africa. Anocracies are unstable and transitory, with "over 50 percent experiencing a major regime change within 5 years and over 70 percent within 10 years… Anocracies are about 3 times more susceptible to autocratic backsliding than full democracies" and about four times more likely than democracies to experience coup plots.[13] They are also more vulnerable to outbreaks of armed societal conflict.

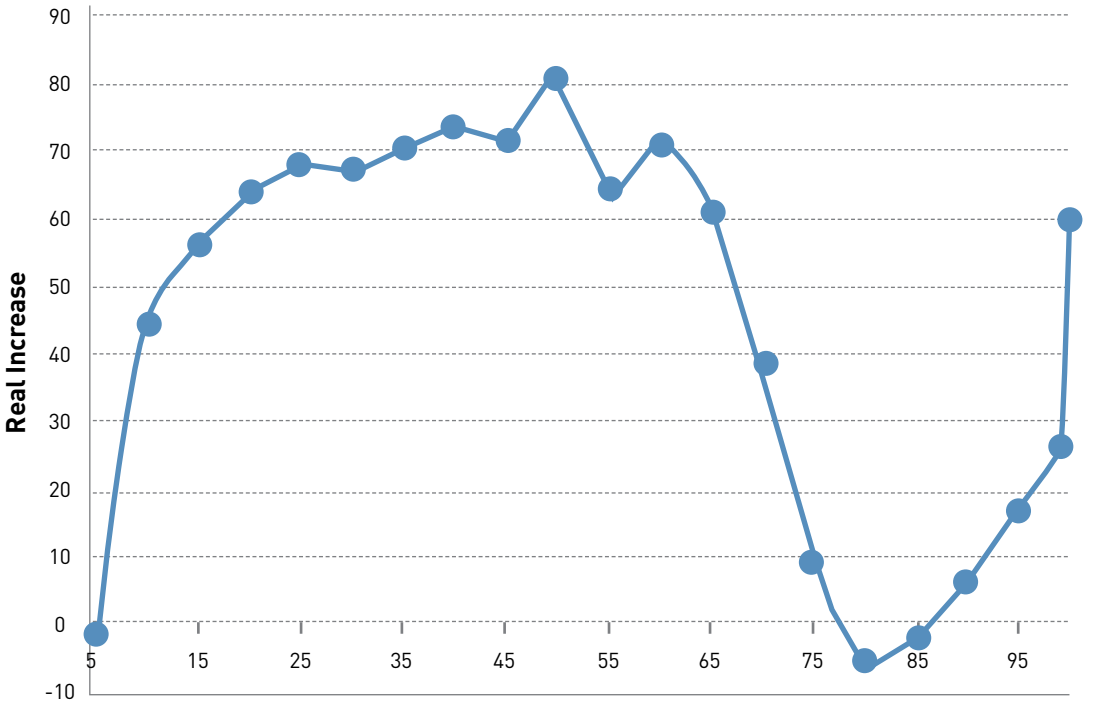
Maybe because there was such a push toward democratization in the wake of Cold War's end and the fall of communism, the transition periods for anocracies or semi-democracies to mature into full democracies has been lengthening, particularly for those countries with little previous experience with democratic governance.[14] In the decade following the end of the Cold War (1990-99), there were approximately 3.2 democratic transitions per year. From 2000-12, however, that number fell to just 1.8 per year.

13 Monty G. Marshall and Benjamin R. Cole, Global Report 2014: Conflict, Governance, and State Fragility (Vienna, Va: Center for Systemic Peace, 2014), p. 24, http://www.systemicpeace.org/vlibrary/GlobalReport2014.pdf.

14 Ibid.

WHO BENEFITTED THE MOST FROM GLOBALIZATION?

Winner and Losers: Change in real income between 1988 and 2008 at various percentiles of global income distribution (calculated in 2005 international dollars)



Note: The vertical axis shows the percentage change in real income, measured in constant international dollars. The horizontal axis shows the percentile position in the global income distribution. The percentile positions run from 5 to 95, in increments of five, while the top 5 percent is divided into two groups: the top 1 percent, and those between the 95th and 99th percentiles.

Source: Branko Milanovic, Global Income Inequality by the Numbers: In History and Now (Washington, DC: World Bank, 2012), http://www-wds.worldbank.org/external default/WDSContentServer/IW3P/IB/2012/11/06/000158349_20121106085546/Rendered/PDF/wps6259.pdf.

Winners: Certainly, this graphic shows that the top-fifth percentile has done very well, seeing incomes increase by up to 60 percent in the 1988-2008 period. But, it also shows that other income groups have done well. According to Branko Milanovic, "The bottom third, with the exception of the very poorest, became significantly better and many of (the) people there escaped absolute poverty." The middle third also greatly benefitted, by approximately 3 percent per capita annually. All in all, the change in global income was huge: "It was probably the profoundest global reshuffle of people's economic positions since the Industrial Revolution." This combined group that escaped poverty are those known today as the global middle class.

Losers: Besides those in extreme poverty who did not do well, there are other losers. The group below the top 5 percent, in the next 20-30 percentile, gained very little or saw stagnant incomes. These big losers are mostly made up of the US and European middle classes.

"When asked by the World Values Survey to rate how democratically their country is being governed on a 10-point scale, a third of Americans now tend toward the end (of the spectrum)—'not at all democratic.'"[15]

Since the early 1990s, these researchers found that "votes for populists have soared in most major Western democracies, whether the National Front in France or the People's Party in Denmark."[16] The

15 Roberto Foa and Yascha Mounk, "Across the Globe, a Growing Disillusionment with Democracy," New York Times, September 15, 2015, http://www.nytimes.com/2015/09/15/opinion/across-the-globe-a-growing-disillusionment-with-democracy.html?_r=0.

16 Ibid.

rise of populist, nationalist, and extremist far-right and far-left parties and groups recalls the 1920s and 1930s, when many Western intellectuals and other groups were attracted to totalitarianism and fascism in the wake of the post-World War I political revolutions and accompanying economic crises. Pew Research surveys have also documented the historic decline in trust in government over recent years; the most recent survey showed that trust is "mired near record lows."[17]

Meanwhile, authoritarianism is no longer equated with economic backwardness. Among the poorest countries, only Eritrea is an autocracy. China is the big exception, experiencing three decades of unbroken high economic growth that is only now slowing, after it has become the biggest economic power according to PPP measures. China—whose authoritarian regime faces a weak opposition—is now slated to pass the threshold of $15,000 per capita PPP, which some scholars assumed would be a trigger for democratization. Moreover, some of the highest per-capita incomes in the world are in countries ruled by authoritarians, particularly in the Persian Gulf. Authoritarian regimes in oil-rich countries have historically been able to resist democratization pressures, partly because of generous social-welfare programs. The existence of a number of economically successful authoritarian states undercuts the argument that democracy is critical to economic modernization. Eminent scholars like Daron Acemoglu and James Robinson have found evidence that oligarchies are more conducive than full-scale democracy to economic modernization—at least in the "medium run"—because they are apt to create environments favoring entrepreneurs with low taxation. Only later do oligarchies create problems by erecting entry barriers to protect current economic incumbents.

Authoritarians May Be Getting Smarter, Too

Numerous scholars, as well as this report's own analysis, point to how authoritarians increasingly understand ways to manipulate democratic processes and institutions—such as elections, parties, and legislatures—for their purposes. They also turned the tables on social media. "With few exceptions, social-media fueled challenges to authoritarian regimes have faltered."[18] (This is also true in the case of protests in more democratic countries, such as the Occupy movement or the M15 anti-austerity protests in Europe.) While China has the resources to censor and block politically sensitive material, less resource-rich authoritarian regimes, like Russia, or authoritarian-leaning ones, like Turkey, rely on self-censorship. Media-owning tycoons in those countries generally have other business interests, which make them "beholden to the government's patronage or good graces."[19] Media bosses routinely fire journalists for crossing the government's lines. Those media outlets that do cross swords end up being hit with huge and spurious tax bills that can put them out of business.[20]

Authoritarians use national sovereignty and the threat of instability to contest any universal legal right by outside groups to assist democratic activists. Russian and Chinese government spokespersons point to the widespread turmoil and humanitarian tragedies caused by US and Western intervention in Libya and Iraq to oust the Muammar Gaddafi and Saddam Hussain regimes. In their minds, Western support and encouragement to democratic activists in Egypt, Syria, and Yemen only further destabilized the region. Authoritarian governments have been very effective in using images of disorder and humanitarian disaster to "feed anti-Western narratives, discredit local activists and opposition leaders" and "justify increased harassment of opposition groups."[21]

It is important, however, not to see current authoritarians as ten feet tall. Authoritarians have grown more media savvy, for example, because they are conscious that the proportion of autocrats being ousted by public revolt has been on the rise. This is a shift from an earlier pattern, in which the ouster was an inside job—a coup d'etat—that resulted from divisions within the elite. Authoritarians are also conscious that they live in a democratic age, and find it necessary to adopt many democratic forms and processes, even if those are gutted to suit their advantages.

17 *Pew Research Center, "Beyond Red vs Blue: The Political Typology: Section 2: Views of the Nation, the Constitution and Government," June 26, 2014, http://www.people-press.org/2014/06/26/section-2-views-of-the-nation-the-constitution-and-government/.*

18 *See Zeynep Tufekci's article, "Authoritarian Use of Social Media," in Mathew Burrows and Maria Stephan, Is Authoritarianism Staging a Comeback? (Washington, DC: Atlantic Council, 2015), http://www.atlanticcouncil.org/publications/books/is-authoritarianism-staging-a-comeback.*

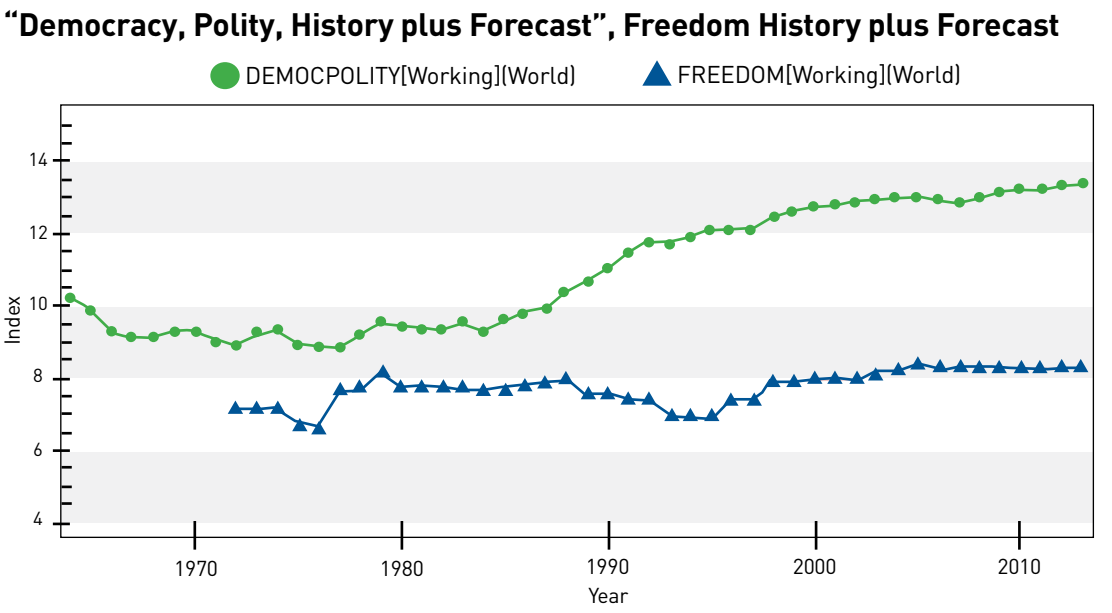
19 *Ibid.*

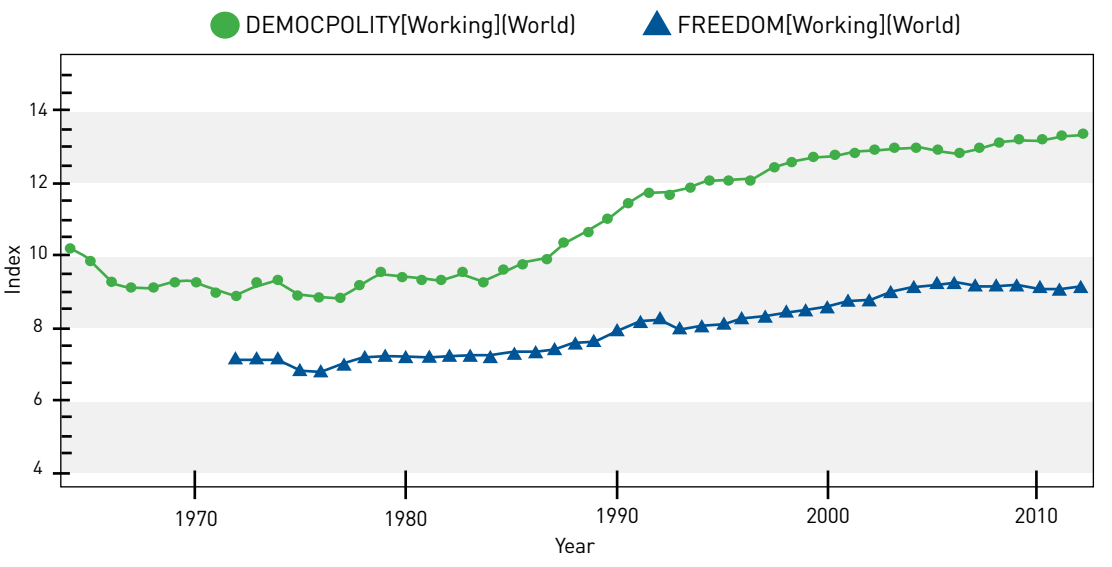
20 *Ibid.*

21 *Andrea Kendall-Taylor, Changing Authoritarian Dynamics and the Limits of Traditional Engagement: A Case for A Legitimacy Narrative, unpublished paper.*

FLAT RATHER THAN A DECLINE IN WORLDWIDE DEMOCRACY

The charts below plot the spread of democracy using the 20-point Polity IV and Freedom House scores (reversed so that higher is more free). The first chart shows world democracy values with population weighting of countries. The second is simple country average. Freedom House scores have been basically flat, with Polity IV showing some incremental progress in recent years.





Source: Professor Barry Hughes, Pardee Center, University of Denver, provided charts to author.

CHAPTER 2

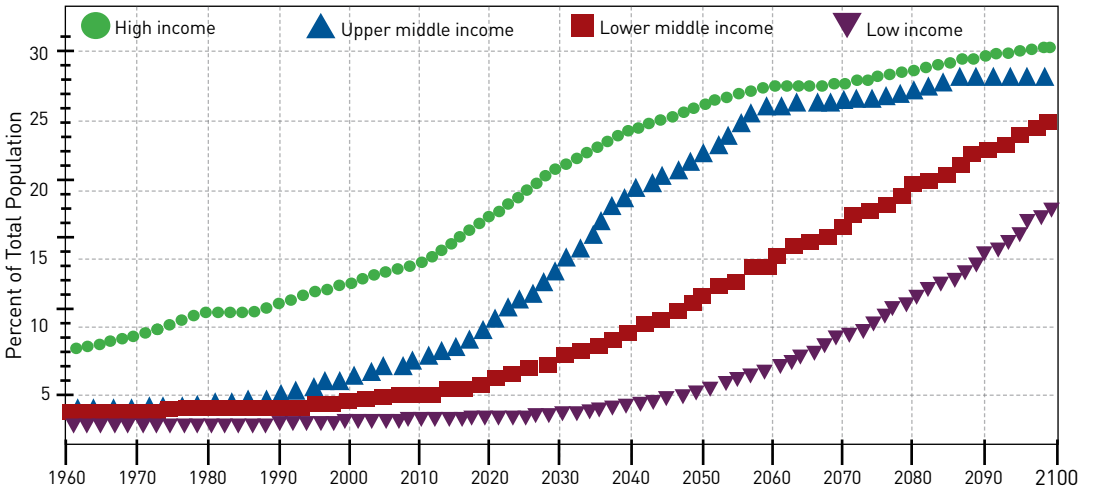
GROWING DEMOGRAPHIC CRUNCH FOR EVERYBODY EXCEPT SUB-SAHARAN AFRICA[22]

The world is entering a period in which the West's postwar social-welfare system is under growing threat, as the global demographic structure is being turned upside down. It is not just the West, but also China and other middle-income powers, that will have to deal with an aging workforce and unsustainable health and pension costs in the next decade. For sub-Saharan African countries whose birthrates remain high, overpopulation carries big costs. Unless they can provide the burgeoning youth populations with education, skills, and employment, the youth bulges are a source of instability.

22 *This section draws extensively from a prospective Atlantic Council publication on "Reducing the Risks from Rapid Demographic Change." The study was sponsored by Zurich Insurance Group and conducted with the help of the University of Denver's Pardee Center. The quantitative data were derived using Pardee's International Futures Model. Full study, published in September 2016, is available at http://www.atlanticcouncil.org/publications/reports/reducing-the-risks-from-rapid-demographic-change.*

Managing demographic risk will be critical to every country's future. Not making the right choices now can lessen economic potential for decades. There will be few second chances.

POPULATION AGED 65 AND OVER



Source: International Futures model, Pardee Center for International Futures, University of Denver

How prepared are high-income economies for the increased costs of pensions? In the fifty years between 1960 and 2010, public pension expenditures as a percentage of GDP doubled for high-income countries, from 4 to 8 percent. By 2035, they are forecast to grow another 3 percent, at a time of shrinking workforces.

These increased pension costs are coming at a time of rapid extensions in life expectancy. Since 1990, lifespans increased more than 2.5 years per decade on average. Increases in pensionable ages for all high-income countries, on the other hand, averaged less than one year per decade. Current forecasts are for life expectancy to increase by at least two years over the next fifteen years. The average pensionable age may need to be significantly higher—perhaps seventy years or above—for some countries by 2035, in order for governments to meet pension demand.

There is a similar story for healthcare spending. The increasing proportion of those aged eighty and over—a consequence of increasing life expectancy—will necessitate more extensive and expensive healthcare needs, such as in-home or long-term care. With healthcare costs rising, retiree savings will be depleted, putting the onus on governments to pay a larger share. But governments will be increasingly strapped; government spending is forecast to cover less than half of the healthcare spending needed—from 62 percent in 2015 down to 49 percent in 2035.

With demand growing for pension and healthcare spending, high-income countries, especially, face a catch-22 dilemma: cutting education, research and development (R&D), and infrastructure spending risks undercutting the higher productivity needed to offset declining workforces. With labor-driven growth increasingly in the past, high-income countries will either have to boost productivity to compensate for declining labor forces or face slowing economic growth.

According to McKinsey Global Institute, even if productivity were to grow at the rapid 1.8 percent annual rate of the past fifty years, the rate of GDP growth would decline by 40 percent, slower than during much of the recovery since the 2008 financial crisis. Some economists already predict a period of significantly slower growth because of declining workforces.[23]

23 Ruchir Sharma, "The Demographics of Stagnation: Why People Matter for Economic Growth," Foreign Affairs, March/April 2016, https://www.foreignaffairs.com/articles/world/2016-02-15/demographics-stagnation.

Emerging labor-saving technologies—robotics, increased automation, and more sophisticated artificial intelligence—could help offset the declines in workforces. But past technology breakthroughs have also led to new employment demands. Will there be enough skilled workers for high-tech industries if healthcare and pensions costs swamp national budgets, squeezing revenues for education and R&D?

Crunch Comes Later for Middle- and Low-Income Countries

Most middle-income countries have proportionally larger and younger workforces, putting them in a better position to prepare for the inevitable aging process. With fewer dependents, there is higher savings potential and more growth capacity. This report's modeling shows, for example, that upper-middle-income countries will be able to devote more resources to education, closing the gap with advanced economies and moving them toward becoming knowledge economies.

However, middle-income countries will soon face many of the same demands for increased government healthcare spending as high-income countries. The share of healthcare spending in upper-middle-income countries will slowly decline, because of government inability to keep up with increasing demand. Upper-middle-income countries will also face pressures to increase public-pension spending. The need for pension spending as a share of GDP will increase by close to 5 percentage points by 2035.

Of middle-income countries, China faces a particularly daunting challenge. By the early-to-mid 2020s, with the sharp dropoff in working-age population, the pressures for more healthcare and pensions will erode the Chinese government's ability to keep up with them. The annual Chinese pension-spending gap is currently $175 billion, and is forecast to grow to nearly $1.4 trillion by 2035. A failure to complete the middle-income transition during the few remaining demographic-dividend years would lead China and other middle-income countries to become old before getting rich.

Most low-income countries concentrated in sub-Saharan Africa and South Asia have the opposite problem. Instead of aging, their populations are youthful. The sooner they can bring down their high birth rates, the earlier they can move into the demographic bonus years in which they have the opportunity to boost growth. So long as fertility remains high, so do healthcare costs. Forty-eight percent of Afghanistan's population is under the age of fourteen, and infant care is estimated to account for more than 40 percent of the country's total healthcare costs.

The pace of fertility decline in sub-Saharan Africa, where total fertility rate (TFR) only dropped from 6.18 children per woman to 5.10 over the last twenty years, has been much slower than many demographers anticipated. Africa's population is the world's fastest growing. And even if fertility in Africa falls, the continent's population will continue to grow rapidly because of the large cohorts entering childbearing ages during the next two decades. A continuing lack of a reduction in Africa's fertility rate has big implications for the whole planet. Many demographers and environmental scientists had hoped to see a plateauing of population growth by mid-century. Without a drop in fertility, the world could end up with a population of eleven to twelve billion, instead of about nine billion, by the end of the century. A world with eleven billion people or more would put enormous stress on resources, at a time when climate change may also be affecting food production and the availability of water in Earth's central belt.

Life expectancy at birth in Africa is the world's lowest, at sixty years—nineteen years lower than in North America. Lack of access to clean water and sanitation, and poor health infrastructure, increase the risk of rapidly spreading communicable diseases, from intestinal parasites to Ebola. In sub-Saharan Africa, HIV/AIDS still ravages the population and maternal mortality is high, although declining.

The more resources can be devoted to education, the more low-income countries can maximize the approaching demographic bonus years. Still, low-income countries will have a hard time matching the resources that high- and middle-income countries can devote to the educational needs of their large youthful populations. With Africa forecast to provide one out of every four workers by 2050, a poorly educated African workforce has negative implications for long-term global growth potential. High levels of unemployed youths lead to civil conflict. One-hundred percent of the states marked as "Very High Alert" or "High Alert" on the Fragile States Index compiled by Foreign Policy and the Fund for Peace have very youthful age structures.

Good and Bad Scenarios

Aging and demographic transitions are a given, but a number of variables—such as medical advancements leading to healthier and longer-living populations, unanticipated drops in fertility rates in low-income African nations, or sustained high levels of migration from poorer to higher-income countries—could change the balance between risks and benefits for some countries.

What Happens When People Live Longer: This report's longevity scenario explores a world in which advances in medical technology and treatments drive down mortality rates by finding cures for cancer, heart disease, and diabetes. This scenario uses France and China as illustrative examples. The consumption needs of all French retirees—measured as a percentage of GDP—increase by more than 14 percent by 2035. In the more rapidly aging China, the life-expectancy increase could drive a boost in consumption needs of more than 20 percent, translating into 200 percent growth in GDP share between 2015 and 2035. In this scenario, there is a stark contradiction between individual and societal needs. However desirable a longer and healthier life is for the individual, it comes with high costs for society.

What Happens with a Sustained Migration Influx: The rate of decline in Germany's labor pool will accelerate between 2015 and 2020, and be a net drag on the German economy. A sustained influx of migrants would reverse this trend, so long as migrants become as productive as the average German worker. In such a scenario, migrants would reduce labor's drag on economic growth by up to half, and potentially add more than $350 billion in GDP (relative to the base case) by 2035.

Reducing High Fertility in Africa: Today, the average African woman is expected to give birth to more than twice the number of children as women in the rest of the world. In a low-fertility scenario, average total fertility rates drop to near replacement levels by 2035. By 2035, Africans would just begin to enter the demographic-dividend years, boosting growth potential and per-capita incomes.

A Sense of Urgency Needed by All

Political and economic measures can make a critical difference in terms of whether people all end up poorer and more unstable, or able to fully enjoy the benefits of growing longevity. With the aging process in full swing, high-income countries face a particularly difficult task of raising retirement ages, implementing efficiencies in healthcare, and reforming pension systems if they are to avert an economic slowdown. Middle-income countries have more time, but the accelerating aging process means they need to move quickly to align pension schemes to increasing longevity, and to build efficient healthcare systems. They have a big opportunity to close the education gap with high-income countries, boosting their productivity levels and attractiveness to foreign investment. Low-income countries need to bring down fertility quickly and increase educational standards if they are to maximize their advantages during the demographic bonus years.

Youth Bulges Remain Important

While aging will become the predominant demographic trend, the number of countries—fifty—with a median age of twenty-five years or less will remain relatively large, though down from more than eighty such countries in 2010. Such youthful countries tend to have an oversized impact on foreign affairs because of the high correlation between youth bulges and the propensity for conflict, either inside or between countries. Since the 1970s, "roughly 80 percent of all armed civil and ethnic conflicts" started in countries with youth bulges.[24] Many of the countries with large youth bulges also figure high on state-fragility lists, and are unfortunately located in areas where climate-change impacts will be the greatest and food and water scarcities are a growing threat.

In 2035, most of these countries with still-large youth bulges will be concentrated in sub-Saharan Africa, and in some parts of the Middle East—the Palestinian territories, Jordan, and Yemen. In the Western hemisphere, only Bolivia, Guatemala, and Haiti will retain their youth bulges. And in the Pacific, only East Timor, Papua New Guinea, and the Solomon Islands will do so. In South Asia, only Afghanistan will be youthful, although youth bulges will persist in tribal populations in Pakistan's western provinces. Pashtun women in both Pakistan and Afghanistan give birth to more than five children on average.

The high fertility rates will have an explosive effect on countries' populations, especially those in the Middle

24 Global Trends 2030.

East and South Asia. If current fertility trends persist, countries like Afghanistan and Yemen will see a doubling of their populations between 2005 and 2030, and a tripling by 2050. Pakistan's population—part of which is beginning to age—will nevertheless see a 50 percent increase, reaching 240 million by 2030, which will make it the world's fifth-most-populous country. Saudi Arabia—which is also beginning to age—will have a 58 percent increase to twenty-seven million between 2005 and 2030. Overall, the Middle East will add roughly 290 million people in the 2005-30 period.[25]

The population explosions make it difficult to turn youth bulges into demographic dividends for the economy. Afghanistan, Yemen, the Palestinian territories, and a number of sub-Saharan countries are projected to see gains in their working-age populations of around 130 percent.[26] No economy could absorb such numbers. In addition, the persistence of high birth rates among minorities within countries will cause potential imbalances and tensions with majority populations. Kurdish fertility in southeastern Turkey has stalled at about four children per woman. In Israel, the ultra-Orthodox Jewish minority, or Haredim, and the Arab sectors will double their absolute numbers over the next twenty years, while the percentage of non-Haredim and secular population—with lower birth rates—will drop from 51 percent in 2010 to 42 percent in 2030. However, the non-Haredim and secular populations provide the vast majority of the Israeli workforce.[27] Such a reduction in numbers cannot help but negatively impact the economy.

Migration and Mobility

Migration and mobility could be important factors in ameliorating the workforce and skills gaps caused by aging, although rising political and social opposition to immigration may act as an obstacle. Populations in youthful countries could have increasing opportunities so long as they can acquire the skills, and if immigration barriers do not prevent mobility. The first globalization of the late nineteenth and early twentieth centuries saw bigger movements, proportionally, of people emigrating (mostly from Europe), and also high rates of return to their home countries.[28]

Circumstances appear even more favorable to movements of people in coming decades, both internationally and within countries. According to the UN, there were 232 million international migrants in 2013. Between 1990 and 2013, the number of such migrants rose by more than seventy-seven million or by 50 percent, with "much of that growth between 2000 and 2010."[29] Interestingly, though, the proportion of the world's population who are international migrants has stayed around 3 percent since 1995.

Europe and Asia currently host nearly two-thirds of all immigrants; in 2013, there were seventy-two million immigrants in Europe and almost an equal number in Asia. North America hosted the third-largest number (fifty-three million), followed by Africa (nineteen million) and Latin America (nine million). The United States has by far the largest number of immigrants: forty-six million reside in the United States, equal to nearly 20 percent of the world's total. The Russian Federation hosts the second-largest number—eleven million—followed by Germany (ten million), Saudi Arabia (nine million), and the United Arab Emirates and United Kingdom (eight million each).[30]

More recent trends indicate a shift away from Europe and North America, especially increasing South-South flows. In 2013, "Asia-Asia was the largest migration corridor in the world, with some 54 million international migrants" leaving one Asian country for another.[31] The Latin America-US corridor, which was the largest one from 1990-2000, has been steadily declining.[32] The birth rate in Mexico—which used to provide the largest number of migrants—has gone down as the middle class there has increased. Many more people are finding opportunities at home rather than being forced to emigrate. All but three of the

25 *Adele Hayutin, Critical Demographics of the Greater Middle East: A New Lens for Understanding Regional Issues (Stanford, Calif: Stanford Center on Longevity, 2009), http://longevity3.stanford.edu/wp-content/uploads/2012/10/Critical-Demographics-of-the-Greater-Middle-East.pdf.*

26 *Ibid.*

27 *Amir Mizroch, "Israel 2030: A Hard Look at the Hard Numbers," Jewdyssee (blog), April 13, 2012, http://www.jewdyssee.com/2012/04/15/israel-2030-a-hard-look-at-the-hard-numbers-2/.*

28 *Global Trends 2030, p. 24; Ronald Skeldon, Global Migration: Demographic Aspects and its Relevance for Development (New York: UN Population Division, 2013), p. 2, http://www.un.org/esa/population/migration/documents/EGM.Skeldon_17.12.2013.pdf.*

29 *United Nations Department of Economic and Social Affairs, International Migration Report 2013 (New York: United Nations, 2013), p. 1, http://www.un.org/en/development/desa/population/publications/pdf/migration/migrationreport2013/Full_Document_final.pdf.*

30 *Ibid, p. 5*

31 *Ibid, p. 3*

32 *Ibid.*

largest migration corridors in the world have a destination in the South. Increasingly, too, the majority of immigrants are moving within the region in which they are born.[33]

As country populations age, the number of immigrants who will leave is likely to decline. Since the late nineteenth century, the majority of immigrants have been young adults. As their proportions decline in aging countries, young people are likely to have more job opportunities at home, lessening the incentive to leave. The big exception will be for students, the numbers of whom are increasing at a very rapid rate. According to the Organization for Economic Cooperation and Development (OECD), the number of international students more than doubled between 2000 and 2011, with almost 4.5 million university-level students enrolled outside their country of origin. Asians—particularly Chinese, Indian, and Korean—constitute a majority of all students going abroad to complete their educations. As with permanent migration, the destinations are beginning to change, with Australia, New Zealand, Spain, the Russian Federation, and South Korea rising for an increasing share of international students, while the United States and Germany are beginning to lose their share. The United States, which still has by far the largest share of international students, nevertheless slipped from 23 percent to 17 percent between 2000 and 2011. Increasingly, international students are also staying on, with an average of 25 percent becoming permanent immigrants in OECD countries. For some receiving OECD countries—including Australia, Canada, the Czech Republic, and France—that rate is more than 30 percent.[34]

For all the increasing movement of young people, it is not clear if that will make a huge demographic difference for most countries in which they settle. For example, net migration is projected to offset Europe's population decline until 2020, when the surplus of deaths over births will be so great that even increasing migration is unlikely to reverse population decline. The big exception is in the United States, where migration has already greatly boosted population growth and will become increasingly important as US birth rates decline and net migration becomes more important than natural increase in the early 2030s.[35] That is, of course, unless there is a movement to expel illegal migrants and stop large-scale immigration.

Internal migration is a more difficult subject to analyze for structural patterns, because of the patchy data. Available data would indicate that "where the distribution of the population in urban areas approaches about three-quarters of the population, the number of internal migrants declines."[36] Internal migration in the United States has been dropping, with a leveling off of urbanization. Aging is also a factor. The number of internal migrants in Japan has dropped since the 1970s, when Japanese fertility rates began to fall below replacement level. In places like sub-Saharan Africa, where urbanization rates are increasing, the move to the cities is picking up momentum despite government efforts in some African countries to stem the flow. China presents an interesting case, as its economic growth has been fueled by the migration of peasants to the cities—more than 229 million, of which two hundred million moved without getting formal permission to change residency. China is counting on the continued movement to bolster economic growth, although it is unclear—with the youthful proportion declining—if it can continue to match former rates of migration.[37]

Urbanization

For the first time in human history, a majority of people are now living in urban areas. That number will climb to nearly 60 percent by 2030, in contrast to roughly 30 percent in 1950. Sub-Saharan Africa—where the urban proportion of population is below 50 percent—may have the highest rate of urban population growth, although Asian urban populations will continue to grow. According to the UN, between 2011 and 2030, 276 million more Chinese and 218 million more Indians will live in cities, accounting for 37 percent of the total increase for urban population in 2030.[38] China alone will have 242 cities in the McKinsey Global Institute's top six hundred, which, according to its estimates, "will generate nearly 65 percent" of global GDP by 2025. Other countries providing significant additions to the world's urban population include

33 Ibid, p. 3.

34 Organization for Economic Cooperation and Development, Education Indicators in Focus (Paris: OECD, 2013), http://www.oecd.org/education/skills-beyond-school/EDIF%202013--N%C2%B014%20(eng)-Final.pdf.

35 United Nations, International Migration Report, pp. 14-15.

36 Skeldon, p. 12.

37 Skeldon, pp. 16-17.

38 United Nations Department of Economic and Social Affairs, World Urbanization Prospects: The 2011 Revision (New York: United Nations, 2012), http://www.un.org/en/development/desa/population/publications/pdf/urbanization/WUP2011_Report.pdf.

Bangladesh, Brazil, the Democratic Republic of the Congo, Indonesia, Mexico, Nigeria, Pakistan, the Philippines, and the United States.[39]

Cities will provide an increasing share of economic opportunity, generating more than 70 percent of global GDP in 2030. According to McKinsey, urban growth is highly concentrated "in just a few hundred cities and will continue to be…the 600 biggest cities alone will generate 60 percent of global GDP and host 25 percent of global population. By 2030, the world is projected to have 41 mega-cities with 10 million inhabitants or more."[40] This is all the more impressive because it is happening at a rapid pace. According to the World Bank, "It took Europe more than 50 years (in the nineteenth and twentieth centuries) to urbanize the equivalent number of people that have moved to urban areas in East Asia in just the past 10 years."[41] Urban buildings and infrastructure will probably account for the majority of global investment out to 2025.[42] In Africa's case, the consequences of the projected rapid urbanization are expected to reach even farther, including spurring smaller family sizes, formation of stronger middle classes, and more rapid education attainment.[43]

Urbanization is a key to ending extreme poverty and fueling broad economic growth, but it has often aggravated existing inequalities. "Large cities without affordable housing and efficient public transportation can force the poor to live far from work, schools, clinics, markets and other amenities," according to the World Bank.[44] Going forward, the central challenge will to be create cities that are sources of social and political stability. Historically, political revolutions have started in crowded cities by middle classes who see their path toward economic opportunity becoming more difficult. Currently, there are fears that growth is slowing in many megacities around the world, and is not keeping pace with the needs of their expanding populations.[45]

Rapid urbanization risks increased pollution and environmental degradation. "Environmental degradation increases with income in the initial stages of economic development," as dramatically portrayed in China over the past two decades. The rate of environmental degradation slows at higher incomes. However, for most countries in East Asia—let alone South Asia and sub-Saharan Africa, where incomes are lower—the World Bank estimates that the world is "still at the stage at which income growth, urban expansion, and environmental degradation go hand in hand."[46] Providing and managing adequate water supplies will be a huge challenge. India's cities will need ninety-four billion liters of potable water in the next fifteen to twenty years. Sewage collection will need massive upgrades; coverage now in some mid-size Indian cities is as low as 10-20 percent.[47] Many rapidly urbanizing cities are in coastal areas increasingly vulnerable to climate change, including sea-level rise and storm surges. On the World Bank/OECD's list of the ten most vulnerable cities are many rapidly expanding ones in developing countries, such as: Guangzhou, China; Guayaquil, Ecuador; Ho Chi Minh City, Vietnam; Abidjan, Ivory Coast; Zhanjing, China; Mumbai, India; Khulna, Bangladesh; Palembang, Indonesia; and Shenzen, China.[48] In most of these cities, the poor are most at risk, living in "the most vulnerable neighborhoods, often in low-lying areas and along waterways prone to flooding."[49]

However, rapidly urbanizing countries have an opportunity to mitigate these risks by employing a wide array of emerging technologies to solve problems such as overcrowding, traffic congestion, resource use, housing, and disaster-response systems. Information and communications technologies (ICT)—nonexistent in Europe, Latin America, or the United States during the heydays of those regions' rapid urbanization—can be used to enhance nearly every type of good or service. A city's public-transport system can use ICT

39 Ibid.

40 Richard Dobbs, Jaana Remes, James Manyika, Jonathan Woetzel, and Yaw Agyenim-Boateng, Urban World: The Shifting Global Business Landscape (San Francisco: McKinsey Global Institute, 2013), http://www.mckinsey.com/global-themes/urbanization/urban-world-the-shifting-global-business-landscape.

41 World Bank Group, East Asia's Changing Urban Landscape (Washington, DC: World Bank Group, 2015), p. xix, http://www.worldbank.org/content/dam/Worldbank/Publications/Urban%20Development/EAP_Urban_Expansion_full_report_web.pdf.

42 McKinsey, Urban World.

43 Global Trends 2030, pp. 27-29.

44 World Bank Group, East Asia's Changing Urban Landscape, p. 2.

45 McKinsey, Urban World.

46 World Bank Group, East Asia's Changing Urban Landscape, p. 3.

47 Global Trends 2030, p. 29.

48 World Bank, "Which Coastal Cities Are at Highest Risk of Damaging Floods? New Study Crunches the Numbers," August 19, 2013, http://www.worldbank.org/en/news/feature/2013/08/19/coastal-cities-at-highest-risk-floods.

49 Ibid.

applications to improve scheduling or routing. "Architects and engineers involved in the green building movement want to reduce the absolute amount of energy and water" that buildings use. Currently, supplying energy to buildings accounts for 71 percent of electricity use.[50] McKinsey research in India suggests that it can be 30-50 percent less expensive for large cities to deliver basic services—including water, housing, and education—than it is in more sparsely populated rural areas.

50 *Atlantic Council, Envisioning 2030: US Strategy for the Coming Technology Revolution (Washington, DC: Atlantic Council, 2013), pp. 11-13. http://www.atlanticcouncil.org/publications/reports/envisioning-2030-us-strategy-for-the-coming-technology-revolution.*

CHAPTER 3

A MALTHUSIAN WORLD OF SCARCITIES INCREASINGLY LIKELY FOR THE POOREST

Global Trends 2030 underlined the potential for a world of resource scarcity for the poorest on the planet if action was not taken to better ensure adequate water and food supplies—and warned that a perfect storm was brewing. Climate-change impacts are likely to be the biggest around the central core of the planet, exactly where population growth is the greatest. The expected temperature increases will make it harder to grow the same crops. By changing precipitation patterns in areas where rainwater was the principal source for agriculture, climate change also makes it harder to produce adequate food supplies for a growing population. Even before the onset of climate change, agricultural production in sub-Saharan Africa was not keeping pace with population growth.

Four years later, much of the same story still pertains. The World Bank recently produced a report that emphasized the importance of water as a framework for thinking about the complex scarcities problem, and as a potential key for unlocking a long-term solution. In the absence of "significant increases in water efficiency," particularly in the agricultural sector, the World Bank estimated that demand would exceed current sustainable water supplies by a whopping 40 percent in as little as fifteen years.[51] Water is a finite resource and is already in short supply in many regions, particularly those with fast-growing populations. With climate change, the finite resource turns into one with less reliability and more variability—both spatially and temporally—in supply. However, once a system for ensuring adequate water supplies can be put in place, then problems such as low agriculture productivity can begin to be tackled. Obviously, there is also the problem of too much water—with the prevalence of extreme weather and storm surges, some low-lying places are increasingly flooded. Solving that problem is also necessary.

The political, economic, and moral risks of not tackling changing water availability are enormous. According to the World Bank, one quarter of the world's population—1.6 billion—currently lives where there is prevalent water scarcity. By 2035, this number could double. Food production is directly connected to the availability of water. Seventy percent of available water now goes to food production, and this is set to grow with population increases. The emerging global middle class expects a higher-protein diet. Meat production, particularly, involves using large quantities of grain, which, in turn, relies on rain or groundwater for growing. Expected higher temperatures only exacerbate the need for additional water for growing crops and raising livestock.

Poorest Areas Most Harmed

Sub-Saharan Africa is the region most at risk because of its high dependence on rain-fed agriculture. It is also a region with robust population growth. A number of sub-Saharan countries are showing economic promise, but the majority are among the world's poorest. For the most part, governments there lack the capacity to deal with major challenges.

Africa: Not All is Bleak

Africa has some of the fastest-growing countries in the world, despite having sixteen of the top twenty states on Foreign Policy magazine's Fragile States Index. Africa contains the bulk of the world's remaining uncultivated arable land, providing opportunities for itself and the rest of the world, if the land could become productive. Africa is a major energy exporter. Democracy has also taken root, even if there is a governance deficit and one-third of the region's countries are plagued by civil conflict.

The Middle East and North Africa (MENA) is also high on the list of regions at risk. Already the driest region on Earth, it will become even hotter and drier during the next few decades. With precipitation patterns changing, many aquifers have been depleted. The region's reliance on water-intensive modes such as irrigation is a concern, as rainwater fluctuates and groundwater is exhausted. Low-lying coastal areas in the region are also beset by rising sea levels. Tunisia, Qatar, Libya, the UAE, Kuwait, and especially, Egypt are at risk. Unlike parts of sub-Saharan Africa, a number of MENA countries—particularly in the Gulf—have resources to deal with the impacts. Concerns remain for countries such as Egypt, Algeria, Yemen, Syria, Iraq, and Jordan, whose stability could be affected by higher food prices. Poorer populations in these countries spend a high proportion of their income on food and would be most at risk as food prices rise, leading to increased likelihood of internal instability.

South Asia also relies on irrigation for agricultural production, so it is also vulnerable to changing precipitation patterns and the runoff in major rivers. Like sub-Saharan Africa, it is another region that is experiencing high population growth with increased water and food demands. At the same time, with rising

51 World Bank Group, High and Dry: Climate Change, Water and the Economy (Washington, DC: World Bank Group, 2016), http://www.worldbank.org/en/topic/water/publication/high-and-dry-climate-change-water-and-the-economy.

temperatures, rainfall variability, and less groundwater to draw upon, food production could actually diminish. The World Bank has estimated that, "In the South Asia region, farm-related income could drop by 25 percent with the likely lower crop yields from water scarcity."[52]

The main concern in East Asia is flooding in the low-lying coastal areas where many major cities and large population concentrations are located. A serious humanitarian disaster on a scale not yet seen could happen if a major typhoon were to make a direct hit on one of these highly populated, low-lying areas. In the Pacific and Indian Oceans, there are a number of island states that could go under, becoming uninhabitable and forcing residents to seek asylum in other countries.

The United States is also seeing major climate-change impacts. The US Navy is increasingly concerned about the viability of its major naval base in the low-lying Hampton Roads area of southern Virginia, which experiences more and more flooding. In the Southwest, rising temperatures and variable rainfall have meant that the threat of forest fires is now yearlong. Forest fires are devastating an increasing swath of the virgin woodlands in the region, forever changing the landscape.

The World Bank also identifies Eastern Europe and Central Asia as "ill-equipped to handle the increasing flood risks, desertification (in the case of Central Asia) and changes in the flow of major rivers."

Increasing the Risk of an Endless Poverty Cycle

There are many factors that lead to reduced or increased poverty. As described in an earlier chapter, recent decades have seen the biggest drop ever recorded in extreme poverty. Though all would pay a price, the biggest cost of not tackling the water problem is a slowdown in the poverty-reduction rate, or its reversal. Seventy-eight percent of the world's poor—eight hundred million—live in rural areas, and a large number of them would be in areas of already high water stress. A change in rainfall amounts or patterns would affect yields that farmers rely on for their own food and livelihood. The World Bank believes yields could be reduced by 10 percent by 2030, a significant margin for many who are already living on the edge.[53] There is also evidence that even periodic droughts could have long-term effects if nutrition for babies and young children is impacted. Numerous studies have shown chronic nutritional deficiencies to do lifelong harm to cognitive abilities, affecting employment and earnings of those suffering malnutrition in early childhood.[54]

Besides extending poverty, water scarcity increases the potential for conflict outbreaks. Like poverty, there are usually multiple factors behind any conflict. However, research has shown that "civil wars tend to erupt following periods of low rainfall."[55] Several years of drought before the 2011 outbreak of the Syrian civil war are widely acknowledged as setting the stage. As in Syria, droughts encourage displacement and migration, which can be destabilizing for a society. One percent of rain reduction has been linked with a 0.59 percent boost in urbanization.[56]

Is Technology the Answer?

Global Trends 2030 examined in depth a number of emerging technologies—drip irrigation, precision agriculture, urban farming, and desalination—that could increase agricultural production while using less water, and less of other inputs such as environment-damaging, nitrogen-heavy fertilizers. Theoretically, desalination could also increase supplies of freshwater. Drip irrigation and precision agriculture require heavy investment that most farmers in the developing world could not afford. So long as the farmers have to bear all the costs, despite the public benefits, there is also little incentive. Urban farming of fruits and vegetables is growing and becoming more popular in many cities, but cannot substitute for large-scale grain needs. Desalination is an expensive process that uses twenty-three times as much energy as normal water withdrawal from lakes and streams.

52 Ibid, p. 24.
53 Ibid, p. 16.
54 Ibid, p. 18..
55 Ibid, p. 20.
56 Ibid, p. 20.

Over time, these technologies could be a more significant part of the solution. But, increasingly, experts are looking to specific policies—such as water pricing—and more comprehensive planning to understand complicated sets of tradeoffs involved in allocating available water resources. Water pricing has been shown to be very effective in reducing consumer demand in urban areas, and in pushing suppliers and consumers to recover wasted water through plugging of leaks. According to one estimate, a "staggering 32 billion cubic meters of treated water is lost" in urban areas due to leaking pipes.[57]

Instituting water pricing in rural areas is more challenging where demand tends to be inelastic. Poor farmers could be put out of business if water is priced at unaffordable levels. Any pricing scheme would have to ensure special provisions or subsidies for the needy. Water permits or water-trading mechanisms are possible solutions over the longer run, but so far, there are few good models for instituting workable pricing schemes in many countries.

Bigger Question—Why Is More Not Being Done?

In view of zero-sum water resources and spiraling consumer needs, one wonders why more is not being done. Much of the above reiterates worrying trends highlighted four years ago in Global Trends 2030. The author's belief, shared by an increasing number of experts, is that the notion of climate security must be more firmly embedded in the national-security agendas of the United States and other countries.[58] The fact that the greatest scarcity threats are likely to be in sub-Saharan Africa, the Middle East, and South Asia is no excuse. As shown by the Syrian civil war, drought is an important instigating factor in conflict. The Syrian civil war has increased the terrorist threat to the West. There were many factors in the outbreak, but the multiyear drought increased the chances. Nations need to understand more clearly the ties between resource scarcity and conflict, but also need a concerted US and international plan to deal with food and water scarcity. Additionally, where the problems are flooding and coastal surge, all need to think about preventive measures, but also the rights and responsibilities of outside actors concerning environmental migrants. Migration often tends to be seen in national-sovereignty terms, and there are few international conventions dealing with reception due to environmental migrants.

A Brighter Energy Outlook

In contrast to the water and food outlook, energy trends continue to brighten. *Global Trends 2030* highlighted the entry of shale energy onto the world market, eliminating worries about peak oil. Shale revolutionized the energy market so much that it helped trigger a sharp reduction in oil prices in 2015. With the availability of abundant conventional and unconventional sources, it looks increasingly likely that prices will remain on the moderate or low side.

Clearly, energy is no longer the threat to the world's economic growth—as was thought to be the case in the 1990s and the first half of the 2000s—despite the fact that energy demand could continue to grow at a relatively high rate, though decreasing over time, in the range of 1.4-1.7 percent a year out to 2035. Developing countries will be the big drivers of energy demand; China is likely to account for 40 percent or more of total energy demand out to 2035.

While oil, natural gas, and coal will form the bulk of global energy balance, renewable energies will begin to play a larger—although still minor—role in the energy mix, ranging from 2 to 3 percent of global energy consumption by 2020, and 4 to 5 percent by 2035. Solar and wind energy will provide a larger portion of electricity in the United States, Europe, and elsewhere. The EU has set out a target of getting 20 percent of its energy from renewable sources by 2020, and 27 percent by 2030. Renewables already make up 36 percent of Germany's electricity mix, according to data compiled for the *Financial Times* by the Bloomberg New Energy Finance research group. "The UK, Italy and France all generated more than 19 per cent of their electricity from renewables…for the 28 members of the EU, the number was 18 per cent."[59]

57 *Ibid, p. 43.*

58 *For fuller discussion, see Peter Engelke and Daniel Chiu, Climate Change and US National Security (Washington, DC: Atlantic Council, 2016), http://www.atlanticcouncil.org/images/publications/Climate_Security_web_0328__Update_2.pdf.*

59 *Pilita Clark, "Renewables Jump*

Seventy Percent in Shift Away from Fossil Fuels," Financial Times, August 17, 2016, http://www.ft.com/cms/s/0/67b20418-60cc-11e6-ae3f-77baadeb1c93.html#axzz4HgXRxHwk.

The Obama administration set in place plans for a 20 percent role for renewables in US electricity generation by 2030. Over the longer term, the OECD nations believe they could obtain more than 54 percent of their power capacity from renewables by 2040.[60]

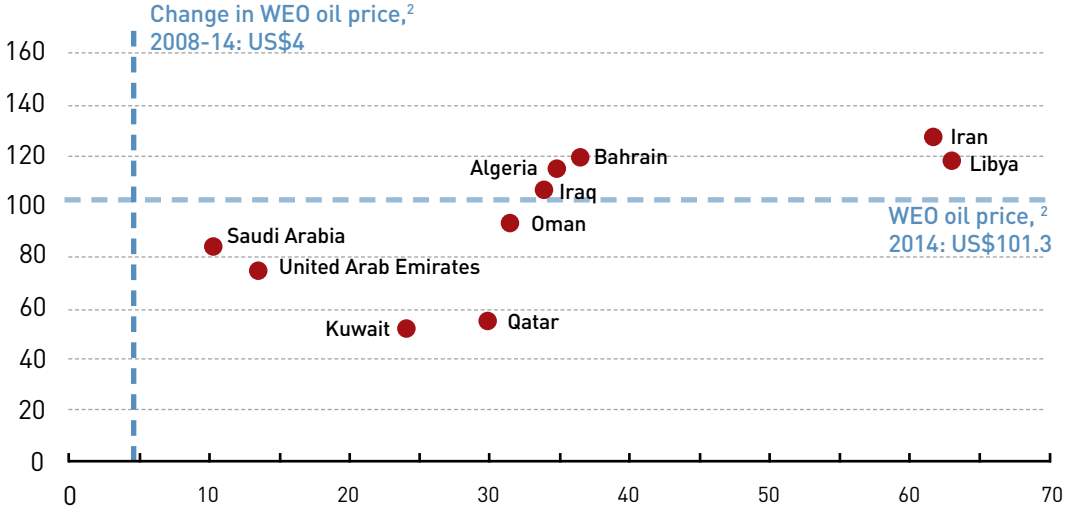
Historically, energy transitions take decades to accomplish because of the large-scale investment and infrastructure building required to segue from one technology to another. In addition, making the new technologies competitive takes time. There is no doubt that the world has already started to transition away from fossil fuels, particularly coal. For example, advanced OECD economies could pass peak coal consumption by 2020.[61] But, a substantial transition out of fossil fuel and into renewables is unlikely until 2035-40. For that to happen, key challenges would need to be addressed, such as progress on lower-cost and more effective energy-storage systems. Another key enabler for the expansion of renewables, such as solar and wind energy, is development of a smart grid, which would increase the efficiency of the power supply. A smart grid could help utilities gauge shift in demand in real time, allowing them to better synchronize supplies.[62]

The New Energy Revolution's Winners and Losers

The possible shift to low-to-medium energy prices is already sending geopolitical shockwaves. Most of the world's oil producers had come to rely on high oil prices to fund government budgets. Even before the oil-price crash in 2015, the International Monetary Fund (IMF) was warning oil producers about their dependence on high oil prices. Even with historically high oil prices, many producers—Algeria, Bahrain, Iraq, and Libya—found it difficult to balance their spending with available revenue. With little likelihood of a return to those historically high rates, Saudi Arabia—whose production costs are among the lowest—has already begun planning to dramatically diversify its economy away from oil production. The beneficiaries of the lower prices are the many poor countries that lack their own energy resources. For many of those countries, high oil prices had been a factor in their current account deficits and debt. With lower outlays on imported energy, they can devote resources to investments in infrastructure, education, and other pressing needs.

FISCAL BREAKEVEN PRICES

(US dollars per barrel)[1]



Sources: National authorities and IMF staff calculations.

(1) Yemen fiscal breakeven, 2013: $215 per barrel. (2) Simple average of UK Brent, Dubai, and West Texas intermediate spot prices.

60 *Robert A. Manning, Renewable Energy's Coming of Age: A Disruptive Technology (Washington, DC: Atlantic Council, 2015), http://www.atlanticcouncil.org/publications/issue-briefs/renewable-energy-s-coming-of-age.*

61 *Ibid, p. 2.*

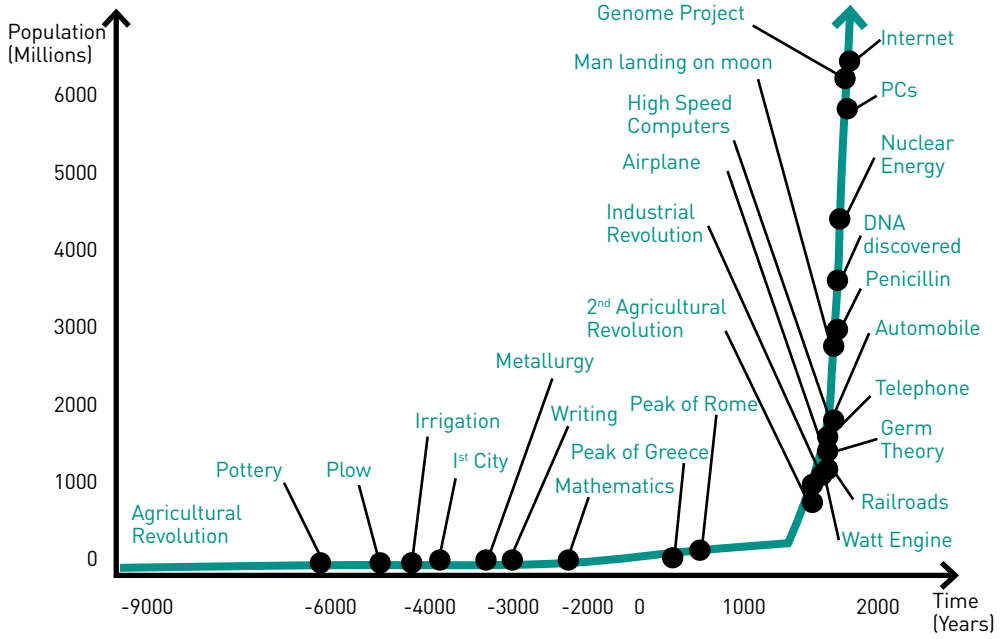
62 *Ibid, p. 7.*

CHAPTER 4

TECHNOLOGY WITH DOWNSIDES

There is no doubt that the world is poised for dramatic technological breakthroughs. Moore's Law is now applicable to more than computing, which means several technologies are evolving exponentially at the same time. The world is looking at multiple revolutions, not just one.

THE HISTORY OF TECHNOLOGY



Source: Robert W. Fogel, Catching Up with the Economy, (Chicago, IL: University of Chicago Press, 1999), https://www.die-gdi.de/fileadmin/user_upload/pdfs/messner/Fogel_Catching_up_with_the_economy.pdf.

There are various ways to catalog the likeliest breakthroughs. In 2012, McKinsey Global Institute named twelve technologies which will have the biggest economic impact.[63] They overlapped with the four technology arenas—information technologies, automation and manufacturing technologies, resource technologies, and health technologies—described and analyzed in Global Trends 2030.[64] It is hard to anticipate the exact date of these breakthroughs. More and more depends on other factors, such as regulatory changes and greater public acceptance. In recent years, technologies in self-driving cars have been perfected, but public skepticism and legal impediments still stand in the way of their large-scale use. In its study, McKinsey Global Institute warned of the "cultural resistance or political opposition" to the development and deployment of its list of disruptive technologies, despite the long-term economic benefits.[65]

The bigger uncertainties are about the new technologies' economic and security impacts. The current extent of cyber crime came as a surprise to some US government officials. Cyber is now transforming the nature of conflict and war (see chapter 5). There have been as many unintended consequences from the new technologies as intended benefits. This chapter will try to nail down not just the likely advantages, but also the potential headaches.

Economic Pros and Cons:

McKinsey Global Institute saw the impact of each of its twelve disruptive technologies ranging from $3.7-10.8 trillion of economic potential on an annual basis for mobile technologies to $0.2-0.3 trillion for renewable energy. McKinsey did not attempt to quantify the GDP impacts, and did not adjust its numbers for risk or probability. It warned that there could be a lag—such as was seen between the introduction of personal computers into the workplace and the positive economic impact coming from the new

63 *James Manyika, Michael Chui, Jacques Bughin, Richard Dobbs, Peter Bisson, and Alex Marrs, Disruptive Technologies: Advances that Will Transform Life, Business, and the Global Economy (San Francisco: McKinsey Global Institute, 2013), http://assets.mckinsey.com/business-functions/business-technology/our-insights/disruptive-technologies.*

64 *Global Trends 2030, pp. 86-100.*

65 *Ibid.*

technologies, "owing in part to the need to reconfigure processes to fully capture benefits."[66] There would be need, for example, for supporting infrastructure and upfront investments, in addition to political, legal, and social changes.[67]

The Atlantic Council with the University of Denver's Pardee Center undertook a study of the past and future economic impacts of cyber, including on GDPs of both advanced and developing countries. The study highlighted that the "accumulated global benefits" from cyber "should still outpace the costs through the year 2030 by nearly USD 160 trillion (constant 2011 US dollars), an 8 percent gain in the cumulative global GDP between 2010 and 2030."[68] However, those global benefits were being increasingly reaped by developing countries catching up with the West in their absorption of the technology. For advanced economies, the benefits were turning into deficits, because of the rising costs of protecting against cyber crime. "The direct spending on cybersecurity solutions (such as firewalls and threat intelligence) is rising steadily, approaching 0.1 percent of global GDP and 0.35 percent of US GDP."[69]

The Atlantic Council study also indicated that "since the overall size of the ICT sector has reached a roughly stable (or even declining) share of global GDP, the growth of that sector is unlikely to contribute much to growth rates of the average economy…direct global cyber security costs are forecast to continue to rise over the next fifteen years, though the spending curve does become flatter."[70] By 2030, the study forecast the cost of cybersecurity will reach $1.2 trillion, or close to 0.9 percent of global GDP.[71] The productivity gains—although significant in 1990s and early 2000s for advanced economies— have begun to level off, and the costs have begun to mount. Out to 2035, this is still likely to be in positive territory, but the big increases in productivity from ICT—without another technological wave—will be in the past. Even then, any gains are going to entail risks and costs, some of them initially hidden.

Divisions over How Much of an Economic Bounce

Some economists—led by Northwestern University's Robert Gordon—believe our best days are behind us.[72] To their way of thinking, none of the disruptive technologies highlighted by McKinsey have the potential to boost productivity in the same way as breakthroughs like electricity, sanitation, or motorized vehicles—all of which were discovered or invented in the late nineteenth and early twentieth centuries. Gordon points to the productivity boost from ICT, which was relatively small compared to that of the earlier technologies. Hence, productivity growth in the United States has been slowing over the past forty years—1.59 percent annual growth—compared to the last eighty years—2.39 percent annual growth—which encompassed the earlier technologies.

The optimistic school, which includes Bill Gates, points to the lag in the measurable effects from ongoing innovation. It takes time before innovations are absorbed into the broader economy.[73] This is the reason why any effects from the emerging robotics, advanced automation, and artificial intelligence technologies have not been seen yet. Wait a while—at least five to seven years—before counting out the productivity gains from the new technologies.

This is more than academic debate. With declining labor polls as a result of aging and lower birth rates, productivity is vital if economic growth is to continue, averting potential decline. Since 2008, there have been few productivity gains in the United States and the West, which is one reason for low wage growth. A longer-term slowdown would constitute a major setback for Western middle classes, who have already suffered decades of wage stagnation. Developing countries have an easier time. Currently, they are well below productivity levels in the United States and the West. If they raise them by copying Western business practices, they can rapidly grow their economies, boosting wage levels.

66 Ibid.

67 Ibid.

68 Atlantic Council, Risk Nexus.

69 Ibid.

70 Ibid.

71 Ibid.

72 Robert J. Gordon, The Demise of U.S. Economic Growth: Restatement, Rebuttal, and Reflections (Cambridge, Mass.: National Bureau of Economic Research, 2014), http://www.nber.org/papers/w19895.

73 Chris Matthews, "Bill Gates Says We're on the Verge of These Three Amazing Technological Advances," Fortune, July 27, 2016, http://fortune.com/2016/07/27/bill-gates-robert-gordon/?xid=soc_socialflow_twitter_FORTUNE.

For everyone, there's concern about increasing inequality. Inequality is a global trend, with developing countries also becoming highly unequal societies. There are numerous factors at play, with the new technologies figuring as one of the main culprits. Digital technologies have not produced the same number of jobs as, for example, the earlier twentieth-century motor industry. Instead, many of the new technologies—automation, artificial intelligence, and robotics—are disrupting both the unskilled and skilled job markets. The biggest returns from the technology breakthroughs are going to the owners of new firms, and a relatively small number of highly skilled personnel in those firms. For the foreseeable future, even if productivity finally kick starts, the new technologies are likely to displace workers faster than they can reboot their skills and find new employment.[74]

...But Many Face Obstacles

Global Trends 2030 underlined the importance of technological breakthroughs in genetically modified organisms (GMOs), precision agriculture, water management, and bio-based energy as vital for dealing with increasing problems of water and food scarcities in the developing world (see chapter 3). It is impossible to envisage the many global challenges being tackled without the use of available or emerging technologies. At the same time, all of the above technologies face a number of stiff obstacles.

Many governments—especially European ones—have put restrictions on GMO use or the sale of GMO products, because of safety reservations and customer aversion. Precision agriculture—which could be used to help boost productivity in African agriculture and elsewhere—requires major upfront investment that is beyond the means of small farmers. Micro-irrigation—needed in areas of increasing water scarcity—is also too expensive for most developing countries, despite the need. As the costs of DNA sequencing come down, personalized medicine is likely to spread, but primarily for the well-to-do who can afford the relatively expensive diagnostic tests. Many developing countries lack sufficient doctors and health services needed for personalized medicine. By 2035, however, human-augmentation breakthroughs—such as fully functional limb replacements, enhanced eyesight, and hearing augmentations—will be more widely available.

There is a similar problem of high investment costs for smart-city technologies and a smart grid. Smart grids will only slowly take shape. In the United States, states like California "with aggressive renewable standards (a target of 33 percent renewable energy by 2020) are further along than others."[75] Some estimate that utilities may have to invest between $17-24 billion annually over the next two decades to establish smart grids in their regions. The federal government would also have to match some of that investment. There are big benefits to be had—up to $2 trillion for utilities and consumers in increased efficiencies—but the costs are also high.

Some biotech advances will almost certainly face public backlash, especially in Western countries. Finding a cure for cancer may be applauded, but the ability of parents to pick and choose traits for their children could be a "bridge too far" for some. The ease with which organisms—potentially including deadly viruses—can be created from DNA building blocks such as BioBricks is already becoming a national-security issue. Director of National Intelligence James Clapper, for example, added gene editing to a list of threats posed by "weapons of mass destruction and proliferation" in his 2016 annual worldwide threat assessment report to the US Congress.[76] While there are efforts within the scientific community to prevent dual-use biotechnology from being misused or falling into the wrong hands, many believe bioterrorism is inevitable. A high-profile bioterrorist attack could prompt a clampdown in further biotech research, forcing scientists to work in more government-controlled settings. This would be a setback, and could slow discoveries in many other non-lethal areas.

My hunch is that the information technologies, and the automation and manufacturing technologies, may get the biggest traction and become the centerpiece of the technology revolutions out to 2035. Every day, there is a report about the greater use of robots. Many Chinese factories are facing a dwindling worker

74 *Erik Brynjolfsson and Andrew McAfee, Race Against the Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and the Economy (Cambridge, Mass.: MIT Center for Digital Business, 2012).*

75 *Atlantic Council, Envisioning 2030, p. 7.*

76 *Antonio Regalado, "Top US Intelligence Official Calls Gene Editing a WMD Threat," MIT Technology Review, February 9, 2016, https://www.technologyreview.com/s/600774/top-us-intelligence-official-calls-gene-editing-a-wmd-threat/.*

population as China's aging accelerates. Workers are demanding higher pay and better working conditions. To keep labor costs down, employers are increasingly turning to robots. "According to the International Federation of Robotics, [China] will have more installed manufacturing robots than any other country by 2017."[77]

Global trade in goods has flattened since 2008, but "digital flows—which were practically nonexistent just 15 years ago—now exert a larger impact on GDP growth," according to McKinsey Global Institute.[78] The Internet, 3D printing, and big data are all enabling the trade in digital goods. Three-dimensional printers, using world-class technology and design, now manufacture in situ rather than at the end of a vast supply chain. More and more media are transmitted and consumed via the Internet. Through social media, businesses can advertise and sell their products locally and globally. Individuals also use social media to learn about new products, and they can also sell their talents to potential employers.[79]

The biggest risk to all the emerging technologies is the lack of a safe and secure Internet. Deloitte's 2015 survey of consumers of smart-home technology indicated that fear of hacking was the most serious barrier to adoption.[80] Worries about a safe and secure Internet are particularly critical to implementation of new technologies in the medical field. Networked devices to monitor vital health signs, diet, exercise regime, etc. "could save $63 billion in healthcare costs over the next fifteen years, with a 15-30 percent reduction in hospital equipment costs."[81] But there is a need to deal with patient concern over the secure functioning of those devices. "Should any high-profile failures take place, societies could easily turn their backs on networked medical devices, delaying their deployment for years or decades. Protecting patient privacy and sensitive health data is a second immediate concern…"[82]

The degree to which security can be assured to consumers will affect the broader global economy. The Atlantic Council's cyber risks report[83] examined several alternative futures for the Internet. "In the best future of Cyber Shangri-La, where technology booms are driven by strong cybersecurity, the recurring annual economic benefits result in a cumulative net global gain of USD 190 trillion by the year 2030–about USD 30 trillion higher than that of the Base Case. In the worst future of a Clockwork Orange Internet, cyber attackers dragging down the Internet might cost the world nearly USD 90 trillion of potential net economic benefit."[84]

The future of technology is still bright, but the experience gained over the past few years has provided a greater understanding of the downsides. Going forward, nations will need to find ways to minimize the social and economic drawbacks, and put in place the needed governing structures and infrastructure in order to maximize benefits. Too often, technology is seen as not requiring government's help. Indeed, the less government interference the better for many in Silicon Valley. Certainly, too much government intervention could stymie scientific progress. But, as has been seen, new technologies will require government help in ensuring security for the Internet. Governments are under public pressure to deal with the social inequalities that have been aggravated by how the technological revolutions have played out. It might be trite to say, but a partnership between the scientific community, entrepreneurs, consumers, government, and the electorate is more needed than ever. It would be impossible to stop technology, but people don't have to grin and bear the unintended consequences.

77 Martin Ford, "China's Troubling Robot Revolution," New York Times, June 10, 2015, http://www.nytimes.com/2015/06/11/opinion/chinas-troubling-robot-revolution.html.

78 James Manyika, Susan Lund, Jacques Bughin, Jonathan Woetzel, Kalin Stamenov, and Dhruv Dhingra, Digital Globalization: The New Era of Global Flows (San Francisco: McKinsey Global Institute, 2016), http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows.

79 Ibid.

80 Deloitte's 2015 Global Mobile Consumer Survey: US Edition, quoted in Greg Lindsay, Beau Woods, and Joshua Corman, Smart Homes and the Internet of Things (Washington, DC: Atlantic Council, 2016), p.2, http://www.atlanticcouncil.org/publications/issue-briefs/smart-homes-and-the-internet-of-things.

81 Jason Healey, Neal Pollard, and Beau Woods, The Healthcare Internet of Things: Rewards and Risks (Washington, DC: Atlantic Council), p. 7, http://www.atlanticcouncil.org/publications/reports/the-healthcare-internet-of-things-rewards-and-risks.

82 Ibid.

83 Atlantic Council, Risk Nexus.

84 Ibid.

PART 2

The Breakdown of the Post-Cold War Order

CHAPTER 5

CONFLICT RISK INCREASING[85]

The ongoing crisis in relations between Russia and the West is a reminder that economic interests and cooperation in international security can be sacrificed for the sake of political, geopolitical, and ideological motives and ambitions. International conflicts are likely to spread in both geographic area and level of destructiveness during the next twenty years—and increasingly, the major powers, including the United States, Europe, Russia, China, and India, will take opposing sides in these conflicts. This risk especially applies to differences between Russia and the United States/NATO in the post-Soviet space and, with less probability, to Chinese and American relations with those countries' allies and partners in Asia. The old confrontation between capitalism and communism has given way to nationalism and conflicts based on moral values, with religious and historical-psychological overtones. These differences are even more serious when linked to the domestic political interests of particular countries' ruling circles. The possibility of the big powers being drawn into direct armed conflict as a result of escalating crises cannot be ruled out.

85 Martin Ford, "China's Troubling Robot Revolution," New York Times, June 10, 2015, http://www.nytimes.com/2015/06/11/opinion/chinas-troubling-robot-revolution.html.

The situation will differ considerably from that of the second half of the Cold War era (mid-1960s to mid-1980s), when tacitly "untouchable" geopolitical spheres of influence were very clearly delineated, and other zones were not worth the risk of a direct military conflict. The situation will be even more different than it was during the first twenty-five years following the end of the Cold War, when the major powers avoided serious differences, often because Russia and China acquiesced to Western leadership.

The involvement of the major powers in any indirect conflicts would entail providing political, economic, and military-technical (arms and military supplies and assistance) help to proxy states and nonstate armed groups. The hybrid nature of this involvement would expand with the sending of military instructors and specialists, commanders to organize military operations, private armed groups and volunteers, special forces, and regular troops—as well as the direct involvement of the major powers' aircraft, artillery, naval forces, and air defenses in border areas.

Virtually any part of the post-Soviet space and surrounding regions—and also the western part of the Asia-Pacific region and northern part of the Indian Ocean—could become the site of serious competition between the main powers. For the first time since the end of the Cold War, the Black Sea is becoming a theater of military confrontation between Russia and the United States/NATO. This increases the danger of an unintended escalation of military action, as a result of incidents at sea or in the Black Sea region's airspace.

Meanwhile, the increasing range and reduced response time of current and emerging nonnuclear offensive weapons systems, along with their highly automated command-and-control systems, heighten the risks of accidental (or provoked) military incidents and rapid escalation of armed conflict.

This is true of the Ukrainian crisis, for example. If Ukraine continues to disintegrate and the Russian armed forces become involved, NATO or the United States (with a "coalition of the willing") might eventually intervene directly, resulting in head-on conflict. Such a conflict could, as Russia's new military doctrine states, "constitute a threat to [Russia's] statehood" and force Russia into using nuclear weapons. Even without going to such extremes, demonstrative action by the Russian and NATO navies and air forces in the Black and Baltic Seas has already raised the risk of military incidents. The threat of such crises would grow if relations with the West become confrontational and East-West tensions increase.

The Commonwealth of Independent States (CIS) conflicts can be viewed as the product of the Soviet legacy and the uneven collapse of the USSR, as well as the ill-conceived policies and mistakes of the involved parties, Russia, and external actors, including the United States, NATO, and the EU. The USSR was dissolved by a stroke of the pen, without any well-conceived concept or negotiations aimed at resolving the problems of the Soviet legacy—the rights of national minorities, territorial and border problems, etc. The EU and NATO regional strategies strengthened the "great power" sentiments of Russia's political elite, and also created fears that there was a Western strategy of "squeezing" Moscow out of the zone of its vital interests—the CIS. As long as Russia shares the continent with the EU and NATO—which possess huge economic, technological, and military power—"without Russia" will be interpreted by Moscow as "against Russia." Russia will remain a source of instability in Europe, especially because it still has the potential to oppose those projects that it perceives as threats to its national interests.

In East Asia, China has been undertaking a massive buildup of its conventional forces, its navy in particular, against a backdrop of a shift in the nuclear balance of power in China's favor. The scope of China's navy will objectively take in the region in which US allies and partners (Singapore, Thailand, Vietnam, Malaysia, Philippines, Taiwan, Japan, and South Korea) are located. This broadened scope reflects Beijing's growing geopolitical ambitions in its neighboring seas.

As a result of China's ambitions, Japan will feel increasingly concerned. Its strategic situation will undergo a drastic change; whether the United States will live up to its security guarantees for Japan in a limited armed conflict will look more doubtful as a result of changes in the balance of conventional and nuclear power in the region.

The other potential scenario is that of armed conflict in response to attempts by Beijing to settle the Taiwan issue through force. If such a scenario occurred, neutral countries such as Vietnam and Malaysia, and other Southeast Asian countries that have territorial disputes with China, would be alarmed about their security.

If China embarks on military and political expansion in the western Pacific Ocean, and then in the Indian Ocean, a new bipolarity would develop. A loose coalition would be formed centered on China, including Russia, some Collective Security Treaty Organization (CSTO) members, North Korea, Iran, Pakistan, and—depending on the circumstances—Turkey, facing an alliance centered on the United States as the core, with US allies in Europe and Asia surrounding it.

Escalating Conflict

Among the features that will characterize future conflict, the following are the most dangerous:

- an increase in the number, scale, and activity of nonstate armed groups
- the readiness of nonstate groups to use extreme forms of violence, including weapons of mass destruction
- the increasingly transnational nature of conflicts
- violence aimed primarily at civilian populations and causing humanitarian emergencies
- widespread use and broadcasting via modern media of acts designed to intimidate (execution of hostages, demonstrative terrorist attacks, and mass murder on ethnic and religious grounds, etc.)
- conflicts of a mixed type, including basic intrastate conflicts with outside intervention and hostilities that spill beyond state borders

As geopolitical tensions escalate, conflicts will become more likely to spill over into regional nuclear war between second-tier nuclear powers. Regional conflicts that have the risk of turning nuclear can be ranked in probability by region as follows: South Asia, the Far East, India-China, and the Middle East.

Potential conflict between India and Pakistan will continue to carry the greatest risk of turning nuclear. The Kashmir issue will remain the biggest obstacle in these countries' bilateral relations. The terrorist threat from radical Islamists has introduced a new dimension to the situation. Pakistan, which has no clearly formulated nuclear doctrine, follows the principle of carrying out a first nuclear strike (unlike India, which has stated that it will not be the first to carry out a nuclear strike). Given's Pakistan's policy, any conflict with India could provoke a nuclear war.

Conflict could also occur if Pakistan's domestic political situation flared up, or if Islamic radicals (such as the Taliban) or international terrorists (such as al-Qaeda) obtained nuclear weapons. The Pakistanis fear that India would provoke political chaos if it used force to settle the Kashmir issue. This would very likely lead to a nuclear response—all the more so because, unlike in India, control of Pakistan's nuclear weapons is in the armed forces' hands.

North Korea's nuclear-weapons program and provocative foreign policy are the biggest destabilizing factors in the Far East. A premeditated nuclear attack by North Korea against South Korea, Japan, or the United States (in ten to fifteen years, when Pyongyang would have developed intercontinental ballistic missiles) is unlikely. However, periodic attempts by North Korea to step up tensions could provoke an armed conflict. If the North Korean regime were to find itself facing defeat, it might resort to using nuclear weapons. In such a situation, the United States might decide to launch a preemptive strike using high-precision conventional weapons. Pyongyang would most likely respond by using its surviving nuclear arms.

Conflict between India and China is much less likely during the next twenty years than conflict between India and Pakistan. China would not use nuclear weapons even if a war between India and Pakistan turned nuclear. Beijing would also refrain from intervention if India, the United States, or multilateral forces took military action in the event that the Pakistani government collapsed or Islamists took power in Islamabad

Increasing tensions in the Indian Ocean could provoke armed clashes, though without turning nuclear. China is in the process of establishing a system of bases to control the Indian Ocean region (the "string of pearls" strategy). India is also building up its navy and constructing naval bases in the Indian Ocean. Destabilization of Iran, Pakistan, Myanmar, or Thailand—or attempts by any of these countries to block each other's access to sea routes—might provoke armed conflict between China and India. Such a conflict

would be particularly dangerous between naval forces in the open sea, where there are no state borders and where a first strike usually achieves a victory.

Over the forecasted period, Israel or Iran might fight an interstate conflict over the Iranian nuclear program, if either side violates the comprehensive agreement of July 2015 regarding limitation and transparency of the program or lifting of sanctions. Such a conflict likely would be quasi-nuclear; it would not involve the actual use of nuclear weapons, but the use of force to prevent their development and proliferation.

War, especially if the United States gets involved on Israel's side, would risk destabilizing nuclear Pakistan and setting off a rapid upsurge in Islamic radicalism around the world. Such a war could also push the Arab and Muslim countries into an en-masse departure from the Nuclear Nonproliferation Treaty (NPT). Some of these countries might accelerate their own military nuclear programs in order to acquire a nuclear-deterrent capability against the United States and Israel. This would irreversibly undermine the legal foundations of the nuclear nonproliferation regime.

If comprehensive agreement on the Iran nuclear issue is successfully implemented, this would pave the way to broad new opportunities for strengthening the nuclear nonproliferation regime and controls over critical technology and materials, through cooperation between the major powers and regional players. Universalization of some principles and norms of the comprehensive agreement would greatly enhance the NPT and its regimes and institutions. At the same time, lifting the embargo and restoring relations between the West and Iran would reduce Russia's influence in the region and open the way for Iran to export its hydrocarbons to the world market. This would result in lower long-term global oil and gas prices, and offer the European Union alternative sources of energy imports. Such developments would have detrimental consequences for Russia's economy.

Growing Regionalized Conflict

Other regions will also be at heightened risk of conflict to 2035, but will not necessarily involve the major powers. This applies, above all, to the Middle East and neighboring regions. Conflict areas could merge to form one large zone from Morocco to the Hindu Kush, drawing in Afghanistan, Pakistan, Central Asia, and even Iran, if a military strike is launched against its nuclear infrastructure.

The risk of armed Islamic extremism in the region is the greatest threat to stability out to 2035 (this issue is simultaneously domestic, transnational, and transregional in nature). Islamic armed extremism could take the form of: attacks on secular pro-Western and pro-Russian state regimes; conflict between Sunnis and Shias; and an increase in piracy in the Mediterranean and Red Seas, around the entire African coast, and in the northern Indian Ocean and western Pacific Ocean.

Other regions where conflict might spread include Central and Southeast Asia, and also equatorial Africa, where a growing number of countries could be drawn into conflict between Muslim and Christian populations. If the major powers are unable to act together to stop such wars, they might be drawn into them on opposing sides.

During the next twenty years, a number of limited interstate conflicts in the Middle East, Africa, and parts of Central and South Asia could develop over access to raw materials—including hydrocarbon resources at sea, fish stocks, and fresh water—as well as drug trafficking, extremist and criminal groups, and environmental damage.

Owing to the limited military capabilities of the countries in Central and Southeast Asia, as well as Africa, such conflicts would be small in scale and duration. Such conflicts could be settled through intervention by, and/or assistance from, the UN and regional collective-security organizations.

Scenarios forecasting conflicts between the major powers and their allies—over access to energy and other natural resources (including fresh water), hydrocarbons, Arctic transport routes, and territories and key geographic nodes abroad—are far-fetched. The damage and consequences of any large-scale conflict for the interdependent big players would be far greater than the hypothetical advantages to be gained from solving disputes through military means.

Small countries might engage in conflict for the reasons listed above, but such conflicts would be limited in

scale (though they could have serious humanitarian consequences) and could lead to intervention by bigger countries and international organizations.

Major Power Conflict

The likelihood of a big war between the major powers will increase compared to today, but such a war will be less likely than it was during the first part of the Cold War (1947-1962).

Hybrid wars, selective military operations by major powers, precise long-range strikes (noncontact wars), use of small mobile units in special operations (rapid power), disruption of communications, and blockades will play bigger roles in the use of military power—not as means of achieving victory over the enemy, but to reach specific and limited objectives.

Such objectives include:

- subjugating a country by posing a direct external threat to its territorial integrity
- violating territorial integrity with the help of local armed opposition groups
- depriving a country of its economic, military-industrial, and geopolitical assets

Wider Access to Lethal Technology

States no longer have a monopoly on causing death or disruption on a large scale. The next fifteen to twenty years will see a wider spectrum of more accessible instruments of war, especially precision-strike capabilities, cyber instruments, and bioterror weaponry. The commercial availability of key components, such as imagery, and almost universal access to precision-navigation GPS data is accelerating the diffusion of precision-strike capabilities to nonstate actors. The proliferation of precision-guided weapons will allow critical infrastructures to be put at risk by many more potential adversaries.

The proliferation of lethal technologies is a potential nightmare for the Middle East, particularly in those countries where there are multiple terrorist and insurgency groups. Imagine Hamas or Hezbollah with highly accurate missiles at their disposal. Even the United States could be threatened. The proliferation of long-range precision weapons and antiship missile systems could pose problems to forward-deployed forces. Third parties might be discouraged from cooperating against such terrorist groups because they fear becoming a victim of precision weapons with greater lethal consequences. More accurate weapons could lead attackers to become overconfident in their military capabilities, and therefore more apt to employ such systems. In addition, precision weapons might give attackers a false sense of their abilities to tailor attacks to create specific, narrow effects.

Fictional Interlude: Will Nonstate Actors End Up More Powerful than States?

The main character, Donya Al Shirazi, a Stanford student in Alec Meden's fictional story entitled "From a Remove" is a member of Scalpel. Scalpel is "widely believed to be the military arm of the Sovereignties. It began to combat the increasingly antagonistic intelligence operations carried out by most world governments, foremost among them the United States and China…they span borders without a care, operating enemy and allied territory alike."[86] The Sovereignty movement started up when a few million "citizens claimed dual citizenship to a nation that only existed on the Internet." They got a real boost in "the Water War," taking out a country's intercontinental ballistic missiles (ICBMs). "Yes, Scalpel found a cheap solution to missile defense: they flew commercial drones packed with explosives into the silos as they opened, detonating the boosters on site. It was so cheap people almost did not believe it was possible. These kind of absurdly low cost and inventive techniques defined Scalpel's combat…" Through ingenuity and use of drones and other widely available new technologies, they could best countries at their own wargames.

86 August Cole (editor), War Stories from the Future (Washington, DC: Atlantic Council, 2015), http://www.atlanticcouncil.org/publications/books/war-stories-from-the-future.

Although many commentators have said that cyber warfare will completely change the nature of warfare, the main threat posed by cyber weapons is their ability to be used in an attack without warning and achieve various levels of disruption. Potential cyber warfare scenarios include coordinated cyber-weapon attacks that sabotage multiple infrastructure assets simultaneously. One scenario would involve power, the Internet, cash machines, broadcast media, traffic lights, financial systems, and air-traffic software simultaneously failing for a period of weeks. Although some computer systems are more secure than others, few, if any, systems are completely secure against a cyberattack.

For some attackers, cyber warfare offers other advantages that have seldom been the case for most types of warfare: anonymity and low buy-in costs. These attributes favor the employment by disaffected groups and individuals who want to sow mayhem. Thus far, the cyber weapons wielded by criminals and malicious individuals are unsophisticated compared to what state actors can deploy, but this is likely to change. As criminal organizations become more adept, they might sell their services to those state and nonstate actors who have even more dangerous intentions.

Terrorists are now focused on causing mass casualties, but this could change as they understand the scope of the disruptions that can be caused by cyber warfare. Other emerging technologies, such as synthetic biology, in the hands of terrorists could cause significant loss of life, in addition to ecological and agricultural damage. Bioterrorism is no longer a rare incident or remote possibility. The tools needed to sequence, synthesize, manipulate, assemble, and transmit DNA are increasingly accessible to non-experts. Amateurs in one place designing a genetic sequence on a computer can send a code to a 3D printer in another location. In 2011, scientists in the United States and the Netherlands sought to create a deadly influenza that would be transmissible between mammals. These were controlled experiments, but they illustrated the ease with which synthetic biology techniques can be used to create and replicate dangerous viruses in "labs with less-robust safety systems, health monitoring and experience." US scientists—increasingly worried about the misuse of synthetic biology—are calling for a security strategy that counters such a threat.[87]

Big Benefits from International Cooperation

Growing cooperation among the major powers might occur in military operations under UN aegis to: impose or maintain peace; prevent genocide, ethnic cleansing, and humanitarian disasters; and, perhaps, to prevent technological disasters and protect the environment. With international terrorism and transnational crime set to grow, an increase in operations to combat them with more and better cooperation among UN member states is expected.

Use of force to prevent proliferation of nuclear weapons, and cut off terrorists' access to them, could also occur in an atmosphere of greater cooperation. Depending on the willingness of the major powers and the main regional players to take collective action, more frequent operations of this kind are likely to occur on a multilateral basis, or under the mandate of the UN and/or regional security operations.

Role of Nuclear Weapons

The nuclear deterrent might play a less important role in guaranteeing security in China, France, India, and Russia, following the lead of US and British military policy. If geopolitical competition increases, however, much weaker incentives will exist to move toward nuclear disarmament. The emphasis will shift to cutting-edge, high-precision, long-range offensive and defensive weapons, and to nonnuclear deterrent concepts. At the same time, nuclear weapons might start playing a greater role in military-political relations among the major players and smaller nuclear powers, and also between the new nuclear and threshold countries.

The United States will remain the leader over the long term in developing missile-defense systems, in both technological capability and scale of deployment. Russia will develop its own defense system within the air-space defenses (which combine air defenses, missile defenses, and space defenses). China, India, Japan, South Korea, Taiwan, Israel, and the European countries in NATO could all make technological and financial contributions to developing missile defenses.

87 Atlantic Council, Envisioning 2030, pp. 18-19.; Also see Laurie Garrett, "Biology's Brave New World: The Promise and Perils of the Symbio Revolution," Foreign Affairs, November/December 2013, https://www.foreignaffairs.com/articles/2013-10-15/biologys-brave-new-world.

The most intensive efforts will be in the development by the United States and Russia of long-range, high-precision, conventionally armed weapons systems (cruise missiles launched from heavy bombers, submarine-launched cruise missiles, and cruise missiles launched from surface ships). Development of boost-glide hypersonic systems and long-range ballistic missiles is also very likely (similar to those already being developed under the US Prompt Global Strike program). China, India, Israel, and other countries are likely to follow the United States and Russia down this road.

If East-West tensions increase, the development of defensive and offensive weapons could drastically undermine strategic stability and destroy the nuclear arms-control regime, including arms limitations and nonproliferation. In this more competitive context, an arms race in space might develop. The space powers will continue to develop quantitative and qualitative space-based missile attack early warning systems, intelligence, navigation, communications and broadcasting, and military command-and-control systems.

The likelihood of space incidents (such as the collision of Russian and US satellites in 2009) might increase. Such incidents also include the possibility that authoritarian and irresponsible regimes will attempt to disrupt the operation of space systems, with unpredictable socioeconomic and military consequences.

If an arms race in space does get under way among the United States, China, Russia, India, Brazil, Japan, and other countries, these countries are likely to employ symmetric and asymmetric measures to counter the threats in space and coming from space.

In an environment of growing cooperation among the major powers, Russia and the United States could reduce their nuclear arsenals to around one thousand strategic and tactical warheads in ten to fifteen years. At the same time, the scale of deployment and technical characteristics of future offensive and defensive conventional, high-precision weapons systems could be limited by agreements between Russia and the United States, and also by multilateral agreements. The UK and France will get involved in this process, in one way or another, by the mid-2020s. By this time, it could be possible to bring the Comprehensive Nuclear Test Ban Treaty into force and conclude the Fissile Material Cutoff Treaty, at least among the five big nuclear powers.

If—with the help of Russia, the United States, and China—nuclear conflict between India and Pakistan is avoided, these countries could conclude a nuclear-arms limitation treaty during the 2020s. As part of efforts to stabilize the situation in the Middle East and strengthen the nuclear nonproliferation regime (especially pertaining to Iran's nuclear program), by 2035, Israel could do away with operationally deployed nuclear weapons (following the South African example). By 2035, North Korea's political and economic system will most likely go through changes that will result in Pyongyang fully renouncing nuclear weapons.

During the next twenty years, China might begin to play a greater role in nuclear and other arms-control efforts, mostly likely in bilateral effort with the United States. Greater Chinese involvement in nuclear and advanced conventional arms-control efforts would be motivated by China's desire to take Russia's place as the second superpower, a status traditionally associated with the privileged role of counterpart in strategic arms talks with the United States.

The only way to prevent an arms race in space would be to improve the legal basis for activity in outer space, particularly by expanding restrictions and bans on weapons deployment in orbit and development of land-, air-, and sea-based means of destroying objects in space.

Under any scenario that takes place by 2035 (much later than the deadline set by the 1992 Convention), global stocks of chemical weapons will have been destroyed in full. Those pertaining to biological weapons are different, however, because the ban on these weapons established by the 1972 Convention will be not enforced due to the lack of a verification system. Development of new bans and control measures for new types of bio-weapons (genetic engineering and so on) would be possible on a multilateral basis only in the context of cooperation among the major powers.

Proliferation of Critical Materials and Technology

Preserving and strengthening the international nonproliferation regime (for nuclear weapons and missile technology) requires agreement among the major powers: Russia, the United States, and China. Even if these countries cooperate, however, success is not guaranteed, given the growing number of actors

involved in technological development and the increasing international trade in nuclear materials. The risks would be even greater in the absence of major-state cooperation.

With climate change and an expected turning away from hydrocarbon fuels, nuclear-energy use is set to increase considerably to 2035. The expansion will occur first and foremost in the Asia-Pacific region, as well as in many unstable parts of the world like the Middle East/Gulf regions. At the same time, the barriers between "military" and "peaceful" nuclear energy use will break down, particularly through the use of nuclear fuel-cycle technology.

The current drop in global oil prices could somewhat slow the pace of nuclear-energy development, but will not change the fundamental trend. Nuclear energy (as in the space sector, which is linked to missile technology), will have not just an economic dimension, but also a clear political one, in terms of countries' status, prestige, and defense capability.

Contrary to the NPT's logic, peaceful nuclear energy has not become an attractive alternative to developing nuclear weapons. Rather, it has become a means and pretext for countries seeking to acquire nuclear weapons or the technical ability to quickly produce them (attain the "nuclear threshold").

North Korea, which set the example of developing nuclear weapons under the cover of pursuing nuclear energy, has been followed by Iran. During the next twenty years, other countries in Asia, Africa, and Latin America could also take this road. Many of these countries are characterized by internal instability and/or are involved in regional conflicts.

The provisions and mechanisms of the NPT (the International Atomic Energy Agency (IAEA), Nuclear Suppliers Group, and the 1997 Additional Protocol) have proven inadequate for this challenge, because the NPT does not ban development of dual-purpose technology and accumulation of critical materials for peaceful purposes. This situation threatens the nuclear-weapons nonproliferation institutions and regime, particularly because many provisions need to be adapted to today's situation, which has not been done.

Strengthening the nuclear nonproliferation regime and the NPT requires consensus among all NPT signatories (currently 190 countries), including some states that might violate the treaty. By 2035, a number of threshold countries are likely to emerge. In the worst-case scenario, a chain reaction of nuclear proliferation would occur, and the "nuclear club" could expand from nine to fifteen or more members

Nuclear weapons will increasingly transform from being one of the attributes of the leading powers to becoming "weapons of the poor" to be used against adversaries' superior conventional forces. This increases the risk of their deliberate or accidental use in local wars.

The spread of critical materials in unstable or radicalized countries would increase the threat of explosive nuclear devices falling into the hands of terrorist organizations.

Despite preventive measures, the risk of theft of nuclear munitions and materials will continue to 2035, and will probably increase as peaceful nuclear-energy use expands and more countries possess nuclear materials and technology (the number will increase from thirty to forty-five to fifty by 2035). The end of Russian-US cooperation on security of nuclear facilities and materials—which would occur in an atmosphere of growing major-state hostility—would intensify this threat. In this situation, terrorists would undoubtedly obtain a nuclear explosive device by 2035.

Cooperation between the United States, Russia, and other countries on security of nuclear munitions and materials, in bilateral and multilateral format, could be restored and expanded only if there were peace among the major powers.

CHAPTER 6

MIDDLE EAST: HIGH RISK OF CONTINUING CONFLICT

In 2012, at the time of the publication of Global Trends 2030, the authors held out hope of a peaceful Middle East joining other regions in rapid modernization. The report suggested political Islam could moderate as it assumed power, which clearly did not work in Egypt. It was realistic that instability would not easily be sustained, and "the challenge will be particularly acute in states such as Iraq, Libya, Yemen and Syria."[88] Despite all the caveats, it tilted toward believing the region would turn over a new leaf.

88 Global Trends 2030, p. 73.

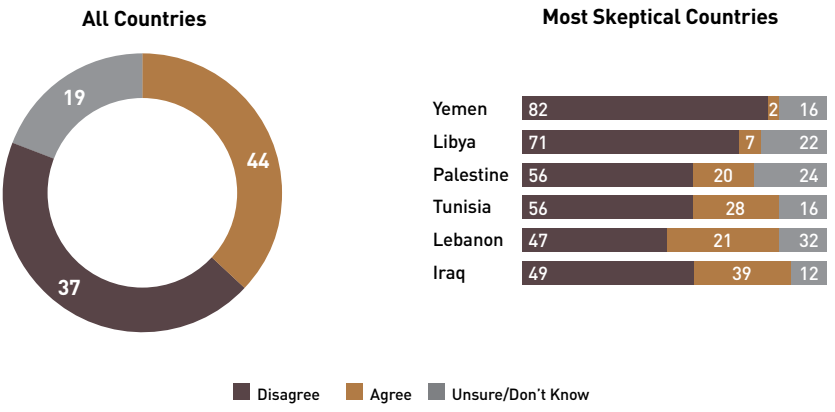
Viewed four years later, the situation is anything but comforting. The Syrian civil war has been unimaginably brutal and murderous, with 40 percent of Syria's population displaced or fleeing the region altogether. In Libya, there could finally be some stability, but only after years of conflict. The lower oil prices, however, present a new challenge, as Libya and many other Middle East producers have overrelied on high oil prices for their government revenues. Iraq looks less and less likely to reestablish a strong state. Even if the ISIS caliphate is eventually defeated—which is highly probable in the next few years—the Kurdish north is increasingly autonomous, while Sunnis are more and more disaffected and likely to join insurgent and terrorist groups. Iraq's oil-based economy faces the same challenge as Libya and the Gulf states: dwindling revenues for state coffers. Yemen is a truly failed state with renewed ethnic and religious conflict, overpopulation, and a water-scarcity problem of monumental proportions.

The promise that the Arab Spring held out of a new democratic beginning for the Middle East was snuffed out in Egypt, where a new authoritarian regime replaced the old Mubarak one. Only Tunisia looks like it may be on a path toward a liberal democracy.

FEWER THAN HALF OF ARAB YOUTH BELIEVE THERE ARE GOOD OPPORTUNITIES AVAILABLE TO THEM, AND THE ISSUE IS PARTICULARLY ACUTE IN THE COUNTRIES WHERE DAESH HAS ACTIVELY RECRUITED YOUNG PEOPLE

How strongly do you agree or disagree with the statement?

"There are good job opportunities in the area I live in"



Sources: ASDA'A Burson-Marsteller, Arab Youth Survey 2016, http://www.arabyouthsurvey.com/uploads/whitepaper/2016-AYS-Presentation-EN_12042016100316.pdf.

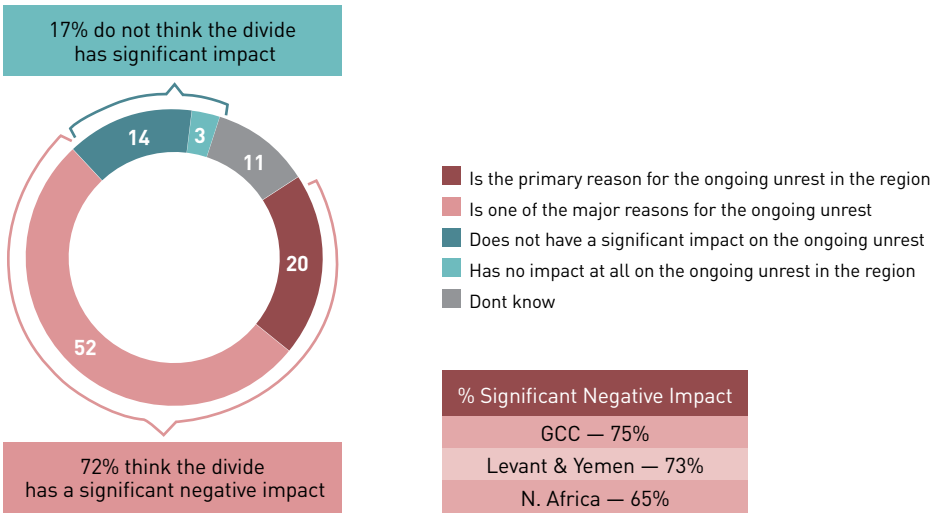
The Gulf countries are by far the most economically and technologically advanced, with living standards for citizens near or surpassing Western living standards. But they also face a new challenge of building more diversified economies in record speed, transitioning from being rentier states to private-sector-led market economies. It will require a mindset change for generations who have grown up with the idea that the state will provide them with everything.

While some would not consider Iran a Middle Eastern country, the road that Iran takes will also be important. One path would be for Iran to focus more on modernization and domestic reform. A second would be to extend its regional influence through support for radical Shia groups. Integration of Iran into the world community is also important in view of the ten-year international agreement on its stand-down from developing nuclear weapons. An Iran that believes it did not get the economic payoff—relaxation of international sanctions—may decide to revisit the terms of the agreement when it expires. Israel, Saudi Arabia, and other countries in the region would probably be prepared to take military action to prevent Iran from restarting its nuclear-weapons program, throwing the region and the rest of the world back into crisis.

How the Middle East evolves is of key importance for the rest of the world. A Middle East still mired in turmoil or open Sunni-Shia conflict in 2035 decreases the likelihood of global security and prosperity. This report forecasts two types of scenarios.

A COMPELLING MAJORITY OF ARAB YOUTH BELIEVE THE SUNNI-SHIA DIVIDE IS A SIGNIFICANT DRIVER OF UNREST IN THE REGION

Which of the following is closest to your view about the Sunni - Shia divide and the ongoing unrest in the region? The Sunni - Shia divide...?



Sources: Arab Youth Survey 2016.

Base-Case Scenario

The first scenario is an almost-endless cycle of violence, with periodic pauses and deepening authoritarianism. This scenario would extend the current situation, adding misery to and threatening the rest of the world. Historical parallels would be the Thirty Years' War, which actually extended more than eighty years if one includes the long struggle for Dutch independence against Spanish rule, and embroiled most of Europe. Close to 40 percent of Germany's population was killed, and a peace settlement was achieved only when all the warring parties were exhausted.

In this scenario for the Middle East, which is the logical extension of current trends, there could be increasing fragmentation and decreasing state authority in Syria, Lebanon, and Iraq—the territories that Sykes-Picot divided between British and French interests at the time of the First World War—and increasing Sunni-Shia rivalry. A difficult global economic outlook that suppresses oil demand would exacerbate fragmentation and conflict. In this scenario, Syria disintegrates into a "soft partition," in which enclaves are independent of control from Damascus. The Bashar al-Assad regime would not finish off the rebels. Islamist militias fight each other, and fight moderate rebels and Kurds for control over villages and towns, mainly in the north and east of Syria. Moderate Sunni rebels may be able to wrest control over south Syria. There would be no reason for the Syrian refugees to return. By 2035, conflict may no longer rage, but Syria would have been a fractured and failed state for two decades. Its main export, to other parts of the region and the rest of the world, would be violence and terrorism.

Iraq has not suffered quite the devastation that Syria has, but the state is increasingly hollow and broken

up along ethnic and religious lines. ISIS would be a memory in 2035, but its legacy would live in an endless series of Sunni insurgencies that would be put down by the Shia government in Baghdad, sometimes with the help of the United States. After lengthy negotiations, Turkey settles for a Kurdish state in northern Iraq under its control. Economically, Kurdistan remains highly dependent on Turkey for getting its oil to market, and for imports. Shia-held Baghdad does not recognize Kurdish independence, nor does most of the rest of the international community, which hopes for Iraqi unity. While the United States may keep a hand in, Shia areas become increasingly dependent on Iran's help to put down the Sunni insurgencies.

The continuing instability in Iraq and Syria would reinforce authoritarianism elsewhere, hampering reform. Initially, Saudi and other Gulf Cooperation Council (GCC) economies make progress in starting to get more nationals into private-sector jobs. Increasingly, more women participate in the workforce, but good job opportunities remain limited. The available new jobs are in the service sector and comparably low paid. After a decade of relatively low oil prices and modest non-oil sector growth, the Gulf governments must drastically cut social-welfare programs and subsidies. They begin introducing value-added taxes (VAT) to make up for dwindling state revenues. After a decade of cutbacks, living standards for most Saudi and other GCC households continue to drop, and opposition groups begin to grow. In the face of that opposition, conservatives throw out the reformers in the governments, reasserting rigorous authoritarian rule and religious orthodoxy. The specter of continuing instability elsewhere, and middle-class fears of its spread to the Gulf, bolsters the conservatives.

Like Europe in the nineteenth century, Egypt will have gone through periods of revolution followed by authoritarian reassertion. The Egyptian government can no longer rely on the cash-strapped Gulf regimes for assistance, prompting rulers to even more ruthlessly suppress dissidence. However, there could be a succession of rulers, as some will undoubtedly fall due to riots and rising food prices. With the level of the Nile falling to historically low levels, Egyptian rulers resort to war against Ethiopia, which Cairo accuses of damming more and more water at the Nile's source for hydropower. A defeat would trigger a new revolution, and much lower standing for the Egyptian military. However, with a society increasingly split between reformers and conservatives, there is no alternative to military rule.

The growing economic crisis in the Gulf would encourage the Shia communities to ramp up opposition to Sunni monarchs. The eastern provinces of Saudi Arabia, where the Shia are in the majority, stage a rebellion. Bahrain becomes the arena of an escalating conflict between the Shia majority and the Sunni monarchy, which oscillates between appeasement and repression. Saudi Arabia and the UAE reinforce their garrisons in Bahrain as the Quds forces strengthen their Bahraini cells, which engage in periodic terrorism.

Everyone knows what happens next: Sunni-Shia powers are drawn into an open, all-out conflict. It is perhaps a logical extension of the disappointing results of reform and social unravelling. It would have huge global political and economic repercussions, amounting to a worst-case scenario for the region and the world. However, a war on the scale of full regional conflict is not inevitable, even if the likely cycle of continuing strife and authoritarianism prevails. The limited risk, however, should be enough to prompt the United States, Europe, Russia, China, and others to think about ways to make sure the slide to all-out conflict does not happen, which points to another and more positive scenario.

A More Positive Scenario Requiring Outside Help

An alternative scenario would center on ending the violence in Syria and Iraq and building up regional cooperation as necessary prerequisites for economic development and down-the-road political stability. Without peace and regional cooperation, economic-development efforts risk failure. It is also premised on the belief that the region will not be able to achieve regional cooperation without outside help. The sources of instability are so deeply imbedded that, without some nudges and oversight, it is unlikely that the region can be put on course for cooperation and growth.

Besides bringing some peace to Syria and Iraq, lowering Sunni-Shia tensions is a key requirement for building cooperation—no easy task in light of the age-old resentments and more recent distrust. But there is a precedent for building cooperation in the midst of tensions. The Helsinki agreement was forged during the Cold War, fifteen years before its peaceful conclusion. One of the unique attributes of the 1975 Helsinki Accord is that it encouraged society-to-society exchanges, and these continued despite increasing

US-Soviet hostility in the 1980s over Afghanistan. Arms-control efforts—because they were state-to-state matters—rose and fell depending on the state of US-Soviet relations. The "human dimension" of the Commission on Security and Cooperation in Europe (CSCE) was ongoing and, in the end, proved a vital factor in bringing down the Soviet regime.

It is impossible to envision the regional actors coming together independently to develop such a regional scheme. It would no doubt take the United States, Europe, Russia, China, and others to persuade them. After all, it was largely due to German efforts that the United States subscribed to the Helsinki Accord, after initially pooh-poohing it. To work, any such scheme would also have to be inclusive. It would mean both Sunni and Shia leaving aside their current differences and believing that cooperation could be built over time. Without some mechanism to lower tensions, it is not clear that, even if Gulf and Iranian economic-development efforts are successful, the states will not end up supercharging their investments in arms and increasing their appetites for taking on each other.

How Do Major Conflicts End?

A window of opportunity may occur in the next few years when the civil war in Syria and Iraq simmers down. Such civil wars usually last six to nine years; 2017 would be the sixth year since conflict in Syria broke out. Such conflicts usually end either in complete victory by one side, or after a stalemate in which it is clear no one side can ever prevail. It seems increasingly clear, looking at the situation from the outside, that neither the Assad regime nor rebel forces can prevail, and only a negotiated settlement is possible. But neither side has yet reached that point. Over time, however, when and if that changes, the outside powers will have a chance to orchestrate a peace that lays the foundations for an eventual recovery. Recoveries from civil wars are typically very slow. In both post-Ta'if Lebanon and post-Dayton Bosnia, there is relative peace but no real economic recovery or political cohesion. The warring parties are still very segregated. Still, however disappointing those peace settlements have turned out, they are better than chronic instability and conflict.

The bigger question is whether the outside actors will have the capacity to help bring about peace, when and if that opportunity arrives. The United States and Russia have been trying to forge a peace settlement, but will that continue if East-West tensions rise and there is, for instance, another Ukraine crisis? How interested will a more inward-looking United States be in enforcing a peace settlement? The United States was at the height of its powers when it orchestrated the Dayton peace that ended the Bosnian conflict in 1995. It will be much harder to get a peace settlement in Syria. Not only is the US public tiring of more outside burdens, but Sunni-Shia splits are very deep in the region. In the Bosnian case, there was more unanimity among the outside actors in wanting to end the conflict. Moreover, a peace settlement in Syria would be a big step in damping down regional conflict, but there would be still the need to build greater regional cooperation.

Either way, what happens will have major importance for the global system. An international peace settlement would help rebuild global cooperation and could be the first step toward a reinvigorated, rules-based order. A festering Middle East would continue to be a source of instability for more than the region.

How Peace Has Historically Been Achieved and Lessons for the Middle East

Peace Treaty or Conference	Peace of Westphalia, ending Thirty Years' War
Nature of Problem	Mix of confessional, civil and interstate wars, which were increasingly destructive. German states lost between 25 and 40 percent of their population.
Trigger for Negotiations	Antagonists realized there would be no victors. Westphalia was called a "Peace of Exhaustion."
Success or Failure?	The Thirty Years' War was the last great religious conflict, but Westphalia did not end Europe's great power rivalries and territorial wars.
Applicability to Middle East Conflicts	Dealt with root causes of religious conflict by establishing basis for state sovereignty and noninterference in others' domestic affairs. Greater autonomy for various ethnic and religious groups may be the only way to institute peace in Syria, Yemen, and Iraq.

Peace Treaty or Conference	1814-1815 Congress of Vienna, ending twenty-five years of nearly continuous Napoleonic Wars
Nature of Problem	The goal was not simply to restore old boundaries abolished by Napoleon Bonaparte's invasions, but to resize main players to achieve a lasting balance of power.
Trigger for Negotiations	Napoleonic France's defeat and surrender in May 1814.
Success or Failure?	Nothing approaching a total war in Europe occurred for a century. A Concert of Europe served as precedent for the League of Nations and UN. However, the goal of stifling liberalism and nationalism proved unsuccessful in the longer run.
Applicability to Middle East Conflicts	Institutionalizing peace by establishing a vehicle (Concert of Europe) for dealing with subsequent challenges to stability has potential relevance. Even if peace settlement is achieved in Syria, there are likely to be future destabilizing developments.

Peace Treaty or Conference	Paris Peace Conferences, ending First World War
Nature of Problem	End a world war causing the death of twenty million, resulting in the collapse of Russian, German, Austro-Hungarian, and Ottoman empires.
Trigger for Negotiations	1918 Armistice following the collapse of Germany's military effort and fear of an Allied invasion.
Success or Failure?	Laid basis for renewed conflict due to Versailles Pact's lack of legitimacy in the eyes of the defeated, and a lack of Allied unity on enforcing the peace settlement. Creating new, ethnically and linguistically homogeneous territorial states led to the expulsion or extermination of minorities.
Applicability to Middle East Conflicts	Sykes-Picot's imposition of nation-state order in the Middle East lasted longer than European settlement, but ran up against the same issue of ethnic and religious divisions undermining national unity. Paris/Versailles failures point to the need for inclusiveness, post-settlement unity among signatories, and a sustainable balance of power.

Peace Treaty or Conference	Helsinki Final Act/CSCE, reducing Cold War tensions
Nature of Problem	Easing tensions in the Cold War.
Trigger for Negotiations	Strong European interest in détente and a Soviet Union eager to legitimize control over Eastern Europe.
Success or Failure?	Agreement was reached because it offered benefits to all sides. In the end, Soviets underestimated its impact in mobilizing civil society in the Eastern bloc, accelerating the end of communist regimes. OSCE has been less successful in forging collective security in the post-Cold War era.
Applicability to Middle East Conflicts	OSCE provides a potential model for an inclusive regional security umbrella that can yield long-term results. Helsinki gave a boost to building East-West trust across multiple political, economic, and societal dimensions, but the progress was slow and halting. To be successful, a Middle East OSCE would need the United States, Russia, and Europe to champion it, encouraging all Middle East players to embrace it.

Peace Treaty or Conference	Ta'if Agreement, ending Lebanese Civil War
Nature of Problem	Ended a fifteen-year conflict among Shias, Sunnis, Maronite Christians, Druze, and Alawites in Lebanon.
Trigger for Negotiations	Defeat of the Lebanese Christian forces; active mediation by Saudi Arabia and the Syrian occupation, enforcing the cessation of hostilities.
Success or Failure?	Ta'if ended major violence, but it has been a fragile peace since. The power-sharing arrangements have acted as a bar to needed large-scale political and economic reform.
Applicability to Middle East Conflicts	Striking parallels with war-torn Syria, including the important role played by outside forces, first spurring the civil war and then enforcing the peace. The power-sharing aspects provide a model for achieving an end to hostilities, but also a warning about the long-term problems created by too rigid an arrangement.

Peace Treaty or Conference	Madrid Conference on Middle East Peace
Nature of Problem	The goal was to achieve a comprehensive peace settlement between Israel and its Arab neighbors.
Trigger for Negotiations	A large coalition of countries, led by the United States, had just driven Iraq out of Kuwait.
Success or Failure?	Madrid set a precedent for direct talks between Muslim states and Israel, setting the stage for secret talks between Israel and the Palestine Liberation Organization (PLO), leading to Oslo. Ultimately, that peace process failed, but Israel and Jordan signed a peace treaty in 1994.
Applicability to Middle East Conflicts	Despite its significant achievements, Madrid shows the limits of any single event, and the need for a sustained effort if longstanding and thorny issues are to be resolved. The old adage that, "You can lead a horse to water, but you cannot make it drink" comes to mind in relation to Madrid. Any conference on today's even-thornier issues would need to be coupled with a follow-on process for ensuring onward momentum.

Peace Treaty or Conference	Dayton Accord, ending Bosnian War
Nature of Problem	Ended the 1992-95 war between Serbs, Croats, and Muslim Bosniaks, establishing a highly decentralized state with two entities: Federation of Bosnia-Herzegovina and Republika-Srpska.
Trigger for Negotiations	War was brought to an end after Bosniak and Croatian forces allied against Serbs, and NATO intervened to defeat Serbian forces.
Success or Failure?	Ended the military conflict, but ethnic tensions remain entrenched twenty years after the agreement. As with Ta'if, the power-sharing arrangements have proved a hindrance moving ahead on political and economic reforms.
Applicability to Middle East Conflicts	Dayton shows the limits of power-sharing arrangements for economic reconstruction and national reconciliation. The extensive oversight powers of the Office of High Representative have prevented massive backsliding to renewed fighting, but have not be able to spur more cohesion.

CHAPTER 7

CHINA'S LINCHPIN ROLE IN THE GLOBAL ORDER

China's spectacular rise is historically unprecedented. No power in modern history has risen so fast to become, in a matter of three to four decades, a regional as well as global power. It is likely, already, the world's largest economy. Many predictions of gloom or collapse for China have proven wrong. At the same time, China has entered a new chapter. It now has to prove it can sustain its rapid rise, moving up the value chain to become a world-class innovative society, not just a middle-income behemoth. This has implications for all. An angry China might be a dangerous international player. At the same time, even if China manages to avoid the middle-income trap—which historically has beset the majority of rapidly growing economies—its rightful place in the regional and global order will still pose a challenge. Since the 2008 financial crisis, China's neighbors have grown more fearful of Beijing, even as economic webs connecting them to China have grown stronger. Historical examples are not favorable to positive outcomes. It will be hard to find a middle ground that suits China's high ambitions for sway over its region, but does not ruffle US feathers or scare China's neighbors, including the increasingly vulnerable Japan.

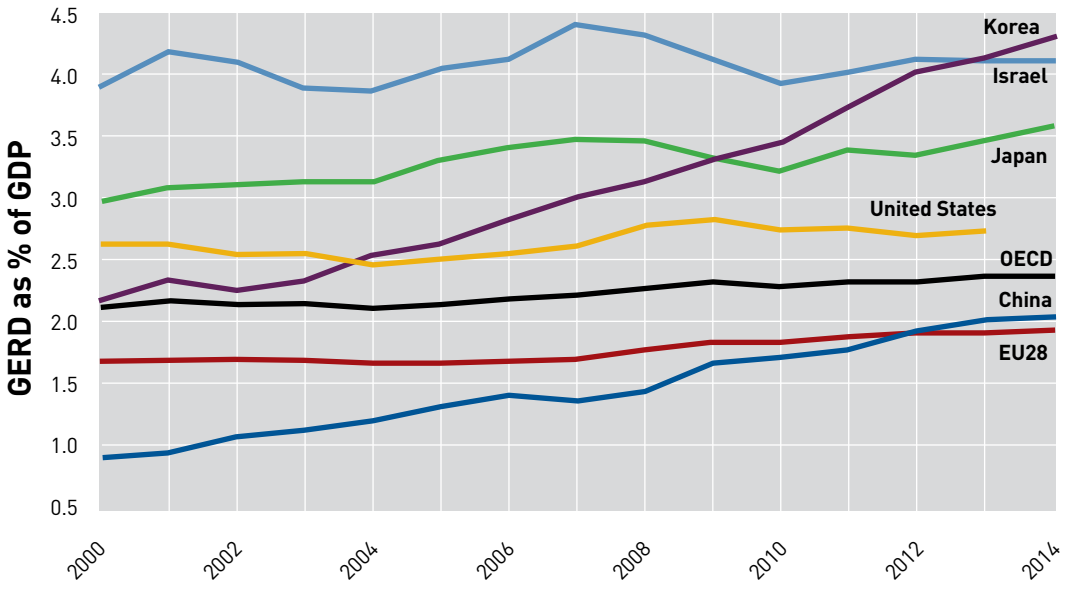
Becoming Rich Before Growing Old

China is under the gun to transform itself from the world's workshop of low- and medium-value goods into a world-class technological power on par with the United States, Europe, and Japan. Demographically, China is moving from a period in which its formerly youthful population provided it with a boost, or "demographic dividend." Over the past three decades, the movement of a huge pool of low-cost workers from rural areas to the cities formed the basis of China's transformation into the world's foremost manufacturing center. That rural exodus has come to an end, with fewer migrant workers to begin with, and those who seek employment no longer willing to put up with the low pay or dismal working conditions of factories in Shenzhen or other coastal manufacturing cities. Low-paid work is now moving offshore. And in the factories that remain, Chinese employers are moving headlong into replacing humans with robots.

China has only a short window before it begins to age quickly—by the mid-2020s. At that point, the aging begins to accelerate, with health and pension costs accumulating quickly. There is a cruel irony behind the rapid closure of China's demographic window. Economic miracles usually coincide with a country's years of demographic dividend. That occurs when the proportion of working-age population (usually defined as fifteen to sixty-five years) dwarfs those under fifteen and over sixty-five. With fewer youngsters and the elderly to support, a country with a large and employed working-age population can rack up big productivity gains. In the Western case, the proportions of working-age population to the rest of society never spiked the way they did in China. China abruptly eliminated a huge number of potential dependents by implementing a one-child policy. That boosted the proportion of the working-age population, which in turn increased its chances for economic growth.

The problem now is that the demographic dividend is winding down as rapidly as it was created—and more rapidly than is the case for other developing countries, due to the one-child policy. To sustain growth, China needs to make better use of its available labor force by increasing productivity—something of which China's leaders are only too aware. R&D spending has been increasing, to the point that China will surpass the percentage of GDP that Europe spends.

R&D INTENSITY: GROSS DOMESTIC EXPENDITURE ON R&D AS A PERCENTAGE OF GDP, 2000-2014

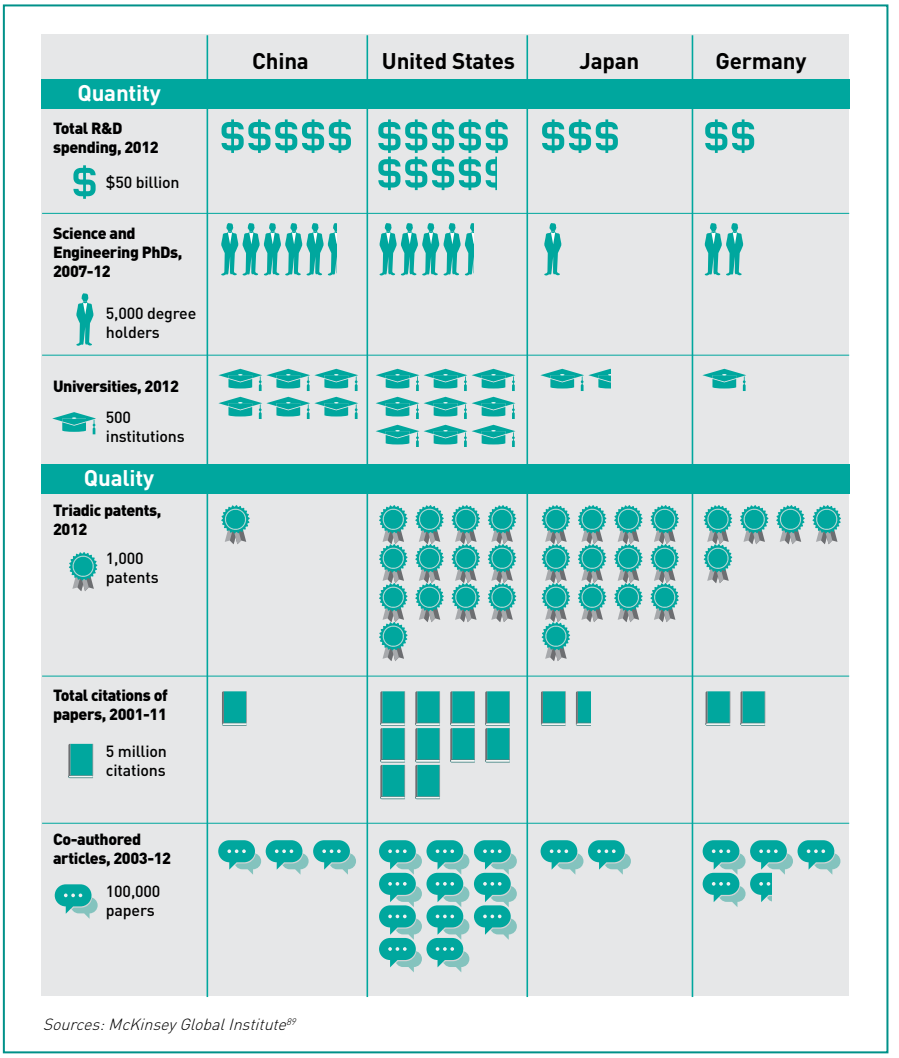


Sources: Organization for Economic Cooperation and Development, "Gross Domestic Spending on R&D, https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm.

Building up a technology base is not easy. It usually takes decades. The United States took the better part of the nineteenth century to equal Britain's scientific and technological prowess, and then surpassed it. It also requires development of an ecosystem—world-class universities, ample sources of venture capital, and individual entrepreneurs who were encouraged to take the risk of turning scientific breakthroughs into commercialized, mass-market applications and products.

There is some doubt, even in China, that present-day China could ever be a high-tech powerhouse. President Xi Jinping and China's other Communist Party leaders desperately want China to go high tech, but they also are not prepared to loosen their grip on political dissent. Under Xi, there has been more suppression of any opposition. In the West, science has always thrived in environments in which free thought has been allowed, if not encouraged. Creativity is another area in which Western critics believe China can never equal Western ingenuity. China's schooling is geared toward rote memory—the obverse of trying to encourage creativity.

On the other hand, there is no doubt that China has made strides. Back in 2012, during the creation of *Global Trends 2030*, the authors surveyed Western scientists about China's progress. Experts thought—as many still do today—that China will be a leader in a number of fields, even if it is not the overall leader and will not be by 2035.



Sources: McKinsey Global Institute[89]

89 McKinsey Global Institute, China's Effect on Global Innovation (San Francisco: McKinsey Global Institute), p.22, http://www.mckinsey.com/~/media/mckinsey/global%20themes/innovation/gauging%20the%20strength%20of%20chinese%20innovation/mgi%20china%20effect_executive%20summary_october_2015.ashx.

US technology firms nevertheless worry about Chinese competition. They also fear that the wholesale cyber extraction of US intellectual property is giving China more of an advantage than it would have striving to be a tech giant on its own. Cyberattacks have grown to such an extent that they have become a political issue. Equally worrisome to US security officials is the buyout of Western firms by Chinese ones hungry to acquire the tech insights, as much as the added business and market share.

To what degree China becomes innovative, without politically reforming, will be a critical test of the importance of traditional Western liberal values for prosperity and progress. So far, China has shown its ability to do very nicely without, but whether China achieves its goal of being an innovative society will be conclusive proof of the proposition, one way or another.

For Chinese leaders, failure to achieve the country's high-tech goals has more immediate and tangible implications. The Communist Party has vowed to bring China's living standards up to the level of Western advanced countries by the anniversary of its takeover, or China's liberation, in 1949. Continued robust growth, then, is a must. At 6-7 percent average annual growth—the current level—this is probably possible, but economies tend to slow as they develop, as China's already has. Will it still be growing at even 5 percent when its population is aging fast, and the proportion of working-age adults begins to fall dramatically? The Economist Intelligence Unit expects China to be almost equal to Japan in per-capita income by 2050, but the spending power of Chinese consumers to be only 50 percent that of a US consumer.[90] China will need to avoid the slowdown—or middle-income trap—into which many rapidly growing powers fall.

A slowdown, including increasing evidence that China will not meet its level pegging target with Western economies, could undermine the Communist Party's standing with the Chinese people. For the regime and people, the goal is also linked to their determination to undo the "century of humiliation," when the Western imperial powers (including Japan) exploited China's weaknesses in the nineteenth century. It is hard to overestimate the potency of that narrative. In the eyes of many in China, the legitimacy of the Communist Party is tied to the extent that it shows China is equal to or better than the other great powers.

Global Trends 2030 describes how countries often become more nationalistic and assertive as their power begins to crest. For many governments, demonstrating their importance on the world stage mitigates their loss of economic power. The report took a catholic view and applied the principle not just to China—which already in 2012 showed some signs of slowing down—but to the United States, Russia, and Japan, which were also experiencing relative losses of power. The comparison pointed to the fact that, with so many powers becoming thin-skinned about their prerogatives, the geopolitical landscape was becoming more treacherous. Historically, there were any number of past rivalries—Britain and Germany before the First World War being the leading one, and even Japan and the United States in the lead-up to the Second World War—that can be explained by at least one power in the duo fearing that its best days may soon be over, and then opting for aggression to defeat its rival before it was too late.

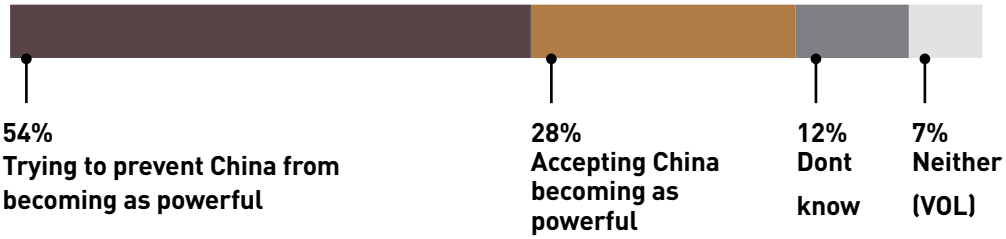
In China's case, the government may believe its best days are still ahead, but it needs to demonstrate to the public that others respect China. With a slowdown in living-standard increases, demonstrating China stands tall becomes even more important. For the United States, which has been the sole leading regional power, there is also a price to be paid in ceding ground. Few in the government or public want conflict with China, but US leadership does not want to appear weak. For Washington, it is increasingly important whether China or the United States sets the rules. What future would Americans have if the United States is no longer the superpower crafting all the rules? Moreover, many of China's neighbors have egged on Washington to reinforce its security guarantees.

The situation going forward is fraught with difficulty. It depends upon leadership on both sides threading a slender needle. There are increasing forces on both sides—including a nationalistic Chinese public—that see conflict as inevitable, which is a dangerous leading indicator.

90 Economist Intelligence Unit, Long-term Macroeconomic Forecasts: Key Trends to 2050 (London: Economist, 2015), http://pages.eiu.com/rs/783-XMC-194/images/Long-termMacroeconomicForecasts_KeyTrends.pdf.

BUT CHINESE SEE US AS TRYING TO LIMIT CHINA'S POWER

Which is closest to your view? The US accepts that China will eventually be as powerful as the US OR the US is trying to prevent China from becoming as powerful as the US.



Sources: Spring 2015 Global Attitudes survey. Q37 & Q121

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Is There a Solution?

With both sides increasingly viewing the Asian regional order as a zero-sum one, there is no obvious solution that does not involve a "loss of face" on one side or the other. The hope would be that greater economic interdependence would increase the cautiousness on both sides. The Trans-Pacific Partnership (TPP) was sold in the United States as a way of keeping China from making the rules. But if China became an eventual partner, then there would be incentive for the United States and its Asian allies, as well as China, to increase at least economic cooperation. The failure of the TPP to pass the US Congress would not only undermine US creditability in its allies' minds, but also eliminate a potential opportunity to pursue a joint framework with China. Otherwise, with the increasingly tight military ties between the United States and its allies—and higher military spending as Asia overtakes NATO—the scene is set for a collision between the United States and China.

Any conflict would be a defeat for both, even if it is costlier for one side. A defeat could rock China politically and economically, but also hurt the global economy. Other than a knock-out blow, a setback for China would probably see a redoubling of nationalistic fervor. President Xi, or a successor who leads China into a defeat, would undoubtedly lose his position, but the likely result would be a fiercer nationalistic leader taking his place, and a Cold War against the United States and its allies.

A Chinese victory would no doubt lead to a more assertive China, intent on exerting regional dominance at the expense of the United States. Like China, the United States would seek to bring the rest of the world to its side in the event of a defeat, sanctioning China and maybe having the effect of launching a new Cold War.

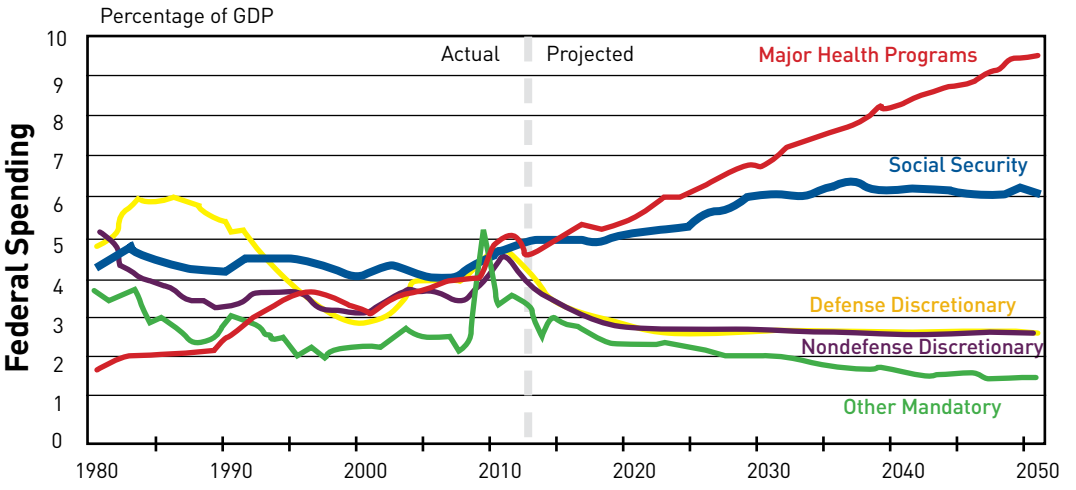
How likely is a Sino-US conflict by 2035? There is increasing risk, unless there is an effort to develop a more inclusive mechanism for resolving differences and curbing any escalation in tensions. Again, it will probably be up to US and Chinese leaders to see the risks in the status quo and move toward security cooperation. A Cold War in Asia would not be easily contained, and it would completely undermine globalization and prospects for a more peaceful and prosperous world.

CHAPTER 8

THE DIFFICULT TRANSITION TO A POST-WESTERN ORDER

The multilateralist global system that the United States and the West built after the end of the Second World War was premised on an economically strong United States and West. In 1945, the United States was the only victor that was not completely devastated. World War II had brought the country out of the Great Depression, and the US GDP constituted more than 50 percent of the world's total. Into the twenty-first century, the members of the Group of Seven (G7) were the world's political and economic heavyweights. It has only been in the past several years that the collective GDP of the developing world—led by China—has surpassed the developed world's. Even as non-Western powers grow, it is psychologically hard for the West to think about relinquishing its reins.

Demographically, the West has, for a long time, been in the minority. What's more recent is the aging of the Western population (analyzed in chapter 2), which is already occurring in Japan and Europe, beginning to squeeze the availability of resources for anything but health, social security, and interest payments on debt. Unless healthcare becomes far more efficient, the US economy will be overburdened with healthcare and pension costs as the "baby boomer" generation ages. Healthcare constitutes a whopping 18 percent of the US GDP—significantly more than is the case for other industrialized countries—without necessarily providing better results.

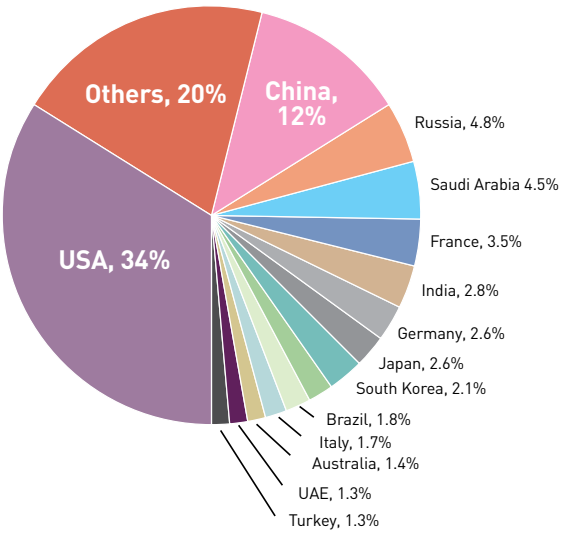


Source: Congrational Budget Office, Historical Budget Data, August 2013, and Peter G.Peterson Foundation projections based on data from the Congressional Budget Office, Long Term Budget Outlook, September 2013. Compiled by PGPF.

Note: All projections use CBO's extended baseline scenario.

With more going to health and pensions, there will be less capacity for defense and military spending. The United States is the biggest military spender, but China is increasing its portion of worldwide military spending, while the worldwide share of European NATO members is diminishing.

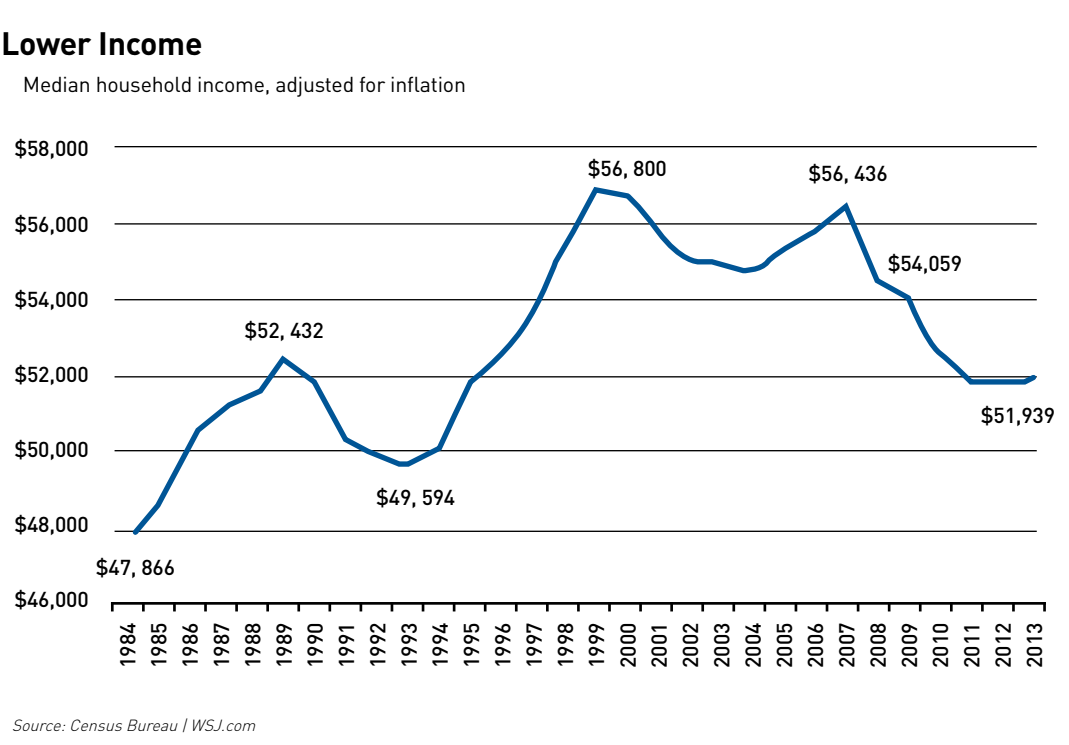
THE SHARE OF WORLD MILITARY EXPENDITURE OF 15 STATES WITH THE HIGHEST EXPENDITURE IN 2014



China's military probably will not rival the United States' power-projection capabilities even by 2035, but it will have greater anti-access and denial powers. In a military contest, China may never be able to deliver a knockout blow, but it could tarnish the US image of military invincibility in a conventional state-on-state contest held in its region. Equally, a confrontation that results in a Chinese humiliation could set back China's aspirations for regional leadership, if not trigger a domestic legitimacy crisis for the Communist Party leadership.

Biggest Problem Is Domestic

The biggest psychological blow to ordinary Western citizens has been their sagging standard of living (more analysis in chapter 1). Despite a much better record of overall growth in the United States since the 2008 financial crisis, those with median incomes have taken a hit.



Worrisome for future US growth potential has been the drop in the labor-participation rate, from the 67 percent range before the 2008 financial crisis to 62-63 percent in the years since. The labor-participation rate was destined to drop due to a growing numbers of retirees, but much of the current sharp decrease comes from unskilled males in their prime working years—forties and early fifties—dropping out. Additionally, many younger women are not entering or staying in the job market. *Global Trends 2030* looked at two scenarios for future US growth—one in which the United States maintained or slightly increased its average 2.5 percent pre-2008 growth rate, or one in which growth would slow to an average of 1.5 percent a year. In the first, there would still be the global economic shift to China. On the other hand, the 2.5 percent average growth would help boost average living standards, engendering a "feel-good" factor, which would make more Americans interested in reengaging with world issues.[91]

91 Global Trends 2030, p. 106.

Given the record of slower growth and labor-force decline since the 2008 financial crisis, the likelihood of the second scenario is increasing. That scenario anticipated lower growth rates—which accelerated declines in average living standards—making it harder to continue trade-liberalization efforts. Indeed, the IMF warned in June 2016 that the United States faces potentially significant longer-term challenges to strong and sustained growth, saying, "concerted policy actions are warranted, sooner rather than later… focusing on the causes and consequences of falling labor force participation, an increasingly polarized income distribution, high levels of poverty, and weak productivity."[92]

Moreover, it is not as if traditional US partners—Europe and Japan—are doing much better. Japan and many European countries are aging faster than the United States, eliminating labor-force growth as a driver of future economic growth. Europe's and Japan's economic performances have been declining since the 1990s.

In Europe, the public discontent with high unemployment and declining incomes has helped to spur the rise of antiestablishment far-right and populist parties that want to weaken the EU and transatlantic ties. Even in richer European countries, such as Germany, a backlash has been growing against the Transatlantic Trade and Investment Partnership (TTIP), out of fear that Europe's rewards would be meager and European standards would be diluted. McKinsey Global Institute, for example, believes a "return to sustained growth of 2-to-3 percent" is possible for Europe, but would require many politically difficult reforms.[93] These include: reducing dependence on imports (much coming from Russia) for crude oil and natural gas; fostering a more vibrant digital economy; increasing workforce participation by the elderly, women, and migrants; and promoting flexibility in labor markets. China now spends a greater share of its GDP on research and development than does Europe. The latest OECD figures show that Europe now spends even less than the rest of the OECD.[94]

In both the United States and Europe, there is increasing anti-immigrant sentiment despite documented economic benefits from immigration. According to EU Commission Employment Analyst Dr. Jorg Peschner, productivity, by itself, will not be enough to reverse the negative employment trend absent more immigration: "EU's productivity growth would have to double in order to keep the EU's economy growing at the same pace as it did before the crisis started." For employment growth to remain positive as long as possible, improving the labor participation of women, low-educated people, and migrants will also have to be a priority. In the United States, many of the new businesses started every year are started by first- or second-generation immigrants.[95]

92 International Monetary Fund, Article IV Consultation with the United States of America: Concluding Statement of the IMF Mission (Washington, DC: International Monetary Fund, 2016), http://www.imf.org/external/np/ms/2016/062216.htm.

93 Eric Labaye, Sven Smit, Eckart Windhagen, Richard Dobbs, Jan Mischke, and Matt Stone, A Window of Opportunity for Europe (San Francisco: McKinsey Global Institute, 2015), p. 10, http://www.mckinsey.com/global-themes/europe/a-window-of-opportunity-for-europe.

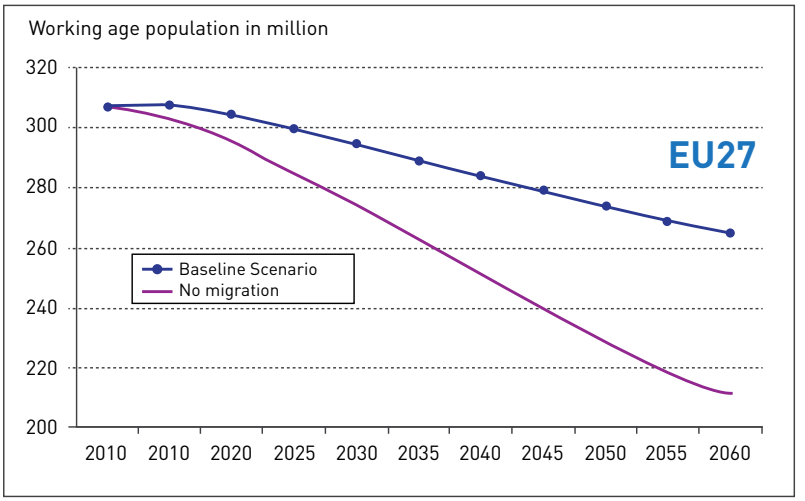
94 Organization for Economic Cooperation and Development, OECD Science, Technology and Industry Outlook, 2014, http://www.keepeek.com/Digital-Asset-Management/oecd/science-and-technology/oecd-science-technology-and-industry-outlook-2014/summary/english_4b88d3e1-en#.V5oxzGf2aUk#page1. Richard Van Noorden, "China Tops Europe on R & D Intensity," Nature, January 8, 2014, http://www.nature.com/news/china-tops-europe-in-rd-intensity-1.14476.

95 Jorg Peschner and Constantinos Fotakis, Growth Potential of EU Human Resources and Policy Implications for Future Economic Growth (Brussels: European Commission, 2013), ec.europa.eu/social/BlobServlet?docId=10939&langId=en.

SHRINKING WORKING-AGE POPULATION

Average annual decline will be -0.4% as from 2020...
...setting the focus on the potential impact of migration

EU's working-age population (people aged between 20 to 64 years)



-42 m pot. workers over the next 50 years...

.. -96 m pot. workers without migration...

Source: Eurostat Europop2010 convergence vs no-migration scenario

Politically, there has been a large rise in support for right-wing and populist parties in the United States and Europe, undermining traditional parties. The gaps, for example, between the leadership and supporters in the US Republican and UK Tory and Labor Parties have been particularly evident in the selection of Donald Trump as presidential candidate and the June 2016 victory of the "Leave" vote in Britain. Unfortunately, there is no end of economic disruption. The job churn will continue as more and more skills and professions are automated, also increasing the potential for more "losers" from globalization, greater political polarization, and inequality. The increased competitiveness of the developing world with the West is a particular morale buster for Western middle classes who got used to ever-increasing prosperity for themselves and succeeding generations. Adapting to a new norm of economic turbulence—more prevalent in other eras—may be one of the biggest mental hurdles for Westerners. The West is used to thinking of the "Third World," not home, as the place where economic turmoil happens.

And a Multipolar Financial Architecture, Too

Historically, US and Western power has rested on having a monopoly on reserve currencies and a Western-dominated financial system. In 2035, the dollar will be the biggest reserve currency, but its share of global financial transactions is expected to drop from 60 percent today to 45 percent. The euro will probably remain the second reserve currency, while the Chinese yuan or RMB—which became a part of the IMF benchmark-currency basket in 2015—will become a third reserve currency, accounting for 10 to 15 percent of global finance in two decades' time.[96]

96 This is based on analysis the author did for joint Atlantic Council/IMEMO report cited above. See pp. 49-51.

The financial architecture will also become more regionalized. The central role played by the financial centers of New York and London will also diminish, and a multitiered financial architecture will develop. Following the UK Brexit, those centers' share in financial intermediation will decrease, as a second pole of global finance forms in the Eurozone. A third pole will develop in East Asia and Southeast Asia.

Gradually, a growing share of global financial resources will be concentrated in those regional clusters. As with the growth of regional trade, the regional clusters will be more self-encapsulated, spurred by rising domestic demand in China and other developing countries with growing middle classes. With the role of electronic money likely to grow, the traditional banking system will probably also undergo major revision, with potential impacts on governmental powers.

A more multipolar reserve system and regionalized financial architecture should lessen risks and contribute to greater stability. But the large-scale technological innovations—some of which contributed to the 2008 breakdown—will continue, making global finance still volatile. Emerging-market countries with fragmentary regulatory regimes will be particularly prone to suffering financial crises. The aging-population factor also increases risks to public finances. This report anticipates modestly increased volatility, lower than what occurred in the global economy during the 1890s through the 1940s, but higher than in the 1950s and 1960s—more of a continuation of what has been the trend line since the mid-1980s.

Are There Alternative Visions to Western Order?

Four years ago, when Global Trends 2030 was published, the answer was largely no.[97] Increasingly, the facts on the ground would suggest otherwise. They do not add up to a cohesive plan to substitute wholesale all Western institutions and practices. However, they clearly indicate that there are some no-go areas, particularly those connected to regime change, democracy promotion, state control over NGOs, and maintaining sovereignty. Russia and China, in particular, see themselves as great powers and, as such, believe they have special rights to dominance in their regions. However, as other powers like India develop, it is likely that they will see themselves as regional powers with inherent prerogatives. It is worth recalling the United States' expansive Manifest Destiny and nineteenth-century Monroe Doctrine, claiming special rights to determine the future of the Western Hemisphere.

The Mercator Institute for China Studies (MERICS) has been closely following Beijing's efforts to build a network of parallel structures to existing international organizations. It has concluded that China "is not seeking to demolish or exit from current international organizations…It is constructing supplementary—in part complementary, in part competitive—channels for shaping the international order beyond Western claims to leadership."[98]

As the accompanying chart indicates, China's shadow network of alternative international structures encompasses everything from financial and economic partnerships (the Silk Road Economic Belt and the Asian Infrastructure Investment Bank) to full-blown political groupings like the Shanghai Cooperation Organization, Conference on Interaction and Confidence Building Measures in Asia (CICA), and the BRICS association of Brazil, Russia, India, China, and South Africa.[99]

Moreover, there is increasing cooperation among many of the emerging powers—beyond just authoritarians—to not just limit what they see as Western meddling in domestic affairs, but to go on the attack globally. According to a recent academic study, the "Big Five" authoritarian states of China, Russia, Iran, Saudi Arabia, and Venezuela "have taken more coordinated and decisive action to contain democracy on the global level." They have sought to "alter the democracy and human-rights mechanisms of key rules-based institutions, including the Organization of American States, the Council of Europe, the Organization for Security and Cooperation in Europe, and international bodies concerned with the governance of the Internet."[100]

97 *Global Trends 2030, p. 108.*

98 *Shannon Tiezzi, "China's 'Shadow' Network of International Organizations," Diplomat, October 31, 2014, http://thediplomat.com/2014/11/chinas-shadow-network-of-international-organizations/.*

99 *Ibid. See also Olin Wethington and Robert A. Manning, Shaping the Asia-Pacific Future (Washington, DC: Atlantic Council, 2015), http://www.atlanticcouncil.org/images/publications/Shaping_AP_Future_Digital.pdf.*

100 *Larry Diamond, Marc F. Plattner, and Christopher Walker (editors), Authoritarianism Goes Global: The Challenge to Democracy (Baltimore, Md.: Johns Hopkins University Press, 2016), p. 5.*

How durable are these preferences for nondemocracy and state control? By 2035, if not sooner (in the case of Venezuela), some of the now-authoritarian states could be liberalized, and the perceived threat posed by Western civil-society NGOs may ease. However, China and Russia are more likely than not to want to dominate their regions. Nationalism and democracy have been shown to be highly compatible. It is not clear that an even more powerful China or India would defer to Western leadership of the global order, even if both sides' values in other areas begin to converge.

China-Centered and Pan-Asian Institutions	Key Features	Parallel to
Financial and Monetary Policy		
BRICS New Development Bank (NDB)	Development bank with a focus on infrastructure, founded in July 2014 with headquarters in Shanghai; Indian presidency for the first five years.	World Bank, regional development banks
Asian Infrastructure Investment Bank (AIIB)	ADB members were invited to join in; fifty-seven founding countries (as of May 2015).	ADB
BRICS Contigency Reserve Arrangement (CRA)	Reserve pool (100 billlion USD) for crisis liquidity (signed in July 2014).	IMF
Mechanisms for internationalizing the RMB	Twenty-eight agreements on direct exchange of RMB with other currencies; treaties on clearing banks in nine countries; seven country-specific Renminbi Qualified Foreign Institutional Investor (RQFII) quotas; twenty-eight swap agreements with central banks.	Established currency market mechanisms
Shanghai as global financial center with RMB-denominated futures markets	State Council decision (2012) to turn Shanghai into a global financial center; approval of Shanghai Free-Trade Zone (August 2013). RMB-denominated futures markets for crude oil, natural gas, petrochemicals (August 2014); gold trading platform (fall 2014); six othere international commodities futures markets are in the planning stage.	Established centers for financial, commodities, and futures markets
China International Payment System (CIPS)	CIPS for international RMB transactions (April 2012); Sino-Russian negotiations on alternatives to SWIFT (fall 2014).	Established payment systems (CHIPS, etc)
Transregional Infrastructure Projects		
One Road, One Belt	Large scale infrastructure and geostrategic projects (announced by President Xi Jinping in November 2013) that aim at opening up new land and maritime trading corridors across Eurasia.	New Silk Road (United States, 2011), Eurasian Economic Union (Russia)
Security		
Conference on Interaction and Confidence Building Measures in Asia (CICA)	A security forum originally initiated by Kazakhstan (1999); China serves as chair 2014-16.	ARF
Shanghai Cooperation Organization (SCO)	An international organization (established in 2001) by China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan with a security focus. In 2014, India, Iran, and Pakistan applied for membership.	CSTO, ARF
Diplomatic Forums		
Boao Forum for Asia (BFA)	An annual forum founded in 2001 for decision-makers from politics, business, and academia with a regiona focus in Asia	WED/Davos
Pan-Asian Trade, Finance, Monetary Policy		
Regional Comprehensive Economic Partnership (RCEP)	A free trade agreement planned to be concluded by the end of 2015 and to encompass three billion people and 40 percent of world trade.	TPP, TIIP
Chiang Mai Initiative Multilateralization (CMIM); ASEAN Plus Three; Asian Macroeconomic Research Office (AMRO)	Reserve pool (increase to 240 billion USD in effect since July 2014) for crisis liquidity ("Multilateralization" started in March 2010; AMRO established in April 2011, status as international organization since October 2014.	IMF

Sources: Olin Wethington and Robert A. Manning, Shaping the Asia-Pacific Future (Washington, DC: Atlantic Council, 2015), http://www.atlanticcouncil.org/images/publications/Shaping_AP_Future_Digital.pdf.

What Kind of Post-Western World?

Clearly, there is a need to plan for a world that will not have the West as its big economic powerhouse—a prospect hard for Western elites and publics to conceive of, despite a decade or more of publicity about the "rise of the rest." According to a recent survey, Europeans and Americans are more comfortable with each other than they are with anybody else. Although a majority of Europeans said, in the most recent German Marshall Fund transatlantic-trends polling, that they would like to see their country take an approach more independent from the United States, both Americans and Europeans still prefer each other over more Russian or Chinese leadership in the world.

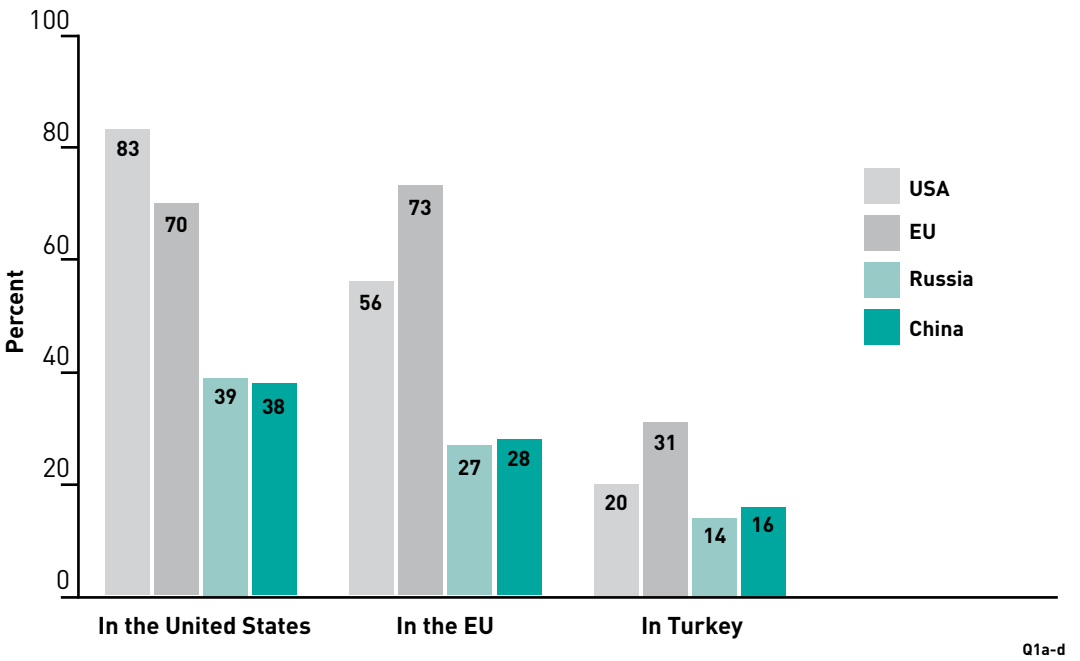
The Obama administration—considered among the most multilateralist of recent administrations—campaigned hard in 2015 to convince Europeans not to join China's proposed Asian Infrastructure and Investment Bank (AIIB). It was as if the United States was against any governance structure not "made in the USA," even when those running the AIIB have made clear their intentions of operating with the World Bank and the Asian Development Bank.

More and more, the talk among Western elites is about locking in as much as possible the status quo, which favors the West, so that it will be harder for the newcomers to overcome. The TPP was sold as a way to set the rules before China gains much more power. A former Obama administration official advised that now might be the best time to undertake UN Security Council reform, before China and other uncooperative powers become more powerful. "A new US administration may be able to advance a proposal to address the Security Council's anachronistic makeup while perpetuating a council that Washington can work with."[101]

For Westerners, the challenge will be to plan for a future that will not be solely run by them, but which they can live with. Handovers have been historically difficult and fraught—more often than not, decided by bloody contests. One could envisage different scenarios, some already described in the earlier chapter on conflict, of military contests between the United States and China, or the United States and China with Russia, or the United States with NATO against Russia. Without delivering a knockout blow by one side or the other, these contests would most likely pit West against East, creating something akin to a new Cold War. Even if there were a knockout blow by the United States against China, it is hard to imagine a defeated China deferring permanently to the West. Its population has been imbued with such a narrative about the injustices by the West against China that any defeat or setback would be confirmation that the United States and West are dead set against a rising China.

101 Suzanne Nossel, "The World's Rising Powers Have Fallen," Foreign Policy, July 6, 2016, http://foreignpolicy.com/2016/07/06/brics-brazil-india-russia-china-south-africa-economics-recession/.

DESIRABILITY OF LEADERSHIP IN WORLD AFFAIRS



Sources: German Marshall Fund of the United States, Transatlantic Trends 2014 (Washington, DC: German Marshall Fund, 2014), pp. 3, 16, http://trends.gmfus.org/files/2012/09/Trends_2014_complete.pdf.

Perhaps the most harmful effect of such a contest would be to convince both sides that neither is trustworthy. For the non-West, it would confirm the suspicion that the West does not want to relinquish its leadership position. For the West, it would make it harder to ever reach out and help establish a truly global system.

Need for a Second-Generation US and Western Leadership Model

War is not, and should not be, inevitable as the West struggles with the growing clout of China and other developing states on the world stage. Unlike during other transitions, the tools exist for ensuring more peaceful outcomes. They will require Western acquiescence to greater roles for the developing world to set and implement new rules of the road for the international order. A key feature of the post-1945 US design for the world order is its multilateralist structures. Many of these operate below most people's radar. This plumbing of the international system has enabled the daily functioning of globalization. To keep it viable, China, as well as other developing countries, must be accorded more representation. There are too many long-term risks involved, for example, in China having only the equivalent of France's voting rights in the IMF, when it is the first or second economic power in the world. This is how resentments are nurtured—all the more dangerous in China's case because of its underlying "century of humiliation" mental complex.

As emerging technologies come online, the lack of a truly global institutional framework could be particularly dangerous. Assuring the future security of the Internet is particularly important in this regard, because all the new emerging technologies—bio, 3D printing, robotics, big data—take for granted a secure, global Internet. Everyone loses if cyber crime and cyber terrorism undermine the Internet. In the worst-case scenarios, in which cyber crime proliferates or strong national borders fragment the Internet, an Atlantic Council study, as mentioned, found that the economic costs could be as much as $90 trillion out to 2030, in addition to the risk of open conflict.[102]

102 Atlantic Council, Risk Nexus.

Besides bringing the emerging powers into leadership roles in the panoply of multilateral institutions, the United States will need to temper its often "exemptionalist" stance to ensure the survival of the multilateralist order. According to the Council on Foreign Relations' Patrick Stewart, a prominent scholar of global governance, one of the persistent paradoxes of the post-1945 decades has been that the "United States is at once the world's most vocal champion of a rules-based international order and the power most insistent on opting out of the constraints that it hopes to see binding on others."[103] No country has the networks and connections that the United States does, but the system is now polycentric, rather than unipolar, and others resent the "exceptional" privileges that the United States claims. The Global Trends works have talked about the need for a new model of US global leadership. The United States needs to be guiding the international system as a "first among equals," and willing to play by its own rules. Paradoxically, there is likely to be no vibrant global-governance system without US and Western leadership, but too much domineering behavior could doom it.

Even if the United States adapted its global role, this is not to say that the tensions and differences with many emerging powers would all disappear, or that the governance system would function seamlessly. In addition to the growing number of new state actors, the increasing importance of nonstate actors adds a new complexity to the functioning of global institutions. Moreover, there are clear-cut differences between the West and emerging powers on values-based issues, such as democracy promotion and the responsibility to protect. Many developing-country publics still resent Western colonialism and equate any intrusion with past historical wrong. They point to the 2011 humanitarian intervention in Libya, for example, as cover for the Western goal of regime change. Hence, the UN Security Council failure to stop the fighting in Syria, with more than two hundred thousand killed and 7.6 million displaced. Russia and China want to make a stand against the United States and the West getting their way and ousting the Assad regime. On the other hand, the lack of a solution smacks more of anarchy than global governance. Certainly, it shows one of the gaps that remains, and likely will remain, limiting global governance because of differences in values.

The speed with which new technologies are coming online and becoming an important political, military, and economic tool—for both good and bad—carries big risks for global governance. Stewart Patrick lists four potential new technologies that "cry out for regulation": geoengineering, drones, synthetic biology, and nanotechnology. Without some setting of rules for their operation, there is the risk of major disruptions, if not catastrophes, stemming from their abuse. The recent advances in synthetic biology lower the bar to abuse by amateurs and terrorists alike, forever affecting human DNA. Geoengineering involves planetary-scale interventions that could interfere with complex climatic systems.

However cumbersome, politically unpopular, and ineffective at times, there is little alternative to increased global cooperation if one does not want to see higher risks of conflict and economic degradation. Without some sort of bolstered global governance, the West would end up with less sovereignty in a "dog-eat-dog" world, in which it was increasingly in the minority. But can the United States and the West rise to the challenge of investing in a global-governance system that will not always favor their interests on every issue? Historically, the United States could be especially generous because it was on top of the world in about everything after the Second World War. Europeans came to truly believe in pooling sovereignty and joint governance after centuries of internecine conflict. The tough economic times at home have seen US and European publics become distrustful of overarching multilateral institutions, believing the will of the United States or individual European countries will not be served. It is oftentimes easier for political leaders to fall in with the public mood rather than display leadership that might appear to work against it.

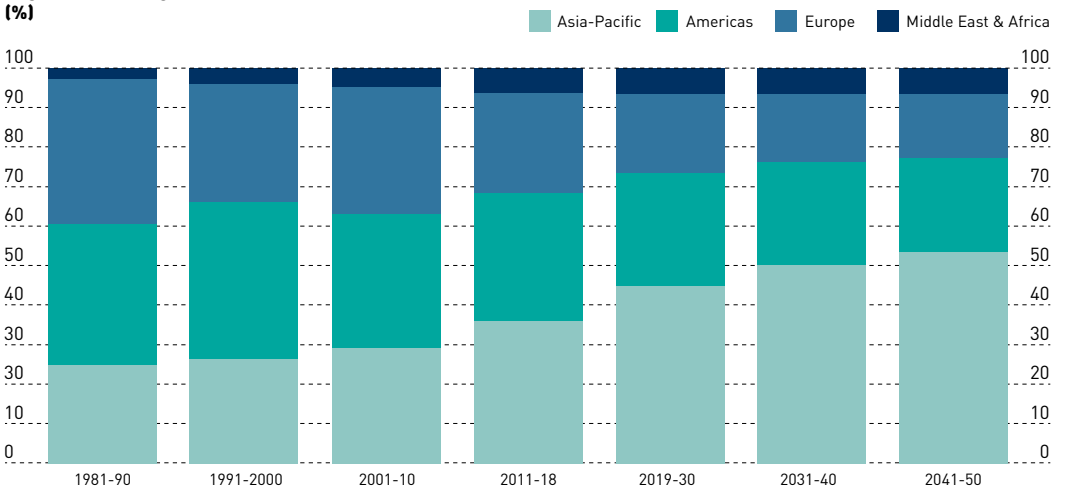
103 Stewart Patrick, "World Order: What, Exactly, are the Rules?" The Washington Quarterly, Spring 2016, pp. 23-24, https://twq.elliott.gwu.edu/sites/twq.elliott.gwu.edu/files/downloads/TWQ_Spring2016_Patrick.pdf.

ESTIMATED GDP FOR THE LARGEST 20 ECONOMIES IN 2030 (IN BILLIONS CURRENT US DOLLARS).

COUNTRY	2030
China	34,338
United States	32,996
India	10,133
Japan	5,087
Germany	4,720
United Kingdom	4,622
South Korea	3,532
Brazil	3,368
France	3,311
Canada	2,750
Indonesia	2,560
Russia	2,431
Italy	2,393
Mexico	2,390
Australia	2,049
Saudi Arabia	1,848
Spain	1,775
Turkey	1,620
Philippines	1,213
Netherlands	1,176

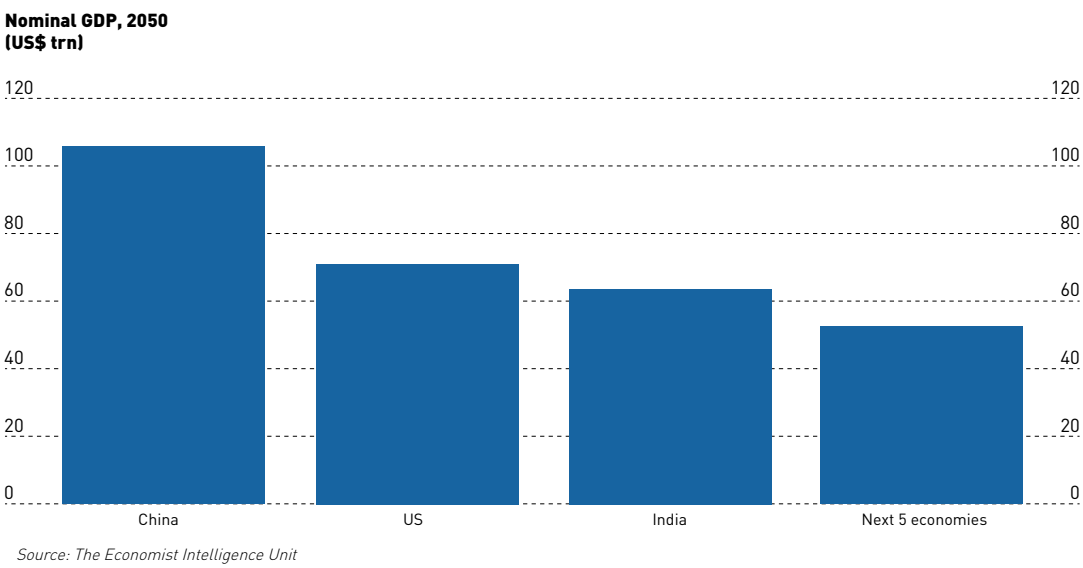
Sources: Source: Centre for Economic and Business Research, December 2015.

Over time, economic power will also be consolidated in Asia, replicating the situation three centuries ago, when China and India were the biggest economic powers in the world, and the center of the global economy was in the East.



Source: The Economist Intelligence Unit

Over a longer term, one could also see a concentration in just three countries:



Source: The Economist Intelligence Unit

PART 3
Alternative Futures

CHAPTER 9

THE BIG PICTURE

The breakdown of the post-Cold War political and security order is irrevocable. Not only are there new powers—particularly China—that do not share the West's vision of a liberal order, but Western publics themselves have turned against globalization, which has been the overall megatrend of the past three decades. The geopolitical landscape ahead will be much different. The best case is looking at multipolarity with limited multilateralism. In the worst case, that multipolarity evolves into bipolarity with China, Russia, and their partners pitted against the United States, Europe, Japan, and other allies. In that scenario, conflict would be almost inevitable.

Besides the tectonic shifts at the geopolitical level, the technology revolutions have changed, and will continued to upend, everyday life for most everyone. Three decades after its popularization, the Internet is a fact of life that no one can live without. The doubling of computing power every eighteen months, combined with the ubiquity of the Internet, has opened up wide possibilities for other technologies—to the point of a third or fourth industrial revolution, depending on how one counts the historical precedents. This communications revolution—based on the Internet and its spread—has spurred globalization, making the world into a village in which everyone across five continents can see how others live in real time.

Ironically, one of the impacts of the accelerating technology revolution has been to increase inequality and, as with past technology revolutions, helped spur a backlash against it and globalization. More than previous technological revolutions, the speed, wide scope, and rapidity of the disruptions to jobs and livelihoods means that there are now many who believe they have lost despite all the improvements in everyday consumer products, medicine, and other services and products.

The emerging technologies are only at the cusp of their development; the new discoveries and knowledge cannot be reversed. But the political and social responses to the new technological developments are not as linear as once thought. In the early days of globalization and technological breakthroughs, the thinking was that each would reinforce each other. Two decades later, it is becoming evident that that is not true anymore. The earlier World Wide Web could be broken up. China's firewall is maybe the first indication of that segmentation. The Atlantic Council's Cyber Statecraft Initiative has examined four possible futures for the Internet, several of which radically differ from the vision the founders had for an open and bottom-up vehicle for enlightenment and individual enrichment.[104]

In the first scenario, the Leviathan Internet, "there is no longer a single global Internet but a series of national Internets dominated by sovereign governments (and particularly their national security apparatuses). Information technologies are more useful to governments to keep track and control over citizens than vice versa."[105] In this scenario, "some nations, like Russia and China, choke off their national borders so that all information—and attacks—has difficulty penetrating."[106] But, there could be gradients and variants, such as a Schengen Internet, "in which different trade blocs have their own 'free exchange' of bits and bytes."[107] The surprising result in the modeling the author did was that "the impact on the economy is modest."[108] There can still be continuing growth of GDP and productivity, albeit well below optimal levels.

Key Trends Coloring Outcomes

The scenarios below seek to capture the diversity and complexity of possible futures while, at the same time, understanding why trends are now driving particular outcomes. While initial trends drove homogenization and an aping of Western models, some of those same trends—in combination with others—are leading to a fracturing of domestic social and political orders, and of the broader global

104 Atlantic Council, Risk Nexus, p. 20.
105 Ibid.
106 Ibid.
107 Ibid.
108 Ibid.

system. This is despite the fact that the world is still economically interdependent. And cooperation is needed more than ever to manage the big global challenges of climate change, state failure, economic backwardness, and conflict.

Given the more fractured environments, this report has detailed three overarching scenarios, or alternative worlds, that appear the most plausible in present circumstances. In two out of the three, the more fractured environment does not impede all cooperation. In the third, the world slides into a situation in which conflict is the likeliest outcome. The author would have wished to construct a set of more optimistic scenarios, such as one in which East-West differences are submerged and a new, more cohesive global order is born. However, while it would be nice to see that happen, the chances appear slim in the next two decades. These three scenarios are the best and most appropriate ones for planning purposes. By all means, the US government and others should be thinking about how to maximize global cooperation and minimize the scope for conflict. Slipping from the first scenario to the second would be a disaster for humanity.

The last two scenarios have been included to highlight particular subthemes. Aging is a historically new trend, which most social, economic, and political institutions are not constructed to reflect. To avoid bankrupting current social-welfare systems and disadvantaging future generations, nations will need to rethink education, careers, retirement ages, economic growth potential, and numerous other institutions and practices all have taken for granted. It is time for these nations to spend some time thinking about how they are going to manage aging.

Urbanization—which is now sweeping the world—presents huge advantages for countering some of the more negatives trends that are taking a hold more broadly. Cities are places of higher growth. Many are more diverse, with higher levels of different ethnicities, religions, and nationalities than in the rest of society. They are also places where youths head in search of opportunities. Cities are where new technologies are often born and tried out. Cities have the potential to be highly resource efficient at a time when resource scarcity, particularly water, is increasing.

Both the aging and urbanization trends demand special attention; they are significant factors impacting the broader course of global development portrayed in the first three "alternative worlds."

Alternative Scenarios

1. **Fragmented World** is the base-case scenario, linearly projecting the current trajectory. In this scenario, globalization would slow appreciably, but not die. The author would expect that TPP and the TTIP would not be passed. Protectionist forces would strengthen, but not dominate. There would be little forward movement on free trade, but limited backsliding. The one area where protectionist forces would prevail is on immigration policy. Borders along the EU's outside perimeter would harden. There would be no repeat of German Chancellor Angela Merkel's open asylum policy. After two years of negotiations, there would be a soft Brexit deal, allowing the UK access to the single market. However, the UK would have to adhere to the EU rules—except those regarding free movement, for which the UK would set its own policies. There would be limited effort to end the Middle East conflicts and, in the event of a peace, Western governments would have difficulty getting public support for marshaling large-scale peacekeeping efforts. Iraq and Syria would likely remain failing states, and relative safe havens for terrorist groups. The conditions for a large-scale war between Sunni and Shia powers would largely remain. Saudi Arabia would find it more difficult to reform in this more restrained growth scenario. Global cooperation between the West and the emerging powers would continue on selected issues, such as climate change. Seeing a more inward West, Russia and China might feel less threatened, and their defensiveness could ease. For the Chinese, a less assertive United States on the world stage might give them hope that they could strike a deal with the United States on South China Sea, as neither is interested in, nor in a position to risk, an open conflict.

2. With the growth of inward-looking regional blocs and global cooperation being so tenuous, there is always the risk that **Fragmented World** gets catapulted into a **New Cold War** scenario. US isolationism and the protectionism of the 1930s increased distrust and suspicion, and laid the groundwork for the outbreak of the Second World War. Nazi Germany and Imperial Japan miscalculated Allied reaction to increasing aggression. A Russia, China, or Iran that sought its own revisionism with a slowly declining

Fictional Interlude: Will Nonstate Actors End Up More Powerful than States?

In Ken Liu's fictional story, "Article I, Section 8, Clause 11," US Senator Andersen is struggling to find a way to respond to Russian moves to absorb Donetsk and Luhansk, and increased Chinese cyber espionage.[109] Andersen introduces a "controversial law to authorize civilians to 'hack' on behalf of the United States." The proposed legislation is entitled "The Helping American Computing Knowledge and Networks Evade Exposure and React Act". It harks back to a time when you could get "a letter of marque from king," allowing privateers with permission to seize merchant ships from other countries as prizes. As the fictional Senator explains, "We have a system that will prevent abuses. Letters of marque granting immunity from prosecution will only be issued to companies and individuals who register with the government and undergo training... We are already at war... It's just that war is limited and fought with computers and brains instead of missiles and soldiers on the ground..." Overnight, Russia and China stop their cyberattacks. Furthermore, the new privateers turn the tables on US foes in Burma and Taiwan. In Taiwan, the once-moribund independence campaign suddenly gets an infusion of campaign funding that allows it to wage a better campaign, attracting high levels of support. The private "hackaneers" had robbed, blackmailed, and extorted members of the Chinese Politburo. They had "stolen the money for the cause" and "had been smart enough to hide behind layers of identity-obscuring accounts..." There was poetic justice in using Chinese funds obtained by corruption to secure the freedom of Taiwan, was not there, according to the Senator.

West might come in for a rude awakening. Certain sets of conflicts—China vs. the United States, Russia vs. NATO, or Western and Sunni powers vs. Iran, Russia, and China—would greatly accelerate the breakup into bipolar camps. A United States that slaps high tariffs on Chinese goods, breaks with its EU and NATO partners, and picks a fight with its neighbors over immigration could also trigger a more rapid reversal of globalization, and the ending of multilateral cooperation. Nations in any variant of this scenario are likely to slap economic sanctions on one another, if not indulge in more kinetic varieties. Cyberspace would be turned into a key battleground, where states and terrorist groups would seek advantage by sabotaging key infrastructure in each other's territories. There would be always the chance that hybrid warfare would escalate into full-scale conventional or nuclear exchange.

3. One is so used to thinking of a bipolar division in which the United States and China are on opposing sides. It is worth thinking about the possibility of **Strange Bedfellows**, in which states are forced to band together to counter the growing power of terrorist and criminal groups greatly empowered with high-tech weaponry, such as cyber and biotech. In a high-tech world in which the bar to entry has been lowered, and the focus of terrorist groups turns from high-casualty events to disabling critical infrastructure, the fight might turn into one between state and nonstate actors. It would be in all states' interests to see high-tech capabilities under their control. Suddenly, the world would see state-run labs have monopolies on bio or cyber. This would be close to a Hobbesian world in which security, much more than economic growth, becomes the overriding goal for all regimes. While states may still worry about threats from each other, there would a big incentive for them to cooperate on a selected basis against nonstate targets, mitigating their differences elsewhere.

Each of the above worlds would be colored, if not driven, by two key social and economic trends:

A. In an Ageless World, life expectancy keeps galloping ahead of the conventional domestic structures. Few thought life expectancies would reach the high seventies and eighties, not to mention ninety or so—which it is likely to be in advanced economies by 2035. Key questions include: How to pay for pensions and healthcare programs when increasing proportions of societies are no longer working age and are recipients, not contributors to those programs? Similarly, how to educate workers who may have to end up working fifty-year careers instead of the usual thirty or thirty-five years? The education they would receive in their teens and early twenties could not possibly carry them throughout their careers,

109 Cole (editor), War Stories from the Future.

not with the rapid rates of technological change. Aging and aged societies also tend to be conservative ones. This was seen in the recent Brexit vote, in which the older one was, the more likely they were to vote for leaving the EU, while the opposite was true the younger one was. A rapidly aging world would favor a more inward, less globalized world. On the other hand, it could also be less likely to go to war. Wars are more likely to be fought when there is a youthful demographic profile. In this scenario, there is an added element of blurring of age. Older members of society, enabled by better health, can and will have to work longer. Breakthroughs in human enhancement will help older workers resharpen their mental abilities, making them better able to master new technologies. The biggest difference between young and old in this scenario would be wealth and income, with more of both concentrated in the older generation. An ageless world—while more homogenous—may not be without its social tensions. Over time, more intergenerational distribution of wealth may become the norm, in order to avoid an escalation in social tensions and a dangerous burst of youthful frustrations.

B. Urban Oasis may be another feature, adding to the fragmentation in the first scenario and moderating any bipolar divisions in the second and third. As in the Middle Ages, cities are rapidly the sites of technological development and sources of economic growth. Youths are attracted to cities because of these economic opportunities. For as long as cities have been in existence, they have been the places where there is the more diversity and greater acceptance of the foreign or other. In the Holy Roman Empire, cities sought a special "free city" status, allowing them to set their own rules. Traders could thrive there, where elsewhere they were overly taxed, discriminated against, or in fear for their lives. In the most stressful international environments, major cities would band together in a modern-day Hanseatic League, maintaining levels of cooperation on technology, resource management, and free exchange of people and immigration. As in the Middle Ages, the major cities may never be able to prevent the downward spiral of regions into conflicts, but they could act as sources for regeneration or renaissance. Given that metropolitan cities encompass many more people than ever before in history, their clout would be greater, and could be more efficacious in braking the slide into full-scale protectionism or state-on-state conflict.

ABOUT THE
AUTHOR

Mathew Burrows serves as director of the Atlantic Council's Strategic Foresight Initiative. His recent book is entitled *The Future Declassified: Megatrends that Will Undo the World Unless We Take Action* (Palgrave/ Macmillan, published 9 September 2014). In August 2013 he retired from a 28-year career in the CIA and State Department, the last ten being spent at the National Intelligence Council (NIC), the premier analytic unit in the US Intelligence Community. In 2007, he was appointed Counselor which is the number three position in the NIC and was responsible for managing a staff of senior analysts and production technicians who guide and shepherd all NIC products from inception to dissemination. He was the principal drafter for the NIC publication Global Trends 2030: Alternative Worlds, which received widespread praise in the international media. He also drafted two earlier editions of the report. Burrows joined the CIA in 1986, serving as analyst for the Directorate of Intelligence (DI), covering Western Europe, including the development of European institutions such as the European Union. From 1998 to 1999 he was the first holder of the Intelligence Community Fellowship and served at the Council on Foreign Relations in New York. Other previous positions included assignments as special assistant to the US UN Ambassador Richard Holbrooke (1999-2001) and deputy national security advisor to US Treasury Secretary Paul O'Neill (2001-02). He received a BA in American and European history in 1976 from Wesleyan University and a PhD in European history from the University of Cambridge in 1983.

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