



*cutting through complexity*

GOVERNMENT

# Future State 2030:

The global megatrends  
shaping governments

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# About the Mowat Centre

The Mowat Centre is an independent public policy research centre located at the School of Public Policy & Governance at the University of Toronto. The Mowat Centre is a non-partisan, evidence-based voice on public policy. It undertakes collaborative applied policy research, proposes innovative research-driven recommendations, and engages in public dialogue on Canada's most important national issues.

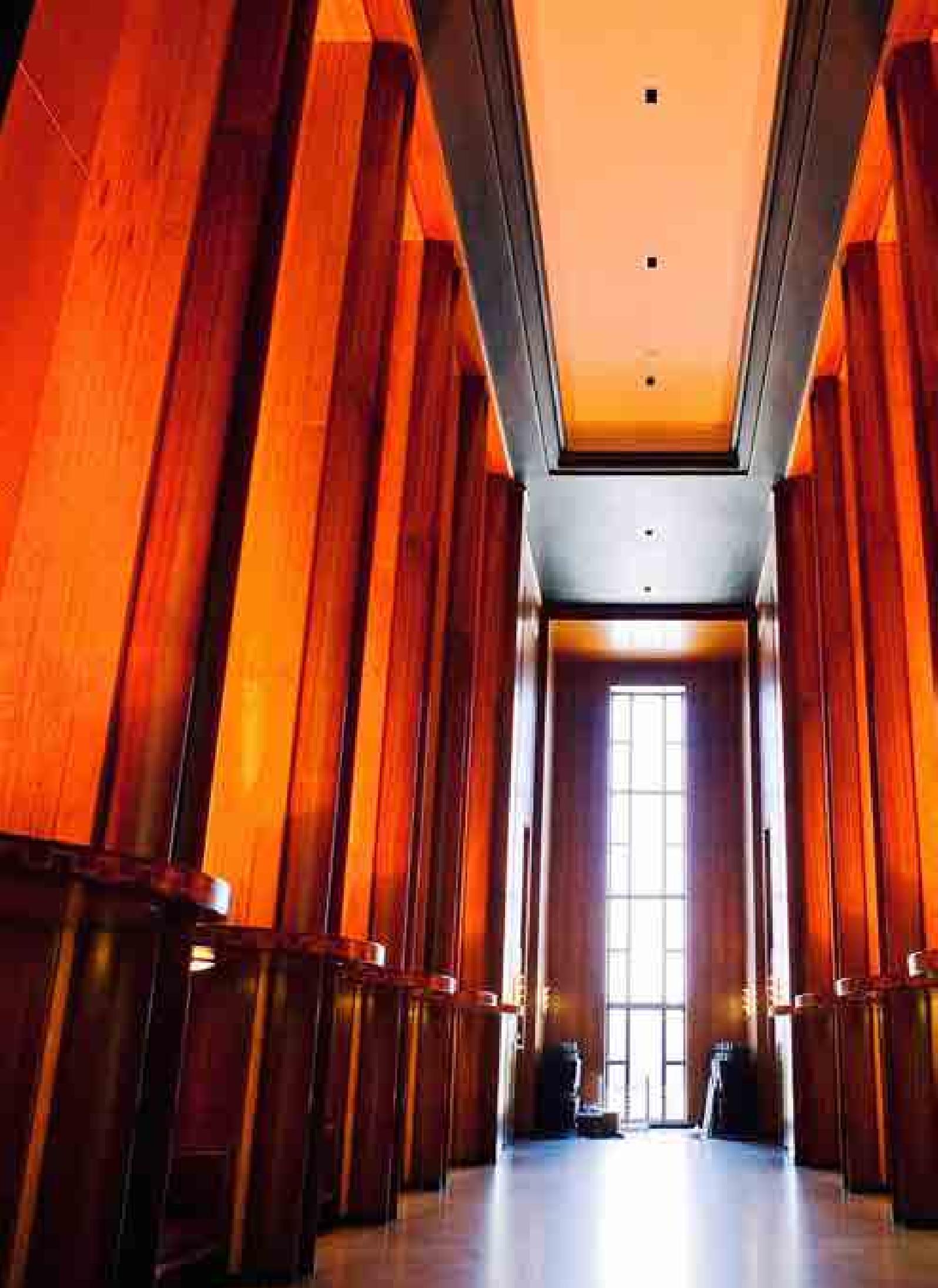
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# Foreword

Major global forces taking shape today will significantly impact the business landscape for the public and private sector through to 2030. While global megatrends have been documented on a macro scale, KPMG International wanted to delve more deeply into the implications for national governments and public sector policy makers and thus engaged the Mowat Centre at the School of Public Policy and Governance, University of Toronto, to conduct targeted research. What we found will help guide important conversations over the next few years.

The findings identify nine global megatrends that are most salient to the future of governments and their core responsibilities of economic prosperity, security, social cohesion and environmental sustainability. While their individual impacts will be far-reaching, the trends are highly interrelated. Therefore, governments will need to consider and evaluate their impacts both in isolation and in combination. We present possible options for governments to consider using the core tools available – policy, regulation and programs – as well as the strategies, structures and skills that future governments will need to have in place to achieve the characteristics of a ‘leading practice’ government in the future.

Our report suggests that appropriate strategies for future success will include greater cooperation in the international arena, promoting behavioral change in citizens and an increased focus on proactive measures to mitigate the worst of the impacts. Governments will be characterized by a shift towards becoming more integrated, outward focused and making better and greater use of technology. Concerted capacity development in evidence-based policy development and stakeholder management will be essential to making the most of opportunities and managing risk in a changing world.

There is not a unique path that all governments should follow. While this report is global in nature, the impact of each megatrend at the local level, coupled with the needs of countries of varying sizes, different stages of economic development, governance models and a host of other factors, will invariably demand different approaches.

**Future State 2030** is the first in a series of important conversations that we want to have with government organizations over the next few years. Ultimately, the report serves as an evidence-based summary designed to stimulate thinking about the future. We are excited about the many benefits that Future State provides and encourage you to contact your local KPMG member firm to discuss how the global megatrends will play out in your jurisdiction.



**Nick Chism**  
Global Chair  
Government & Infrastructure

Throughout this document, “KPMG” [“we,” “our” and “us”] refers to KPMG International, a Swiss entity that serves as a coordinating entity for a network of independent member firms operating under the KPMG name, and/or to any one or more of such firms. KPMG International provides no client services.

# Executive summary

## The global megatrends impacting governments and citizens alike into 2030

### 1 Demographics

Higher life expectancy and falling birth rates are increasing the proportion of elderly people across the world, challenging the solvency of social welfare systems, including pensions and healthcare. Some regions are also facing the challenge of integrating large youth populations into saturated labor markets.

#### Citizen questions to government:

Will I have a pension when I am old and will it be sufficient for me to live on?

How will we ever find enough jobs for our youth?

### 2 Rise of the individual

Advances in global education, health and technology have helped empower individuals like never before, leading to increased demands for transparency and participation in government and public decision-making. These changes will continue, and are ushering in a new era in human history in which, by 2022, more people will be middle class than poor.<sup>1</sup>

#### Citizen questions to government:

What is government doing to improve services for me? And how will they keep me better informed?

How will government protect my privacy and security in the information age?

### 3 Enabling technology

Information and communications technology (ICT) has transformed society over the last 30 years. A new wave of technological advances is now creating novel opportunities, while testing governments' ability to harness their benefits and provide prudent oversight.

#### Citizen questions to government:

What work will my children be doing by 2030?

How do I keep evolving my skills to ensure that they are relevant?

### 4 Economic interconnectedness

The interconnected global economy will see a continued increase in the levels of international trade and capital flows, but unless international conventions can be strengthened, progress and optimum economic benefits may not be realized.

#### Citizen questions to government:

How will governments help us compete?

What is government doing to ensure that my bank is safe?

## 5 Public debt

Public debt is expected to operate as a significant constraint on fiscal and policy options through to 2030 and beyond. Governments' ability to bring debt under control and find new ways of delivering public services will affect their capacity to respond to major social, economic and environmental challenges.

### Citizen questions to government:

How will government (in developed countries) restore budgets and ultimately pay down debt in times of slow growth?

How is government balancing the need to reduce debt against the need to stimulate growth?

Why am I paying for previous generations' excesses?

## 6 Economic power shift

Emerging economies are lifting millions out of poverty while also exerting more influence in the global economy. With a rebalancing of global power, both international institutions and national governments will need a greater focus on maintaining their transparency and inclusiveness.

### Citizen questions to government:

How is government adjusting to a new economic world order?

How will government manage foreign ownership of corporations to ensure all benefits are received?

## 7 Climate change

Rising greenhouse gas emissions (GHGs) are causing climate change and driving a complex mix of unpredictable changes to the environment while further taxing the resilience of natural and built systems. Achieving the right combination of adaptation and mitigation policies will be difficult for most governments.

### Citizen questions to government:

Is government doing enough to reduce carbon dioxide (CO<sub>2</sub>) emissions in our country?

How will government help maintain affordable insurances and asset protection for my home and business as weather gets more extreme?

## 8 Resources stress

The combined pressures of population growth, economic growth and climate change will place increased stress on essential natural resources (including water, food, arable land and energy). These issues will place sustainable resource management at the center of government agendas.

### Citizen questions to government:

How will government ensure that we have sufficient water for our future needs as demand exceeds supply?

What is government doing to guarantee that my children have sufficient food, water and energy?

## 9 Urbanization

Almost two-thirds of the world's population will reside in cities by 2030.<sup>2</sup> Urbanization is creating significant opportunities for social and economic development and more sustainable living, but is also exerting pressure on infrastructure and resources, particularly energy.

### Citizen questions to government:

How can government plan for infrastructure better so that it is timely, effective and sustainable?

What is government doing to get rid of poverty in my city?

## The key changes indicated by the megatrends

**M**egatrend pressures will necessitate numerous and varied changes. Looking across the individual implications of the nine megatrends, both in terms of what and how governments may need to change, key themes emerge as summarized below. While these hold true globally, inevitably each country will need to determine the relevance of these changes at a local level. For more information, please refer to the detailed analysis starting on page 52.

**Figure 1:** Summary of potential key changes arising from the megatrends

### What governments need to change?

#### Policy, including the expansion of:



- national governments' engagement in international, regional and jurisdictional forums to address interconnected issues
- the quantity and quality of evidence-based policy which uses high-quality data assisted by strong data analytics.

#### Regulation, including shifts that seek to:



- encourage behavioral change among citizens to mitigate and manage downstream megatrend impacts (where policy and program changes have been ineffective)
- enforce market practices to align with government policy priorities and choices, including controls over the extent and form of any foreign investment.

#### Programs, including shifts that seek to:



- minimize costs to governments by reducing unit costs/prices, reducing unit demand and/or capping total demand for government services
- take a more holistic long-term view of infrastructure systems, encompassing both hard and soft infrastructure.



## How governments need to change?

### Strategy changes include greater focus on and use of:



- long-term planning and scenario exercises including long-term economic forecasts and critical infrastructure renewal assessments
- behavioral insights to encourage people to act in ways that will reduce pressures on social support systems
- outcomes and metrics to help ensure that funds are allocated to cost-effective programs
- flexibility and 'paradigm' thinking as part of policy and planning capacity to address unexpected challenges and opportunities
- technology adoption that is flexible, affordable and timely.

### Structural changes include shifts towards becoming more:



- internationally integrated through active engagement with international partners or increased cooperation with international institutions
- highly integrated through more connected-up policy arrangements within and across relevant policy domains
- locally empowered with greater funds and authority given to cities to meet their responsibilities
- networked through meaningful collaboration with citizens, other levels of government, neighboring countries, the private and non-profit sectors to sustain key areas of government service delivery
- flexible and adaptive in planning to facilitate greater risk taking and more timely responses to unanticipated situations.

### Skills needed include greater capabilities and capacity in:



- international awareness, including knowledge of global trends and their impacts, to factor into decision-making processes
- financial sophistication with a deep knowledge of highly integrated international capital markets
- systems thinking to understand the potential benefits and risks of technology developments and undertake effective technology road-mapping
- effective stakeholder engagement, including the use of new communication channels such as social media
- risk assessment and change management to address complex risk issues.



# Introduction

The world is changing rapidly. Technology is connecting people within and across national boundaries and disrupting existing assumptions. Mounting public debt is limiting the scope of governments to act in a range of policy areas. Climate change is increasing the frequency and magnitude of extreme weather events. And more than at any point in human history, we live in a world where events and decisions in one part of the world can influence lives at the opposite end of our planet.

Recognizing that these changes are already underway, KPMG International engaged and worked with the Mowat Centre at the School of Public Policy and Governance, University of Toronto, to better understand the megatrends that will have the most significant impact on governments in the years ahead, as well as the changes required to achieve the characteristics of a 'leading practice' government in the future. **Future State 2030** is based on this research and presents cross-cutting observations on the policy, regulatory and program shift options governments may need to consider, as well as the strategies, structures and skills needed to deliver them.

To be clear, global megatrends are not simply the important issues facing governments. While issues differ between countries, megatrends are the larger forces shaping the policy choices available to governments to deal with emerging issues.

- 1) Global megatrends are not short-term issues. They are projected to have relevance for **at least 20 years**, shaping the role of governments into 2030 and beyond.
- 2) Global megatrends are **relevant worldwide**, to nations of different sizes, regions and levels of prosperity.
- 3) The global megatrends identified in this report **are salient to the four core responsibilities of governments**: economic prosperity, security, social cohesion and environmental sustainability. They create new challenges and opportunities for governments and shape the policy and regulatory tools available to them, demanding new responses to deliver on core mandates.

The nine global megatrends identified by the Mowat Centre are rooted in these principles and were refined based on literature review and expert interviews.

While they are highly interrelated, the megatrends can broadly be grouped into trends reflecting changes in the status and expectations of individuals, changes in the global economy and changes in the physical environment.



## The good news

No government can succeed in its core functions without thoughtfully planning for, and responding to, these trends. However, it is important to note that, as will be evident in the forthcoming sections, in certain megatrend areas it is not just a question of the risks posed to governments but also the potential for increased opportunities.

In fact, we believe that all governments will benefit from the explosion in available information and data around the world. This growth in knowledge capital, coupled with advances in technology that enable its rapid dissemination, has the potential to create unforeseeable changes in areas such as medicine, engineering, transportation and agriculture. What's more, these changes are likely to occur at a far more rapid pace than changes in the past several decades. Governments, therefore, need to be equally prepared to take advantage of these opportunities and not focus solely on managing risk.

## Understanding interconnectedness

As the research shows, the nine global megatrends are highly interrelated. While the individual trends won't play out to the same degree in each country, the resulting consequences are inevitably interconnected and reinforce each other in terms of impact.

This relationship is evident when considering, for example, the nexus of issues around changing demographics, resource stress and climate change. Already many of the world's natural resources, such as water, energy and food, are under stress. With expected increases in the general population and a growing middle class, a 50 percent jump in food production will likely be necessary to meet this demand,<sup>3</sup> requiring additional water and energy consumption. Climate change, in turn, may further exacerbate these resource pressures given its potentially devastating and irreversible effects which include the potential for droughts and extreme weather events. Climate change may also impact the global megatrend of urbanization, as the number of people displaced by climate change increases.

Considering the interconnectedness of the megatrend causes and effects, governments will need to undertake a variety of responses to properly address the issues.

For example, with world food stress increasing – through both supply side stress (e.g. climate change) and demand side factors (e.g. rising world population) – net importing nations will need to seek greater certainty over their food supply security through mechanisms like the introduction of stronger regulation. Moreover, with stress events for both energy and food likely to be more prevalent over coming decades – inclusive of their attendant price and volume shocks for national governments to absorb, manage and, in many instances, fund via subsidy arrangements – these resource stress issues will require expanded international engagements to secure the food supply.

Similarly, at both the regional and sub-national government levels where common water resources are shared by multiple governments or multiple jurisdictions, the need for water supply security will also require a combination of responses. These may include multi-national governance of shared resources (e.g. the International Joint Commission's role in managing fresh water in the US-Canada Great Lakes), including agreements for resource sharing in times of duress, programs to build much needed infrastructure and investments in technology to improve efficiency.

In short, the above demonstrates why it is critical that all governments adopt a holistic approach when assessing the implications and subsequent responses most relevant to their jurisdiction.

Case study ▶▶

## The interplay between air conditioning, energy and climate change

With almost 90 percent of American households equipped with air conditioners,<sup>4</sup> the US currently uses more energy for cooling than any other country. As the middle class continues to grow and incomes rise, several developing countries in some of the hottest areas of the world are poised to substantially increase their energy demand for cooling. As climate change continues to put pressure on worldwide energy demand for air conditioning – causing a 72 percent increase by 2100 according to the Netherlands Environmental Assessment Agency<sup>5</sup> – this increase, in turn, will exacerbate climate change issues as air conditioners are the major contributors of GHGs.

## What about security?

In developing this report, increased security concerns through to 2030 were considered as a potential 10th megatrend, given its prevalence in the media and importance to governments as one of their core responsibilities.

However, in keeping with the principles previously identified, security was excluded as one of the global megatrends on the basis that it is evergreen, a constant force that governments must contend with. Still, we believe that world security concerns will continue to play out as a significant influence in world affairs, although it is equally clear that the nature of the threat is changing. For more information, please refer to the Appendix on page 62.

## Analyzing impact: Our approach

In assessing the impacts of the nine megatrends on the future state of government, we believe it is important to look at two important dimensions – what governments may need to change, as well as how they may need to change.

Of course, it is understood that any well-considered changes to government activity should be evidence-based and aligned to the policy priorities of the government of the day. However, for the purposes of our assessment of megatrend-driven consequences, KPMG has adopted the following taxonomies:



## What governments need to change?

**Policy:** Government policy objectives and service delivery aspirations achieved through the capacity to deliver high-quality, evidence-based policy advice and/or to facilitate (non-regulatory) changes to national and state laws (i.e. including tax law). For national governments, policy also includes any sovereign commitments/alignments to international memoranda, treaties, agreements, etc.

**Regulation:** Government policy objectives and service delivery aspirations achieved through regulatory means. This includes self-regulatory arrangements (e.g. as might be applied to certain industries or professions) or licensing arrangements (e.g. electrical) through to more formal regulatory arrangements for key markets (e.g. equity and bond markets) or key industry sectors (e.g. financial and insurance sectors).

**Programs:** Government policy objectives and service delivery aspirations achieved through the specific and purposed provision of program resources both recurrent operational expenditure and capital (capital expenditure). This includes the diverse spectrum of government service delivery activities including borders, defense, education, foreign affairs, healthcare, housing, human services, trade, immigration, infrastructure, transportation, policing, etc.

## How governments need to change?

**Strategies:** The shifts in leadership, vision and planning required to drive strategic change.

**Structures:** The shifts in organizational and delivery arrangements required to enable strategic change.

**Skills:** The shifts in capabilities and capacity to facilitate strategic change.



# Global megatrends

## LEGEND

KPMG has adopted the following taxonomies for our assessment of megatrend-driven consequences:

What governments need to change?



Policy



Regulation



Programs

How governments need to change?



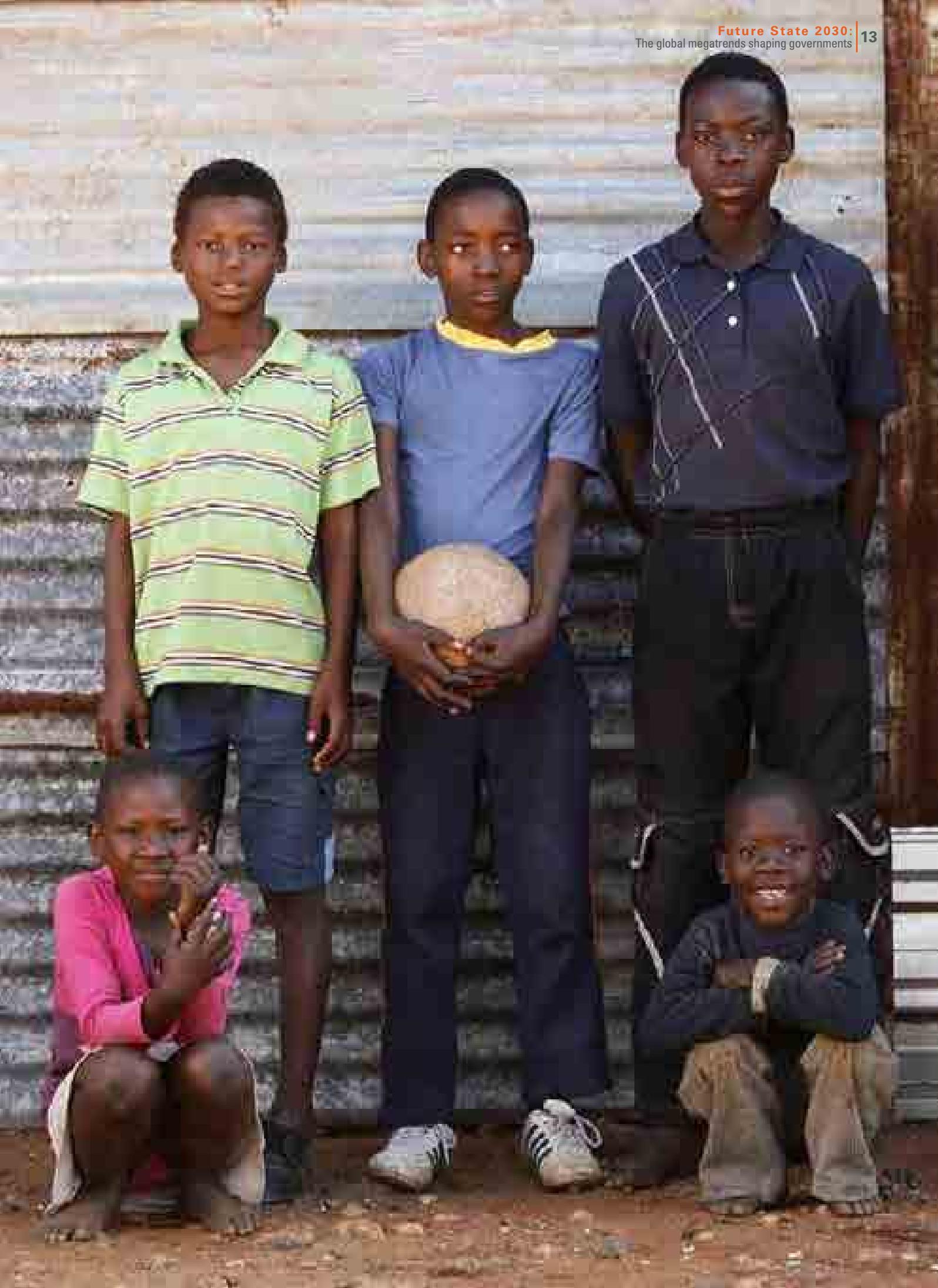
Strategies



Structures



Skills



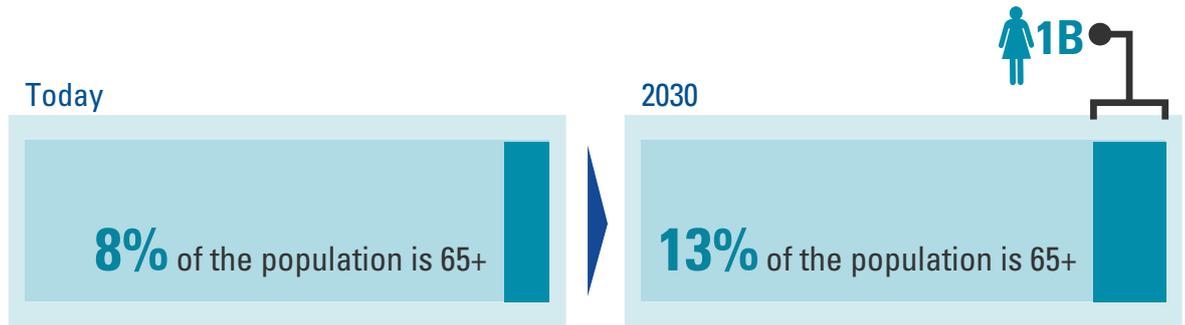
# Global megatrend #1 Demographics

Higher life expectancy and falling birth rates are increasing the proportion of elderly people across the world, and challenging the solvency of social welfare systems including pensions and healthcare. Some regions are also facing the challenge of integrating large youth populations into saturated labor markets.

By 2030, the number of people aged 65 and older will double to 1 billion globally,<sup>6</sup> causing concerns with overall labor market productivity and the ability of existing fiscal systems to withstand the pressures of aging. In contrast, many developing countries are simultaneously experiencing a youth explosion, creating opportunities for 'demographic dividends' for governments that can overcome the challenges of successfully integrating younger citizens into the workforce.

## The evidence of change

By 2030, the world's population of people aged 65+ will double to 1 billion,<sup>7</sup> raising the overall proportion of those 65 and over.



A key contributing factor in population aging is declining birth rates, as measured by the crude birth rate per 1000 people.<sup>8</sup>



From 2011-30, pension spending is forecast to grow an additional:

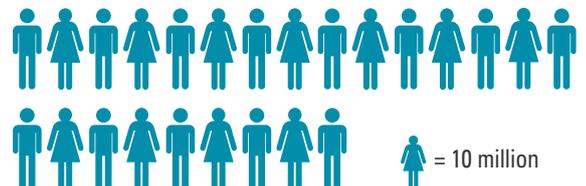


Globally, 15-24-year-olds make up **40%** of the total unemployed population.<sup>10</sup>



**90%** of the global youth population resides in developing countries.<sup>11</sup>

**1 million** young people in India will enter the labor force every month for the next 20 years.<sup>12</sup>





“

We are all – individually and collectively – responsible for the inclusion of older persons in society, whether through developing accessible transportation and communities, ensuring the availability of age-appropriate healthcare and social services or providing an adequate social protection floor.<sup>13</sup>

**Ban Ki-moon,**  
Secretary-General, United Nations

## The consequences of demographics



An aging world



Public pension systems  
under pressure



Healthcare spending  
increases



Youth bulges

## Implications for government

### What governments need to change?

#### Aging world

Governments may need to:

-  • Monitor and further adjust policy settings to accommodate the impacts of aging populations, taking into account health, aged care, social and community-based care, pensions and accessible infrastructure.
-  • Institute pension reforms that address the burden of intergenerational equity, for instance, raising the age of retirement, changing eligibility or changing the tax or service level profile.
- Pay greater attention to instituting, changing or expanding social security and pension reforms so that the burden of aging is both better funded and generationally shared as the situation arises, for instance, adjusting national pension entitlement ages or increasing provision in pension investments.

#### Youth bulges

Governments may need to:

-  • Develop and implement policies that encourage investment from employers, which leads to job creation.
-  • Focus on youth development through human capital investments that improve long-term employability, for instance: vocational education, apprenticeships, training programs and support for private sector firms to invest in staff training and development (e.g. tax incentives for training expenditure).
- Increasingly develop strategies to address and support youth employment. For instance, increased investment in programs that get youth into employment (e.g. welfare-to-work, programs that encourage job sharing and/or entrepreneurialism, etc.) in key economic sectors that are generating employment opportunities.

### How governments need to change?

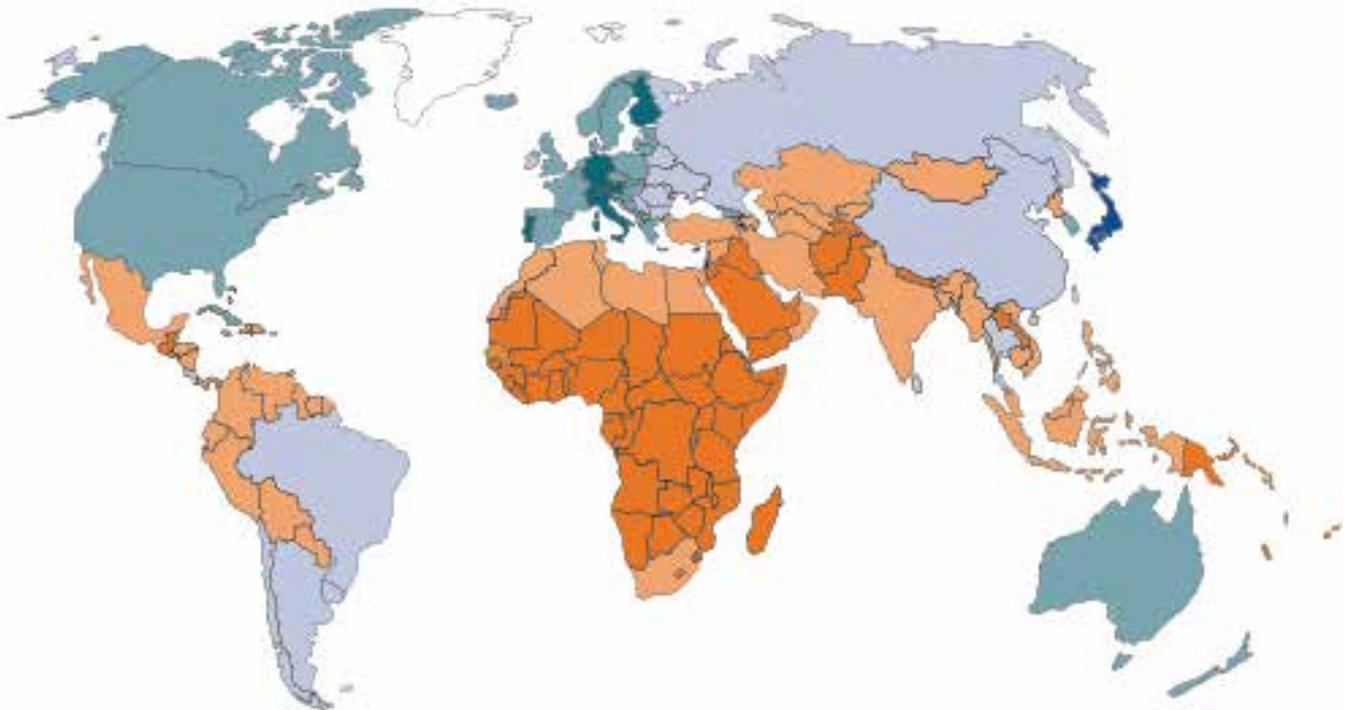
Governments may need to:

-  • Use reliable labor market information (including future demands of the forecast of skills by industry and region) to implement evidence-based policies and programs to better align the demand and supply of skills to meet the needs of employers.
- Develop long-term plans based on robust evidence to balance the needs of current and future generations, for instance, mandatory school leaving age or retirement age.
-  • Engage in closer collaboration with the private and not-for-profit sectors to better provide or bridge the gaps in social security and service delivery and develop innovative education, training and employment opportunities for youth.
- Increase effective collaboration across multiple government agencies to meet the challenges posed by new demographic realities, for instance, co-location and integration of health and social services to meet the needs of aging populations.
-  • Ensure access to increased financial and actuarial higher-order policy skills.
- Improve communication skills, including through social media channels, to garner buy-in from citizens.
- Ensure effective management of third parties (e.g. private sector and voluntary sector engagement) to bring additional capabilities while ensuring that they consider the cost of delivery and the quality of the outcome with an appropriate transfer of risk.

## Old-age dependency ratio in 2030<sup>14</sup>

Ratio of population aged 65+ per 100 population aged 15-64

□ No data	■ 10 – 19.99	■ 30 – 39.99	■ 50 or more
■ Less than 10	■ 20 – 29.99	■ 40 – 49.99	



“ One of the biggest issues facing governments in the first half of the 21st century is intergenerational aging. Its management will require continuous monitoring and policy adjustment. Its impact will place an enormous pressure on the pursuit of economic productivity. Its neglect will destine a nation’s economic growth to years of duress.

**Mick Allworth,**  
KPMG Partner

### Case study ▶▶

## Youth unemployment in South Africa

South Africa’s youth population holds the key to the country’s development prospects over the next 20 years. The government’s National Youth Policy articulates a vision through which the country’s “democracy and its social development approach to public policy creates an enabling environment in which the lives, work and prosperity of young people are placed at the center of the country’s growth and development.”<sup>15</sup> Yet, with between 500,000 and 700,000 new labor force entrants each year for the past 10 years (in a labor market of 16 million),<sup>16</sup> the government has struggled to capitalize on its ‘demographic dividend.’ Today, South Africa leads the world in youth unemployment, with an estimated 60 percent of people aged 15-35<sup>17</sup> who are jobless.<sup>18</sup>

The South African government is implementing a number of initiatives across policy domains and sectors to counter this trend. For example, government-funded public works initiatives have targeted youth participation by setting quotas (e.g. 40 percent for the Expanded Public Works Programme, a funding initiative to increase the amount of service jobs across all sectors of government).<sup>19</sup> To produce incentives for the private sector, South Africa’s Finance Ministry recently proposed a subsidy that would encourage businesses to employ young people.

The government is also committed to providing youth with sufficient education and skills training. Currently, around half of all college graduates remain jobless for at least two years after graduation.<sup>20</sup> In addition to increased funding for improving schools throughout the country and creating more vocational education programs, the government is encouraging work training programs for skill development. For example, the Western Cape Work and Skills Programme connects youth with private companies such as supermarket chains, hotels and food producers for practical trainee opportunities.<sup>21</sup>

Moving forward, continued investments in education and skills training and scaling up of successful policy and program interventions to promote economic growth will determine whether and to what extent South Africa will capitalize upon its demographic dividend.

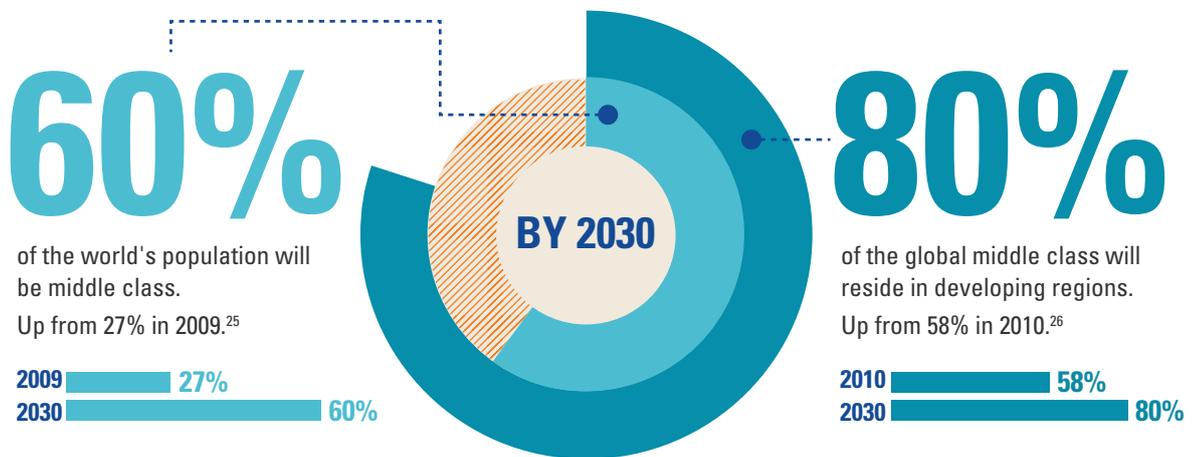
# Global megatrend #2

## Rise of the individual

Advances in global education and technology have helped empower individuals like never before, leading to increased demands for transparency and participation in government and public decision-making. These changes will continue, and are ushering in a new era in human history in which, by 2022, more people will be middle class than poor.<sup>22</sup> Middle class is defined as earning between 10 United States dollars (USD) to USD100 a day.

Today, the global literacy rate is 84 percent,<sup>23</sup> the status of women is improving, millions are being lifted out of poverty and the internet provides a platform to anyone with a connection to be heard and to mobilize. Still, concerns around stable employment, quality and cost of education and access to quality healthcare remain. Inequality is also an issue for governments to carefully monitor. Overall, a focus on investing in girls' and women's education is also critical for eliminating poverty, lessening inequality and driving economic and social development. For example, women's wages, agricultural income and productivity – which are all critical for reducing poverty – are higher where women involved in agriculture receive a better education.<sup>24</sup> Consequently, growing individual empowerment will present numerous challenges to government structures and processes, but if harnessed, could unleash significant economic development and social advancement.

### The evidence of change

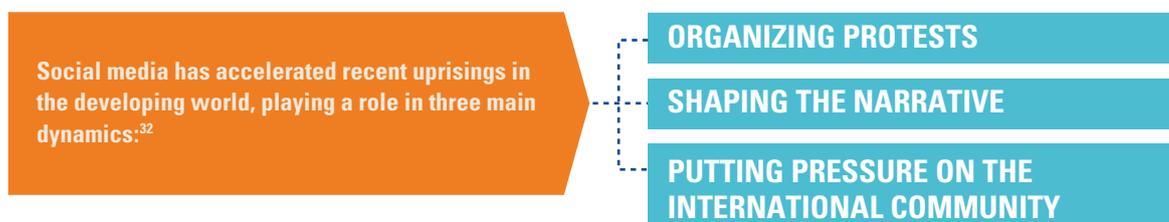
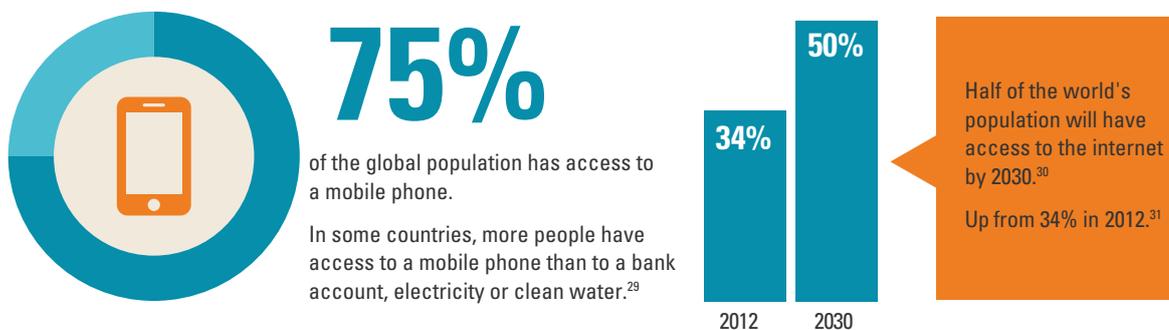


According to the International Monetary Fund (IMF), just having as many women in the labor force as men could boost economic growth by:<sup>27</sup>



While inequality in education and health are declining, income inequality is on the rise and





## The consequences of the rise of the individual



“Citizens are not just demanding technologically advanced interactions with government, but also asking for a new voice.

**John Herhalt,**  
Former KPMG Partner

## Implications for government

### What governments need to change?

Developing country governments may need to:

-  • Address rising expectations for services from a more demanding, more vocal and more connected middle class through more transparent communications and mechanisms such as tax increases or adjusted service eligibility in order to meet demand.
- Re-evaluate income inequality to ensure that all strata of society partake in the benefits of rising economic prosperity.

Developed country governments may need to:

-  • Shift their trade policy orientations and industry assistance programs to better align with emerging growth opportunities such as increasing focus on new emerging middle class markets (e.g. Indonesia and Myanmar).

### How governments need to change?

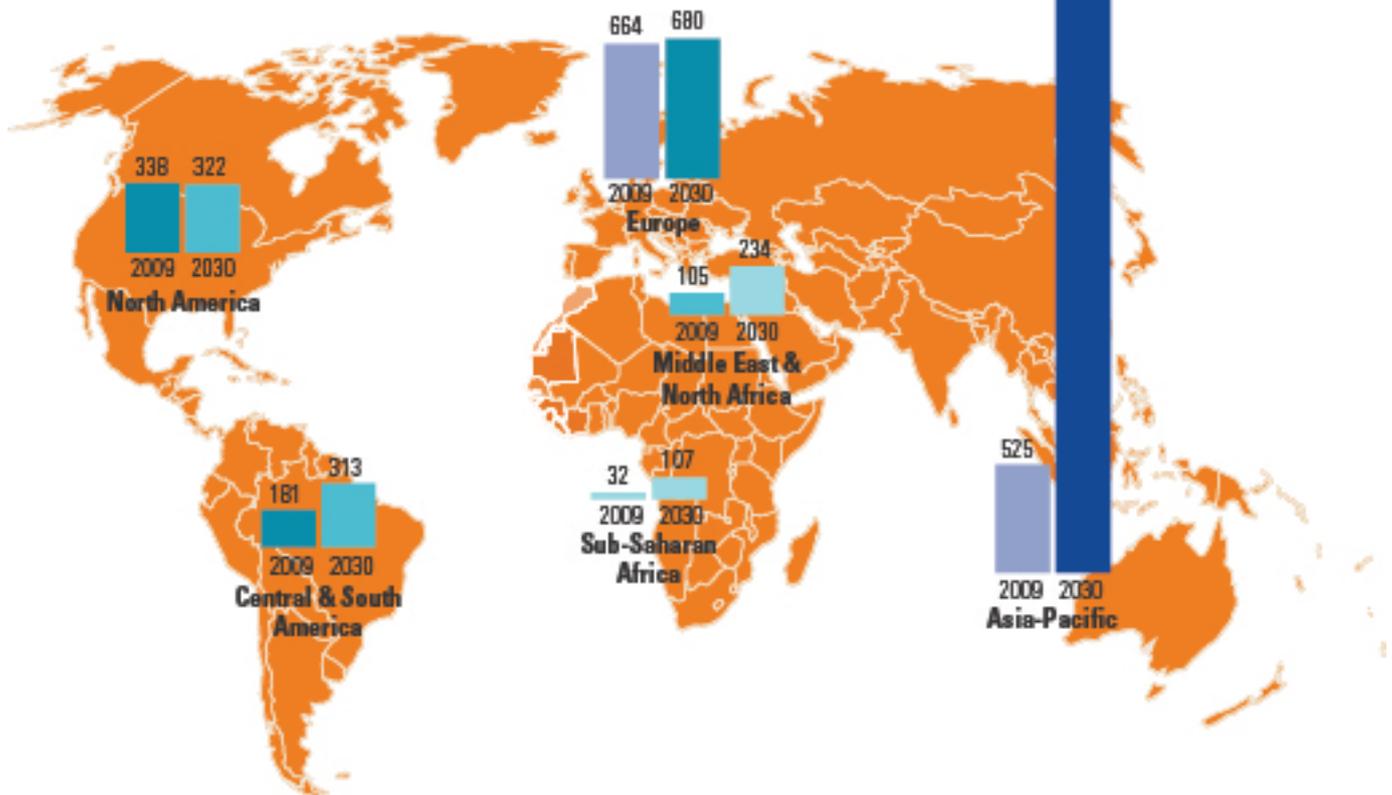
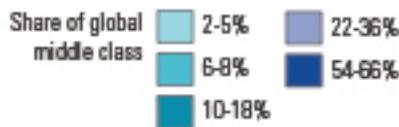
Governments may need to:

-  • Develop a plan that addresses rising demands of the middle class, including increased demand for services, transparency and two-way communication.
- Consider or reconsider progressive tax systems to better balance income inequality.
-  • Establish or update new and/or enhanced structures that reflect middle class demands for new and revised service delivery arrangements.
- Integrate internal structures to focus on the efficient delivery of multiple services.
-  • Improve stakeholder management skills, particularly in the area of social media communications, to better manage an engaged and demanding citizenry.



## Middle class growth to 2030<sup>33</sup>

Size of the global middle class as measured in millions of people



### Case study ▶▶

## A virtual middle class in India

Rising alongside India's growing middle class of 300 million people is a 'virtual middle class' of another 300 million who, though still very poor, are increasingly demanding rights, services and good governance.<sup>34</sup> What's different about this new version of the middle class is that its empowerment is not driven by a rise in income – historically the enabler of middle class expectations – but rather through widespread access to affordable computing and telecommunications technology, which is facilitating connectivity, learning and political engagement.

The ubiquitous spread of mobile phones has been a key factor in this shift. Mobile phones arrived in India in the late 1990s, but were unavailable outside major cities where waiting lists for landlines were still several years long.<sup>35</sup> In a span of just 10 years to 2012, however, the number of mobile phones jumped from 45 million to nearly 1 billion<sup>36</sup> – yet only about a third of the Indian population (366 million people) has access to a toilet.<sup>37</sup> As mobile phone usage grew, so too did its functions. From healthcare text message services to dissemination of best practices in agriculture and other fields, mobile phones are used to improve all aspects of daily life.

Cheap computing technologies are also being leveraged to deliver electricity to remote communities, where nearly 600 million Indians have little or no access to power. For example, Gram Power Inc. provides shops, homes and telecom towers with Gram Power's smart meters. Together these meters form a network that eliminates power theft and payment defaults, while optimizing supply and demand of power. As a result, for less than 20 cents a day, the system offers rural Indians power to operate lights, fans, mobile phones and other home appliances.<sup>38</sup>

As basic needs are increasingly met with the help of technology, lower-income Indians have turned their attention to seeking social justice, equality and a voice. The highly publicized tragic rape and death of a student in New Delhi in 2012 immediately ignited outrage and demands for better governance across income levels in India, fueled by social media, which helped to draw national and international attention. As a result of the protests catalyzed by social media, stricter laws have been enacted, rape cases have been accelerated through a notoriously backlogged justice system, and promises to increase the number of women police officers have been made.

# Global megatrend #3

## Enabling technology

Information and communications technology (ICT) has transformed society over the last 30 years. ICT not only ushered in the information age, but ICT-based technologies have also been instrumental in enabling the research, development and growth of technologies in many other fields such as applied science, engineering, health and transport. Consequently, we have chosen to focus solely on ICT for the purposes of this report, as a new wave of technological advances is now creating novel opportunities, while testing governments' ability to harness their benefits and provide prudent oversight.

The exponential growth in the volume and speed of access to information and communication has numerous effects. It can generate new markets and challenge existing institutions. Unlike some other trends, there are no clear indications of enabling technologies shaping the future of government more so in one region than another. While developed countries may have greater access to many of these technologies at present, many technological innovations provide 'leapfrog' opportunities for less developed countries to capitalize on new and changing markets. For example, regions with no previous dense telecommunications networks, such as Africa, have benefited more than those countries which already had fixed-line telecommunications.

### The evidence of change

Global internet users in 2000:  **360 million**

Global internet users in 2012:<sup>39</sup>  **2.4 billion**

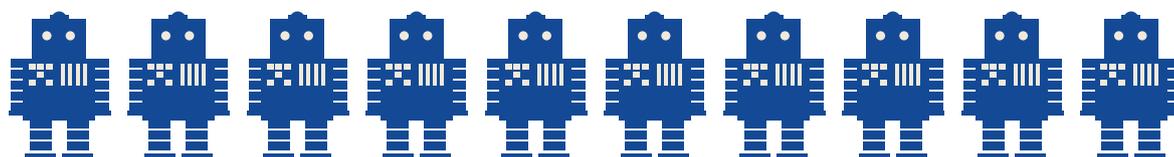
The global value of the 'app economy' is projected to be **USD151 BILLION** BY 2017.<sup>40</sup>



of the digital data in the world today was created in the last two years.<sup>41</sup>

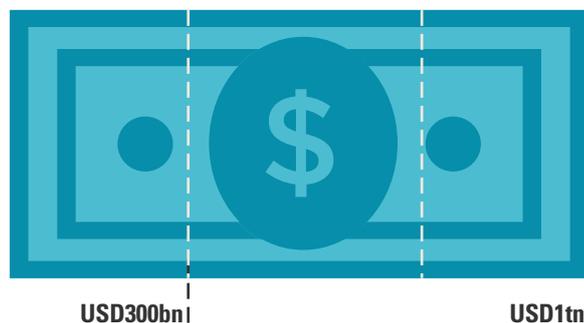
Hon Hai/Foxconn (a major Chinese electronics manufacturer) plans to introduce **1 million robots** into its manufacturing processes in just three years.<sup>42</sup>

 = 100,000



Survival is less certain in a technologically-enabled world, creating major challenges for governments in the areas of economy and employment.

Already, cyber attacks account for USD300 billion to USD1 trillion in global losses.<sup>44</sup>



“In the developing world, many things were just not possible before modern technology – it is often about providing services that were lacking rather than improving the quality of services which were already available.

Trevor Davies,  
KPMG Partner

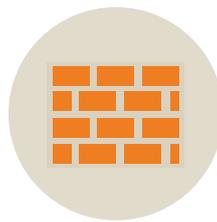
## The consequences of enabling technology



Transformation of communication



Big data



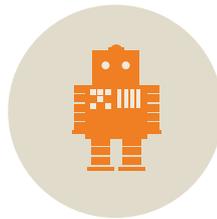
The boundary between what is considered public and what is considered private is blurring



Change of security and policing to focus on dealing with cyber crime



New social service models



A new future for manufacturing



Transportation transformations

## Case study ▶▶

### Cyber security: An emerging threat

The digitization of so many aspects of people’s lives and businesses presents an enormous opportunity for improved efficiency and productivity, but it also presents a significant new type of risk in the form of cyber security challenges. Governments will face pressure to protect their citizens, their own operations and the security of their nations from threats not seen before.

The European Union Institute for Security Studies predicts that “over the next two decades, the cyber sphere is likely to become an arena of conflict and tension between states of all political stripes, not least among those for which cyber security is a key component of intelligence and military strategy, and also between individuals or private companies.”<sup>45</sup> This trend also exposes critical infrastructure to threats from both enemy states and non-state actors in a new manner.<sup>46</sup> Cyber actions can infiltrate nuclear plants or disrupt financial systems.<sup>47</sup> As the security dimensions of global internet connectivity become increasingly salient, the traditional neutrality and stakeholder governance model of internet governance will need to change.<sup>48</sup>

#### Implications and responses

- As threats easily transcend national borders, emerging cyber security threats call for international cooperation and information sharing, especially during a crisis.<sup>49</sup>
- Most countries that have established cyber security as a priority have created some form of coordinating body to manage responses, though the departmental responsibility varies.<sup>50</sup>

## Implications for governments

### What governments need to change?

Governments may need to:

-  • Think, plan and assess more rigorously the impact that enabling technology will have on a nation's economy, industries and markets, including the risks arising from an increased rate of economic, industry or market obsolescence.
-  • Leverage advancements in technology to develop evolved channels of service delivery that are integrated, quicker and more scalable.
- Address higher cycle rates of skills obsolescence with employment and workforce dislocation consequences through re-skilling training programs.

Developing country governments may need to:

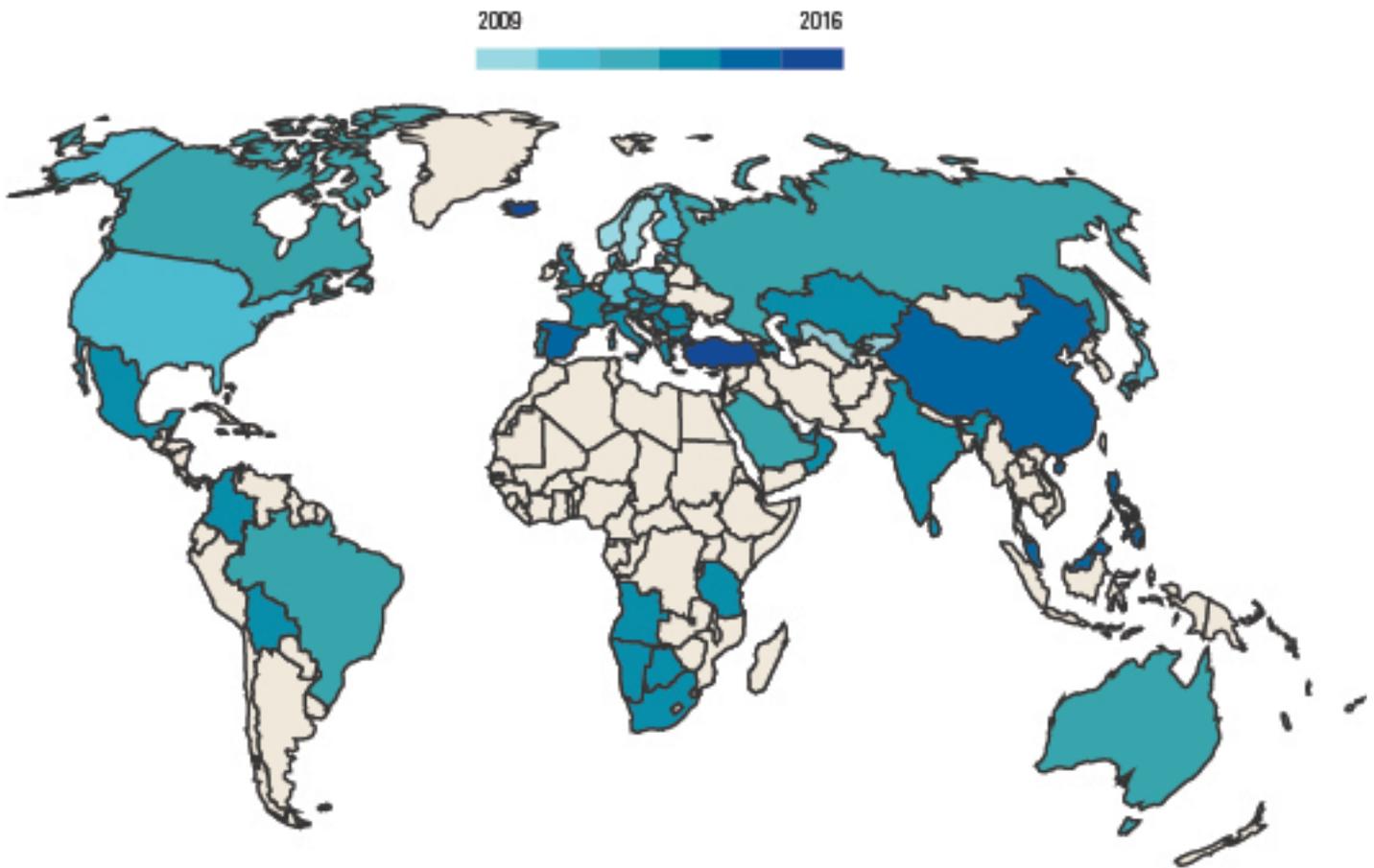
-  • Consider how enabling technology can provide 'leapfrog' opportunities that can bypass intermediate technologies and/or legacy systems.

### How governments need to change?

Governments may need to:

-  • Plan for new and emerging technology impacts:
  - positive impacts require a plan for skill development in new and emerging areas such as the 'app economy'
  - negative impacts require a plan for employment skills obsolescence and workforce dislocation.
- Use big data to extract value out of existing data assets to better inform and target decision-making, service delivery, etc.
- Use new and emerging technology, including social media, to communicate both to and from the citizenry.
- Position themselves as an early adopter of technology rather than a follower, thus requiring a commensurate shift in risk appetite.
-  • Consider structures that facilitate the early adoption of proven technology as a priority. For instance, making the Head of Technology a senior post.
-  • Emphasize training for government executives to increase their awareness of new technologies and innovations.
- Ensure access to leading thinking on new and emerging technologies, technology trends and the relevance to governments, for instance, investing in research institutes attached to leading universities.

## Global heatmap by year of mobile 4G (LTE) deployment<sup>51</sup>



Note: LTE is Long Term Evolution, a 4G mobile communications standard (source: Oxford dictionary).

### Case study ▶▶

## Aadhaar: Unique Identification Authority of India

In India, the Unique Identification Authority is leading a significant effort to use biometric information to create unique and secure government records for its citizens. The goal is to create a 12-digit secure identification for at least 600 million Indians within five years.<sup>52</sup> The impetus for the effort is the tens of millions of Indians without any formal registration document or birth certificate who can use the new Aadhaar unique identifier to access government services or other core services like mobile phones and bank accounts.<sup>53</sup>

However, during its next phase, the Aadhaar program may also be able to act as the foundation for a deeper modernization of Indian public services, if the public sector chooses to embrace the opportunity. For example, Aadhaar numbers are being used as the basis for managing direct cash transfers to the poor,<sup>54</sup> and removing administrative barriers to access a range of other social and private services (such as telecommunications and banking).<sup>55</sup>

If the Indian government is successful in integrating Aadhaar with a wide array of government programs, the benefits to government and society would be substantial. A 2012 study found that the internal rate of return to government on its investments in the scheme would be just over 50 percent in real terms.<sup>56</sup>

# Global megatrend #4

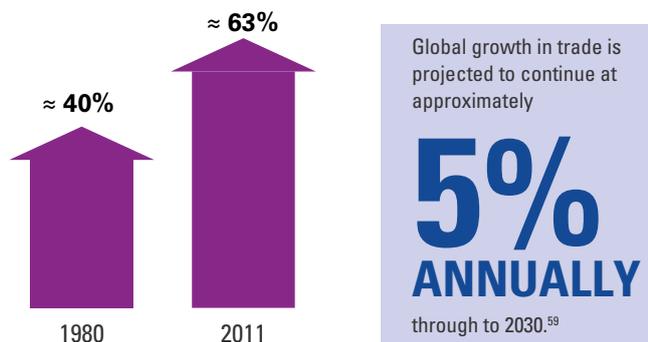
## Economic interconnectedness

The interconnected global economy will see a continued increase in the levels of international trade and capital flows, but unless international conventions can be strengthened, progress and optimum economic benefits may not be realized.

For governments, the trend toward further economic interconnectedness brings significant potential and a major push toward global free trade could shift 650 million people out of poverty over a 10-20-year period.<sup>57</sup> However, there are also new challenges as economies are increasingly connected to risks beyond national borders. These risks not only move quickly, they also defy the scope of national regulation, demanding international cooperation. As the trend toward increased economic interconnectedness is expected to continue, governments throughout the world will need to ensure that they have the policy frameworks in place to capture the benefits of trade and manage the risks.

### The evidence of change

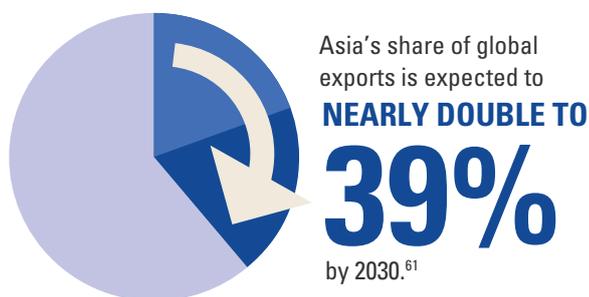
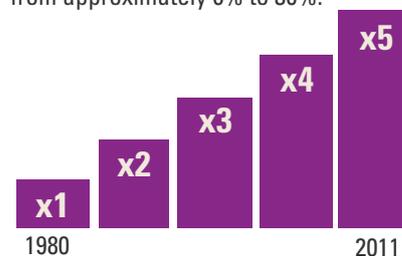
Global trade as a share of GDP increased from:<sup>58</sup>



Global Foreign Direct Investment stocks have

**QUINTUPLED**

as a share of GDP, from approximately 6% to 30%.<sup>60</sup>



of reciprocal trade agreements currently in force have been introduced since 1990.<sup>62</sup>

### The consequences of economic interconnectedness



Trade and investment continue to increase growth



Increasingly complex trade and investment relationships



Declining barriers to trade



Greater risk for international (economic/financial) contagion events

## Implications for government

### What governments need to change?

Governments may need to:

-  • Manage the interconnected risk (contagion) related to the financial sector and market failures while continuing to encourage growth in trade relationships.
-  • Align their national regulatory regimes and systems with international regulatory regimes.
-  • Be more fully aware of the economic impacts arising from interconnectedness, such as tax regime 'arbitrage' and the increasingly global markets for:
  - high-end skills and labor
  - research, innovation and new technologies
  - capital investment flows.

### How governments need to change?

Governments may need to:

-  • Implement strategies to enable better, broader and quicker alignment of national regulatory regimes to international regulatory regimes, and national market supervisory norms to international market supervisory norms.

Developing country governments may need to:

-  • Update their structures such that they are consistent with internationally professional regulatory regimes.
-  • Develop increased skills for aligning national policy based on international agreements.

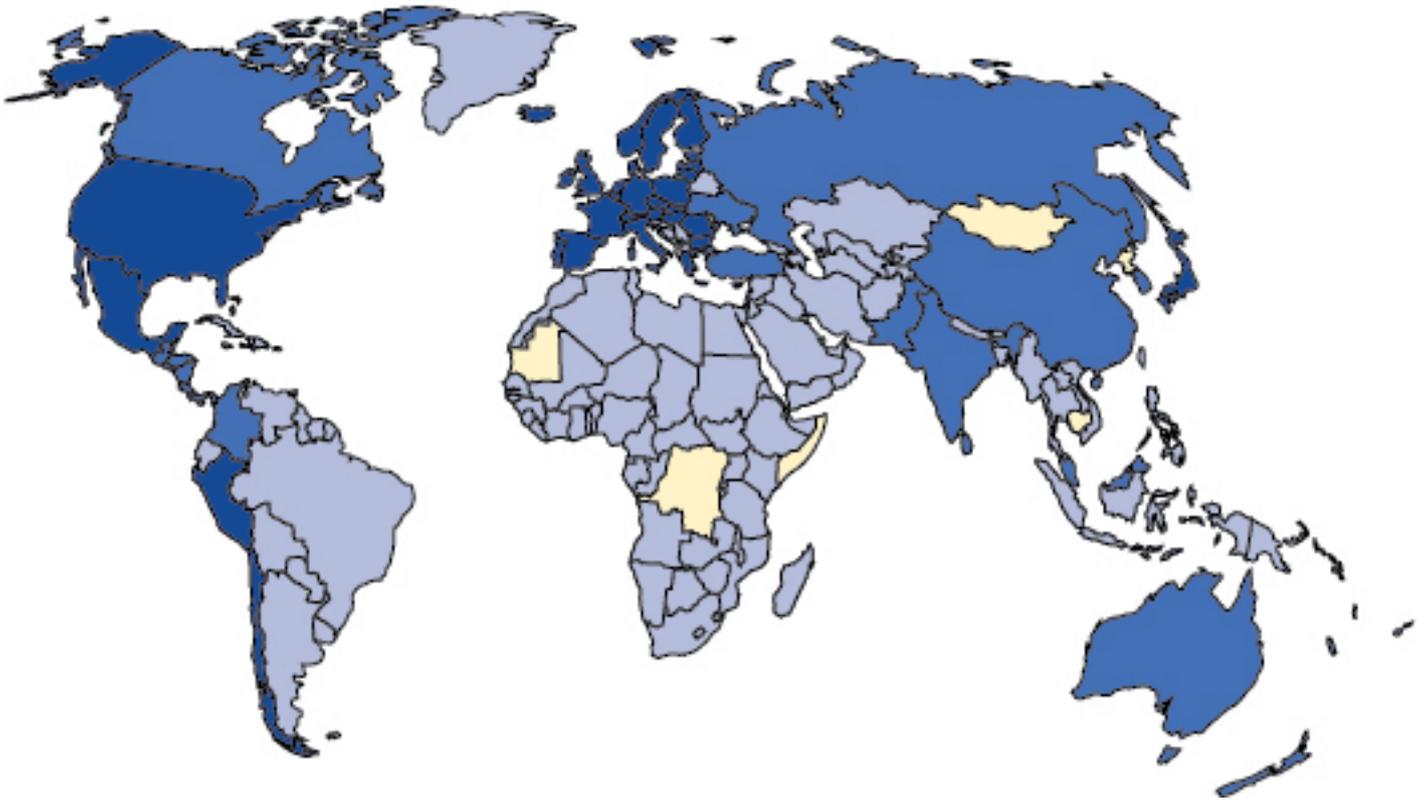


## Participation in regional trade agreements (RTAs)<sup>63</sup>

### World Trade Organization (WTO)

Participation in goods and services RTAs

0 1 40



“

No part of our interconnected world is immune. The crisis is global, and the way out must also be global. By working together, we can make the whole of our policy actions more than the sum of their parts.<sup>64</sup>

**Christine Lagarde,**  
IMF Managing Director

## Case study ▶▶

## Deeper integration: The Trans-Pacific Partnership

The Trans-Pacific Partnership (TPP) is a trade agreement currently under negotiation between 11 countries on both sides of the Pacific (Australia, Brunei, Chile, Canada, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States and Vietnam are currently members, with Japan having recently received approval to join negotiations). The TPP represents the largest 'regional' trade agreement currently under negotiation, though it is not the only one currently in progress – member countries are also involved in the Pacific Regional Comprehensive Economic Partnership, the Pacific Alliance and agreements with the European Union.<sup>65</sup> If Japan and South Korea were to join, as some predict, member countries would represent 40 percent of world GDP and about 27 percent of current world exports.<sup>66</sup> It is a demographically and economically diverse group of countries, with GDP per capita at purchasing power parity ranging from USD3,000 in Vietnam to USD60,000 in Singapore.<sup>67</sup>

The 29 chapters under the TPP negotiation would liberalize trade and goods and services as well as investment well beyond what has been achieved in other previous trade agreements.<sup>68</sup> In addition to tariffs on goods, the agreement would cover services and investment, and traditionally domestic policy areas such as government procurement, intellectual property, agriculture, environmental issues and telecommunications.<sup>69</sup> Regulation of patent protection for pharmaceuticals, for example, see interests in stronger patent protection balanced against interests in access to more affordable generic pharmaceuticals to manage healthcare costs.<sup>70</sup>

The TPP is an ambitious agreement whose impact could have even larger influences on the shape of economic interconnectedness over time. It involves a clear effort to expand the international trade rulebook, and it is open-ended with a goal of expanding membership over time.<sup>71</sup> If, as expected, the TPP launches further growth to a larger trade agreement with broader coverage through the region, it is expected to increase world trade by 12 percent by 2025.<sup>72</sup> The results could be more significant if the groundwork leads to a renewed investment in the WTO framework.



# Global megatrend #5

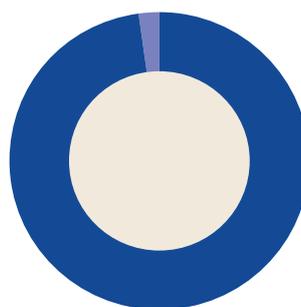
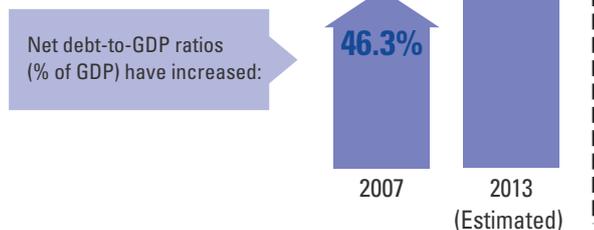
## Public debt

Public debt is expected to operate as a significant constraint on fiscal and policy options through to 2030 and beyond. Governments' ability to bring debt under control and find new ways of delivering public services will affect their capacity to respond to major social, economic and environmental challenges.

As KPMG International research has shown, contrary to widespread belief, today's public debt problems did not simply emerge out of the global financial crisis and the stimulus spending that followed. Most major economies had already amassed sizable debts before 2008 and were posting budget deficits in the five+ years preceding the global financial crisis.<sup>73</sup> This position made the road back to prosperity a much longer one.

### The evidence of change

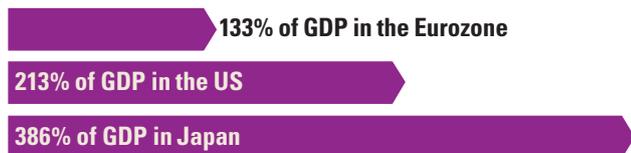
Public debt in developed countries has ballooned over the past half decade.<sup>74</sup>



If current trends continue, global levels of net public debt are set to reach.

**98%**  
of GDP by 2035.<sup>75</sup>

Status quo projections for 2035 would see net debt rise to an average of:<sup>76</sup>



By 2030, population aging will drive up health and pension spending by a projected:

**4.4%** of GDP in developed countries  
**3.2%** of GDP in developing countries.<sup>77</sup>

### The consequences of public debt



Increasingly important international and intergovernmental fiscal relationships



Increased exposure to global market risks



Reduced capacity to address future international economic/fiscal financial shocks



Population aging exacerbating public debt



Limited potential to meet growing demand for new services

## Implications for government

### What governments need to change?

Governments may need to:

- 
  - Particularly in the developed world, focus on restoring government balance sheet health through surplus or balanced budget settings and improved fiscal sustainability settings once world economic growth levels have stabilized. This will inevitably involve both a revenue and expenditure-side assessment.
  - Have tighter and greater control over expenses.
  - Improve fiscal measurement so that separate structural budget settings are readily identifiable from other budget measures. For instance, budgets that are required for nation-building infrastructure or debt retirement.
  - Put in place independent mechanisms for fiscal policy settings that balance the sovereignty term of elected government against the balance of prudent medium to long-term fiscal planning. For instance, the 'Fiscal Compact' requires Eurozone member states to place key fiscal restraining limits into their national constitutions in order to better ensure balanced budgets and the adherence to debt ceiling protocols.

### How governments need to change?

Governments may need to:

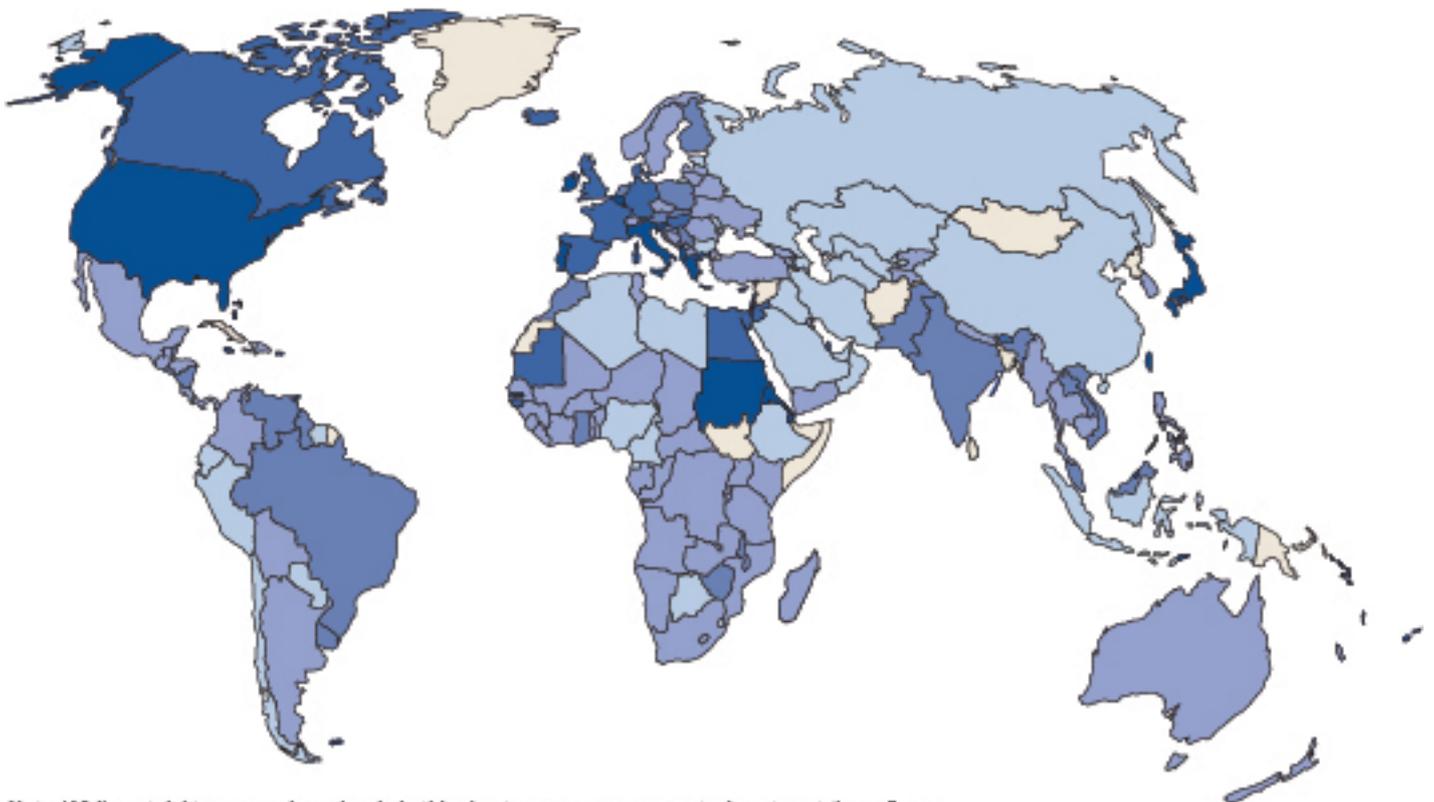
- 
  - Implement intergenerational cycle fiscal sustainability initiatives, including:
    - the preparation of periodic intergenerational reports
    - the preparation of periodic national infrastructure priority plans
    - the establishment of an insurer-of-last-resort provision.
- 
  - Establish independent fiscal advisory bodies that advise political leaders and focus on the quantum of spending, thus enabling governments to focus on the quality of spending.
- 
  - Ensure sufficient financial understanding and awareness for political leaders.

“ Governments need to demonstrate a greater commitment and capacity to control their own finances and to live within their means. It is not about the size of government spending or the extent of social welfare or the level of entitlement spending that a nation’s citizenry wishes to embrace. It’s about the affordability of that embrace.

**Nick Baker,**  
KPMG Partner

## General government gross debt in 2013<sup>76</sup>

Percent of GDP



Note: While net debt was used previously in this chapter, many governments do not post these figures. As such, we have used gross debt here.

“

It will take decades to lower public debt to where it was before the crisis or, in any case, to levels that do not expose countries to risk. But the task is not impossible and good shortcuts are not available.<sup>79</sup>

**Carlo Cottarelli,**  
Director of the IMF's Fiscal Affairs Department

Case study ▶▶

## Public debt in the United Kingdom

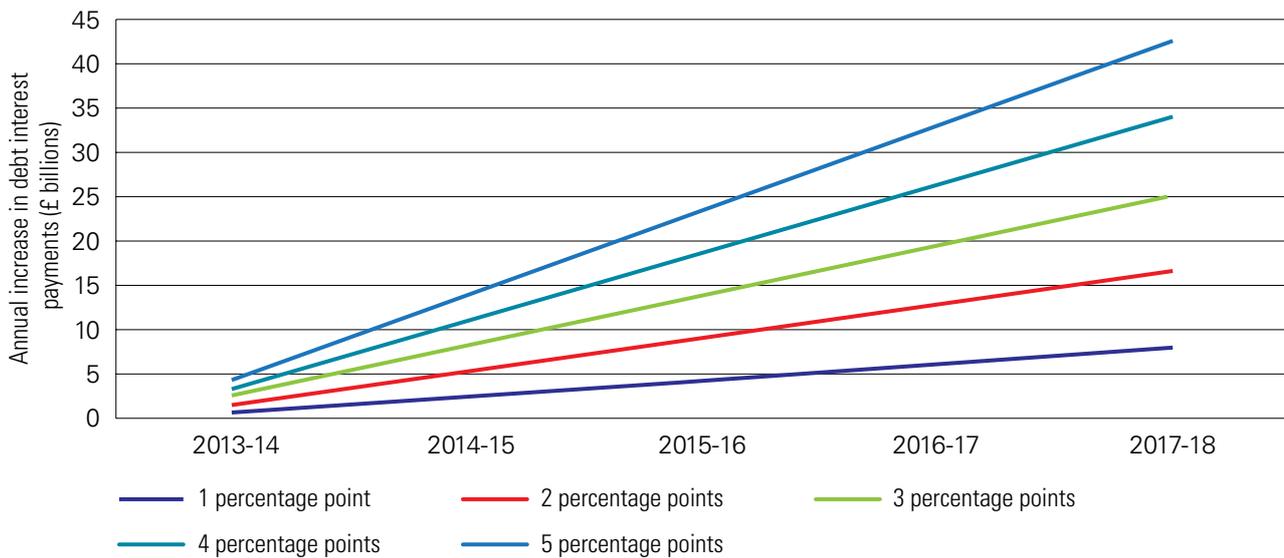
By the time the global financial crisis began in late 2008, the UK had already posted seven consecutive annual budget deficits. Public finances quickly deteriorated further. Net public debt soared from 38 percent of GDP in 2008 to an estimated 86.1 percent in 2013.

Like so many advanced economies, stimulus measures and financial sector support “prevented the worst case scenario, but ... also extended the time frame over which imbalances would be unwound.”<sup>80</sup>

Significant challenges remain. Net-debt-to-GDP ratios are not set to peak until 2016 when they will reach 93.2 percent of GDP, according to IMF estimates.<sup>81</sup> Debt interest payments will continue to squeeze program expenditure. Between 2011/12 and 2017/18, the share of spending devoted to servicing central government debt is forecast to rise from 7.4 to 10 percent.<sup>82</sup>

Until now, the UK has benefitted from low borrowing costs. However, interest rates remain sensitive to the reversal of quantitative easing and reduced investor confidence. Even a 1 percentage point rise in interest rates in 2013/14 would, by 2017/18, have added an extra 8.1 billion Great Britain pounds (GBP) to yearly debt servicing costs (see Figure 2).<sup>83</sup> Fiscal consolidation is needed while rates are still low.

**Figure 2:** The projected impact of rising interest rates on debt servicing costs



Yet important steps have been taken towards achieving fiscal sustainability. Recognition of growing pension liabilities caused by population aging has seen a number of reforms. Mandatory retirement ages have been abolished. The eligibility age for state pensions has been raised.

The creation in 2010 of the Office for Budget Responsibility (OBR) signals a greater commitment to improved fiscal planning. The OBR is charged with producing independent economic forecasts and long-term assessments of the health of public finances. It has already been credited with depoliticizing the economic analysis used in the budgetary planning process.

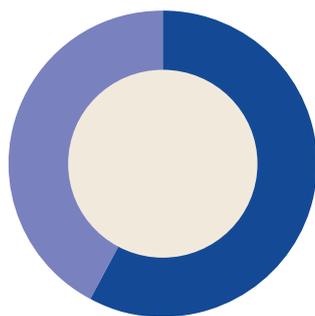
# Global megatrend #6

## Economic power shift

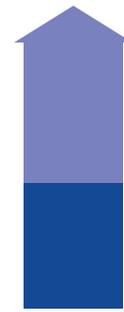
Emerging economies are lifting millions out of poverty while also exerting more influence in the global economy. With a rebalancing of global power, both international institutions and national governments will need a greater focus on maintaining their transparency and inclusiveness.

Driven by trade liberalization, economic reforms and freer movement of capital and technology from the developed to the developing world, emerging market economies (which include China, India, Brazil, Russia, South Africa, Mexico, Indonesia and others) are becoming increasingly important players in international finance.<sup>84</sup> This shift in economic power has not been without its challenges. As nations have acquired more wealth, many have also experienced growing inequality within their borders.

### The evidence of change



Developing countries will account for an estimated **57%** of global GDP by 2030.<sup>85</sup>



Developing countries will be home to 440 of the world's fastest growing cities, generating **47%** of global GDP growth through 2025.<sup>86</sup>

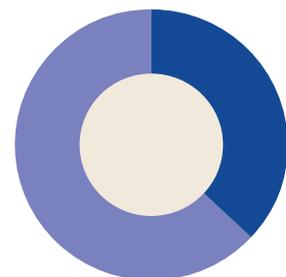
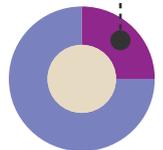
By 2030, China and India will account for



**35%** of world population



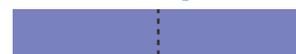
and **25%** of global GDP.<sup>87</sup>



Today, developing countries account for **37%** of global trade.

Over the next five years, acquisitions of foreign companies by Chinese firms are set to

**double,**



by 2020 they could

**quadruple.**<sup>89</sup>



'South-South' flows make up roughly half of that total.<sup>88</sup>



“

Emerging powers ... are no longer policy takers. These countries now increasingly influence the pattern and scope of international trade, creating new supply and demand pulls and flexing their influence in international organizations.<sup>90</sup>

**Pascal Lamy,**  
Director-General, WTO

## The consequences of economic power shift



The 'global south' as the engine for growth



Emerging multi-polar world order



Innovation as the source of sustaining growth



Increased consumption base driving economic opportunities

## Implications for government

### What governments need to change?

Governments may need to:

-  • Foster a greater understanding of a nation's economic comparative advantage in a post-power shift world.
-  • Adopt a different approach to regulating financial capital flows and investments to reflect the shift:
  - from publicly owned multi-national corporations investing in foreign countries to government-owned corporations undertaking direct investments in another foreign state.
- Develop clear policies supported by regulation related to foreign-government ownership of key national assets and resources.

Developed country governments may need to:

-  • Focus on new and emerging markets and market access, including possible trade agreements, trade visits and the establishment and/or expansion of trade offices in a range of new countries.

### How governments need to change?

Governments may need to:

-  • Review how to manage direct foreign investment of their national assets.
- Consider how to assist in adjusting the national economy in a post-power shift world.
- Implement strategies to attract inward investment, including favorable tax and business policies and education for key skills.
-  • Broaden their participation in international trade agreements, including bilateral and multilateral trade agreements.
-  • Build up skills in medium to long-term economic modeling and scenario analysis of comparative economic advantage in a post-power shift world.

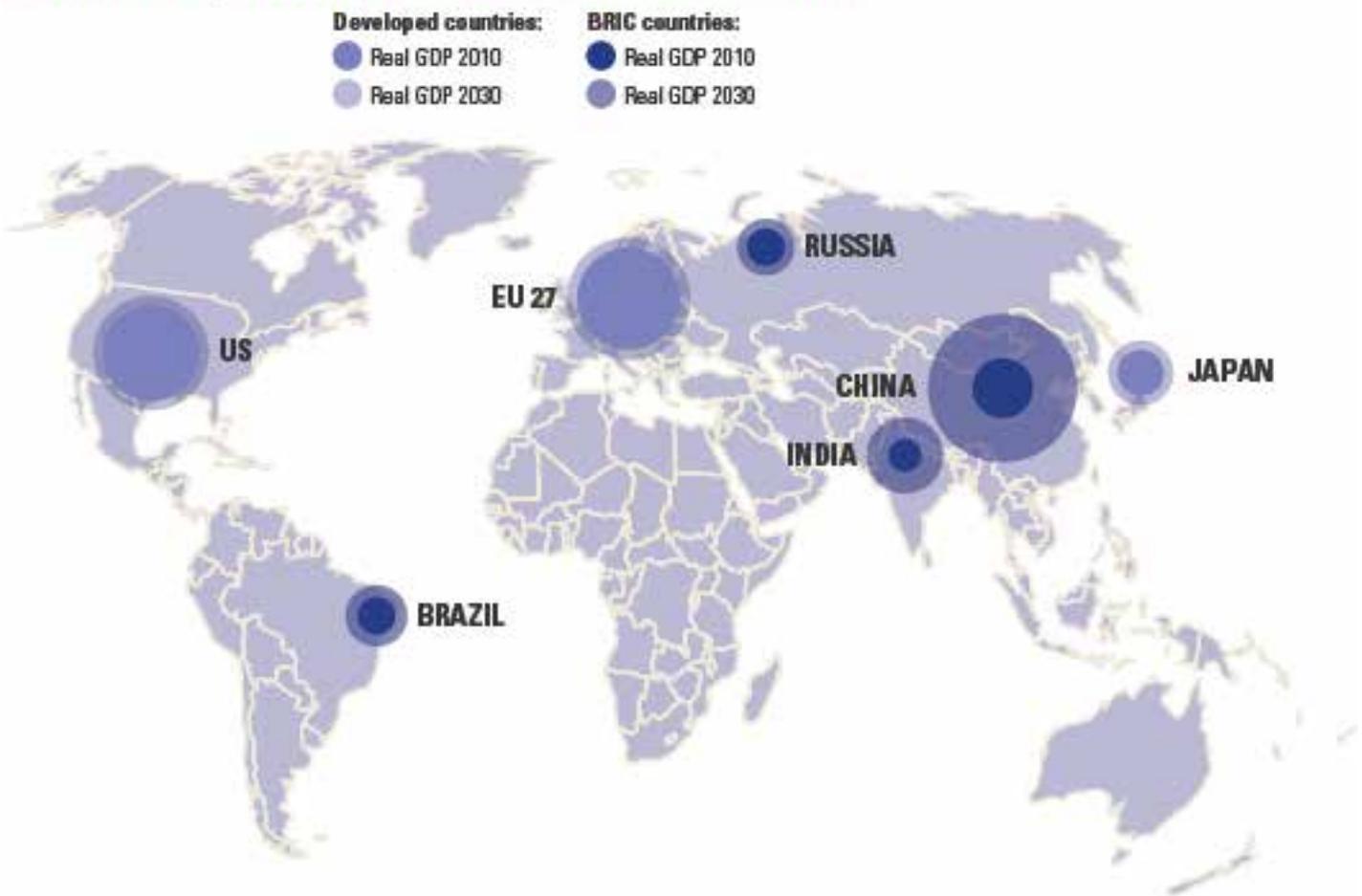
Some developing country governments may need to:

-  • Set up foreign investment review boards.

 I'm convinced that the essence of globalization today provides the world with many more opportunities than risks ... However, if these positive forces of globalization are to benefit everyone, we have to create a new balance of power: in world trade, in the consumption of resources, in education, in the fight against AIDS and in state finances. To put it in a nutshell, we need a global economy which complies with the rules of a fair regulatory framework.<sup>91</sup>

**Angela Merkel,**  
Chancellor of Germany

## Economic growth of BRIC countries in 2030<sup>92</sup>



### Case study ▶▶

## China in Africa

Between 2000 and 2011, trade between China and Africa has grown in value from USD10.5 billion to USD166 billion.<sup>93</sup> As a result, China has now overtaken the US as Africa's largest trading partner.<sup>94</sup> In the same period, China has also substantially increased its aid to the continent, committing roughly USD75 billion and equaling nearly a fifth of the total flows reported by Western governments.<sup>95</sup> Finally, while a large part of this foreign investment has been directed to natural resource extraction, in the last decade there has been a broadening towards more investments in telecommunications, construction and banking.<sup>96</sup>

The expansion of China into Africa has served its political and economic interests – namely securing energy and other resources for its booming population – but has also been essential to providing Africa with much-needed technology and financial resources.<sup>97</sup> However, some have criticized China for importing oil and raw materials while flooding Africa with inexpensive textiles and clothing that are endangering the survival of African manufacturers.<sup>98</sup>

The Forum for China and Africa Cooperation (FOCAC) has helped promote a more trusting and mutually beneficial relationship between the regions. Through FOCAC negotiations, China has allowed Africa an increasing amount of products into China duty-free, especially from least developed countries.<sup>99</sup> The 2013-15 FOCAC action plan also includes agricultural cooperation and technology transfer initiatives.<sup>100</sup>

A report on Sino-African relations from the Centre for Global Development (CGD) explains that China's actions in Africa have been shaped by its own experiences of development.<sup>101</sup> For example, Special Economic Zones, which have been used successfully in China, are an approach the Chinese are now helping to replicate in Africa. CGD asserts the importance of such South-South learning experiences cannot be overestimated.<sup>102</sup>

As the relationship between China and Africa intensifies, a key issue in many countries will be improving governance. For instance, in some countries with weaker institutions, infrastructure projects financed by the Chinese are not always subject to competitive bidding and specifics on the nature and terms of financial assistance are frequently opaque at time of signing.<sup>103</sup> Enhancing transparency in China's African operations will be necessary to maintain goodwill and promote stronger ties in a continent of rising economic strength and opportunity, and one which will be increasingly courted by other emerging powers in the coming decades.

# Global megatrend #7

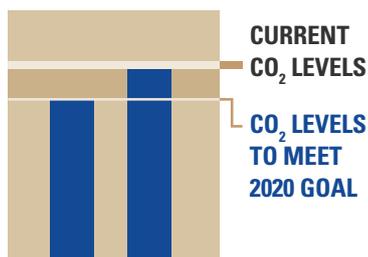
## Climate change

Rising greenhouse gas emissions are causing climate change and driving a complex mix of unpredictable changes to the environment while further taxing the resilience of natural and built systems. Achieving the right combination of adaptation and mitigation policies will be difficult for most governments.

The complexity and uncertainty associated with climate change often paralyzes government action at the national and international levels. However, combating climate change will require unprecedented levels of multilateral cooperation to prevent the worst effects of rising CO<sub>2</sub> levels in the next century. This will also require immediate efforts to 'climate-proof' communities for the effects of climate change that are already locked-in.

### The evidence of change

Emission levels are too high – already 14% higher than the estimated emission levels required to meet the 2020 goal.<sup>104</sup>

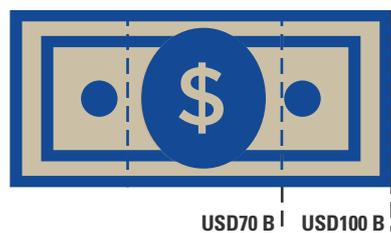


By 2050, costs of extreme weather could reach up to 1% of world GDP per annum.<sup>105</sup>

For example, this would equal **USD720 MILLION**, based on the 2012 value of world GDP.

Adapting to a 2°C warmer world by 2050 will require investments of

**USD70-USD100 BILLION PER YEAR.**<sup>106</sup>



With a warming of 2-3°C:



The Amazon rainforest could dry up.



Irreversible melting of the Greenland ice sheet could occur.



20-50% of species would be at risk of extinction.<sup>107</sup>

With a warming of 3-4°C, up to

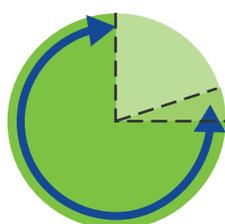


**200 MILLION PEOPLE**

could become permanently displaced due to rising sea levels, flooding and droughts.<sup>108</sup>

= 50 million

### THE DEVELOPING WORLD WILL SHOULDER



**75-80%**

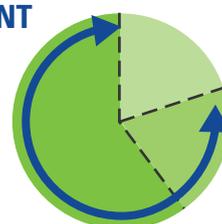
of adaptation costs, with East Asia and Pacific regions carrying the highest costs.<sup>109</sup>

### LOCAL MITIGATION EFFORTS ARE INCREASINGLY IMPORTANT

Cities account for

**60-80%**

of energy consumption and are responsible for the same portion of global CO<sub>2</sub> emissions.<sup>110</sup>



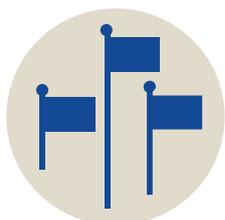
“ All across the world, in every kind of environment and region known to man, increasingly dangerous weather patterns and devastating storms are abruptly putting an end to the long-running debate over whether or not climate change is real. Not only is it real, it’s here, and its effects are giving rise to a frighteningly new global phenomenon: the man-made natural disaster.<sup>111</sup>

**Barack Obama,**  
44th President of the United States

## The consequences of climate change



Unpredictable, dramatic ecosystem impacts



The challenge of global cooperation



Pressure to adapt to 'locked-in' effects of global warming



A greater role for cities

## Implications for government

### What governments need to change?

Governments may need to:

-  • Work more vigorously internationally to set targets and carbon pricing and subsequently implement actions to hit agreed targets.
- Allow a greater role for cities through local policies or programs to address climate change impacts.
-  • Recognize the increased imperative to reduce carbon usage at national levels through policy (e.g. carbon trading system), regulation (e.g. carbon taxing and/or pricing signals) and/or programs (e.g. promote carbon reduction behaviors).
-  • Institute long-term plans that include mitigation strategies for increased extreme weather events.
  - This will be particularly important for the world's ports, which are responsible for handling the vast majority of world trade and will be particularly at risk for storm surge damage and rising sea levels.
- Further reduce their economic reliance on carbon, for instance, investing in renewable energies.

### How governments need to change?

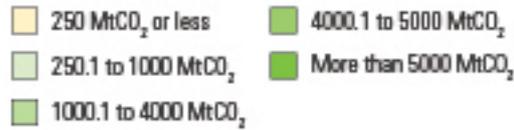
Governments may need to:

-  • Design long-term plans for climate change that include:
  - strategies for reducing their economy's reliance on carbon
  - mitigation strategies for increasing extreme-weather events, particularly in coastal megacities that are especially susceptible to rising sea levels
  - where necessary, strategies to address the displacement of people caused by climate change, including the need for inter-country resettlements.
-  • Actively participate in international and regional forums focused on carbon pricing and reduction, etc.



## Projected CO<sub>2</sub> emissions in 2030<sup>112</sup>

Millions of metric tons of CO<sub>2</sub> produced annually



### Case study ▶▶

## City of Rotterdam's climate adaptation initiative for climate change

Historically, Rotterdam's advantage has been its location on the delta of the Meuse and Rhine rivers, making it home to Europe's busiest shipping port.<sup>113</sup> However, with 90 percent of the city sitting below sea level, Rotterdam faces significant obstacles to stay afloat in the face of sea-level rise and flooding brought on by climate change.<sup>114</sup> The city is turning this challenge into an opportunity to become a global leader of water and adaptation innovation through its mission to become '100 percent climate proof' by 2025. Rotterdam is steering its climate adaptation initiatives with public engagement, cutting-edge research from its local institutions and subsidies to incentivize 'green' practices among its 600,000 occupants. A central objective is the 50 percent reduction of harmful CO<sub>2</sub> emissions by 2025.<sup>115</sup>

To that end, sustainable transportation policy has given cyclists right of way in traffic, with separated paths to privilege bicycles.<sup>116</sup> In an effort to support rooftop gardens, which absorb CO<sub>2</sub> and rain, and reduce the urban island temperature effect, the city offers a 50 percent subsidy for their construction. Since 2008, there has been an average of 40,000 square meters of rooftop gardens constructed per year.<sup>117</sup>

To control the future effects of extreme flooding the city has invested in a range of innovative rainwater storage solutions. For instance, a newly built parking garage incorporates a 10,000 cubic-meter underground rainwater store.<sup>118</sup> Another solution involves stratified public squares that serve both as community centers and water stores during heavy weather. New floating communities on the waterside near the coast are not only architecturally innovative but also attractive to new businesses.<sup>119</sup>

# Global megatrend #8

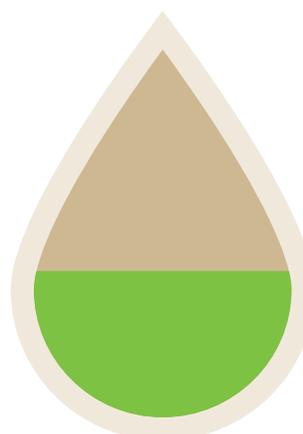
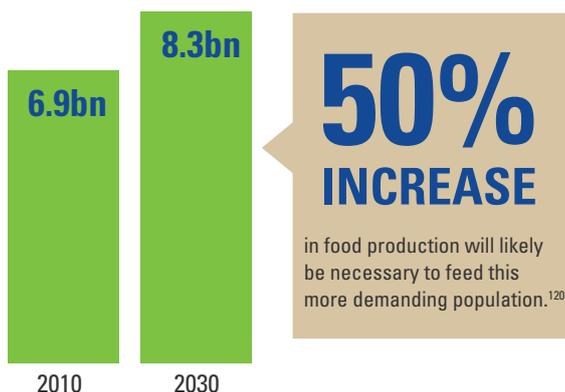
## Resource stress

The combined pressures of population growth, economic growth and climate change will place increased stress on essential natural resources including water, food, arable land and energy. These issues will place sustainable resource management at the center of government agendas.

By 2030, significant changes in global production and consumption, along with the cumulative effects of climate change, are expected to create further stress on already limited global resources. Stress on the supply of these resources directly impacts the ability of governments to deliver on their core policy pillars of economic prosperity, security, social cohesion and environmental sustainability.

### The evidence of change

The population is growing and so is the middle class:



**40%**

Estimated global gap between water supply and demand by 2030.<sup>121</sup>



The International Energy Agency projects an approximate **40%** increase in global energy demand by 2030.<sup>122</sup>

**DRIVEN BY**



Economic growth



Population growth



Technological advancements



“ If nothing is done we will run out of water faster than we will run out of oil.<sup>123</sup>  
**Peter Brabeck-Letmathe,**  
 Chairman of the Board, Nestlé



About more people will live in areas of water stress by 2030 in a business-as-usual scenario.<sup>124</sup>

= 200 million

Both growing demands and unstable production patterns due to climate change will cause global food prices to double between 2010 and 2030.<sup>125</sup>



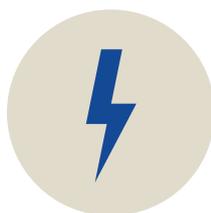
### The consequences of resource stress



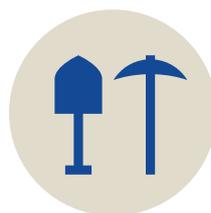
Food and agricultural pressures



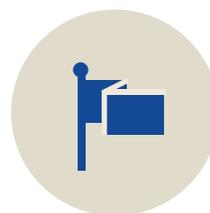
Increased water demand



Energy demand on the rise



Competition for metals and minerals



Increased risk of resource nationalism

## Implications for government

### What governments need to change?

Governments may need to:

-  • Establish better data and monitoring both of demand side and supply side metrics related to food, water, energy and other mineral resources.
- Collaborate with supply side resource producers, suppliers and stakeholders to address supply security (for food, energy, water, etc.) and drive supply side efficiencies in extraction/production and distribution.
- Collaborate with demand side users and stakeholders, particularly citizens, to address demand level management and drive other demand side efficiencies.
- Adopt horizontal policy and planning approaches to identify efficiencies given the highly interrelated challenges of food and agriculture, water and energy.
- Actively participate in international and regional forums related to food, energy and water (for those countries that have sharing agreements of water resources with neighboring countries) to avoid hoarding and the need for emergency national reserves of key resources.
-  • Employ heavier enforcement of legislative/regulatory control should current tactics prove to be an ineffective tool in managing resource stress.
-  • Build additional public infrastructure to support climate change efforts, particularly as it relates to the challenges of water security (i.e. clean water production and water storage capacity).

### How governments need to change?

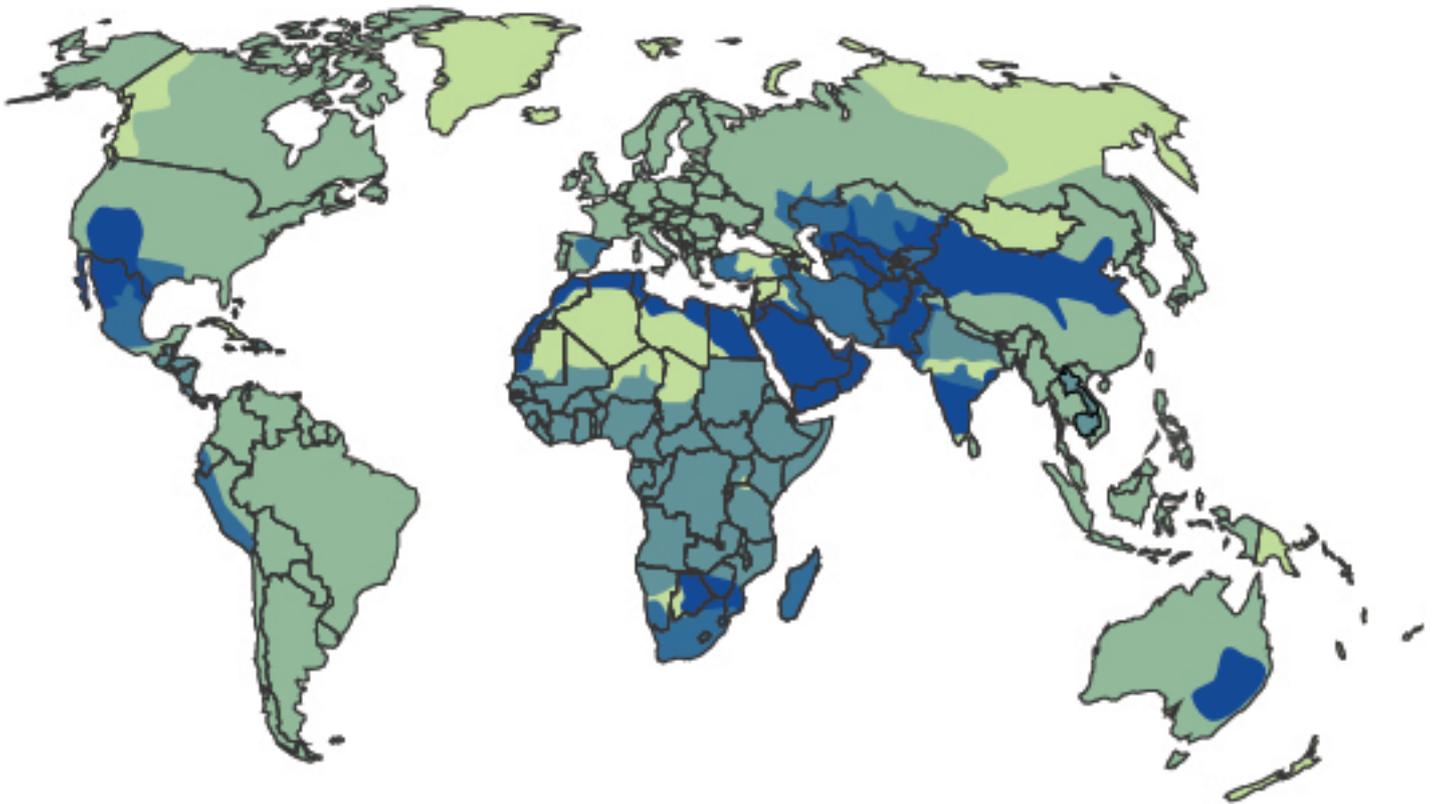
Governments may need to:

-  • Ensure that rules and protocols around the sharing of resources across net importer and exporter countries in times of stress are established well before the situation arises.
- Develop strategies for both reducing demand and increasing supply of resources.
-  • Actively participate in international and regional forums to address the interrelated issues of resource stress.
- Implement new and revised models of collaboration with resource suppliers including cross-government and/or the private sector.
-  • Hone public-private sector relationship engagement and management skills to better deal with food suppliers, etc.

“ Sustainable peace depends as much on sustainable development as it does on arms reduction, conflict resolution and security measures. This is because the root causes of conflict can so often be traced back to inequitable access to development opportunities and to natural resources.<sup>126</sup>

**Renata Lok-Dessallien**  
UN Resident Coordinator in China

## Projected global water scarcity in 2025<sup>127</sup>



### Case study ▶▶

## The Guarani Aquifer

Lying underneath an area that spans parts of Brazil, Paraguay, Uruguay and Argentina is the Guarani Aquifer System, a hydrogeological reserve potentially containing enough freshwater to supply the world's population for 200 years.<sup>128</sup> At 1.2 million square kilometers, the Guarani is currently the source of drinking water for 15 million people, primarily in Brazil.<sup>129</sup>

Given projected increased demand for water and stress on supply in the region, the aquifer represents an essential strategic resource that requires careful management.<sup>130</sup> Karin Kemper, a water resource specialist with the World Bank has described the Guarani system as "a striking example of an international water body threatened by environmental degradation. Without better management, the aquifer is likely to suffer from pollution and rapid depletion."<sup>131</sup> The need for four countries to cooperate and coordinate management of this shared resource makes such protections all the more challenging.

Spurred on by assistance from the World Bank's Global Environment Facility and the Organization of American States, the four countries that share the Guarani Aquifer have taken significant steps towards a multinational governance model to manage the long-term sustainability of the aquifer. This effort represents a positive example of cooperation efforts beginning before pollution or depletion reach critical levels.<sup>132</sup> In 2010, the countries signed the Agreement on the Guarani Aquifer, institutionalizing a cooperative governance model that includes regional, national and local elements.<sup>133</sup>

The need for multinational governance approaches will only increase in importance as resource stress pressures accelerate over the coming decades. If the Agreement on the Guarani Aquifer is to serve as a model, it will need to continue to evolve in the face of changing circumstances. In particular, enhanced efforts to monitor and manage the impacts of agriculture activities on the 'recharging' of the aquifer will be essential to future success.<sup>134</sup> Furthermore, the new risks and challenges posed by climate change could place stress on the Agreement and other multinational governance arrangements such as Canada-US shared governance of the Great Lakes.<sup>135</sup>

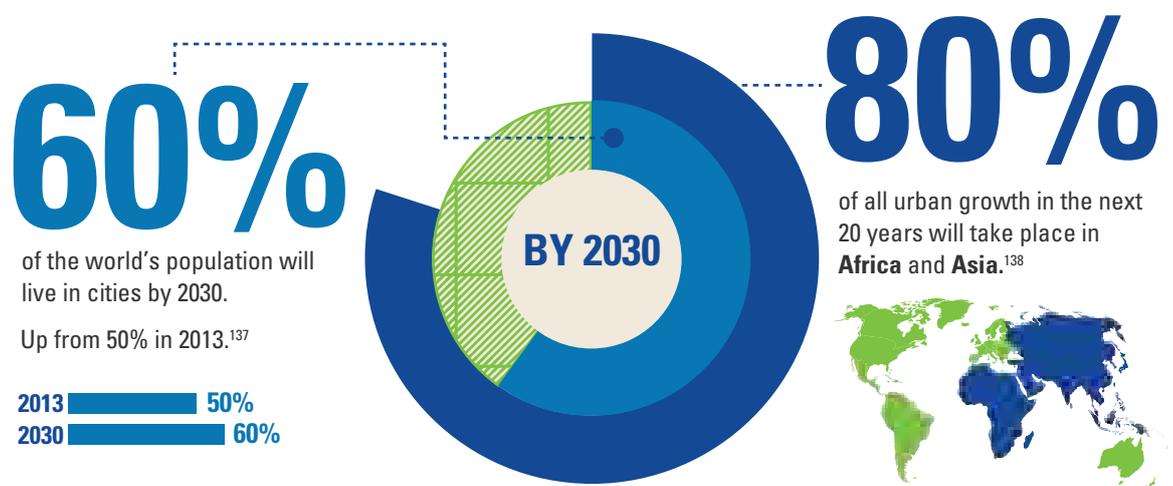
# Global megatrend #9

## Urbanization

**A**lmost two-thirds of the world’s population will reside in cities by 2030.<sup>136</sup> Urbanization is creating significant opportunities for social and economic development and more sustainable living, but is also exerting pressure on infrastructure and resources, particularly energy.

While most urban growth will occur in developing countries, ensuring growing cities are properly managed will also be a priority for governments in developed countries as they strive to maintain competitiveness in the face of growing global competition. One of the greatest challenges that policy makers around the globe will face will be monitoring the process of urbanization and managing growth sustainably while ensuring adequate access to housing, water and energy for all citizens. Equally important will be awareness of the social and service-oriented impacts of urbanization, both positive (e.g. efficiencies of serving more concentrated populations) and negative (e.g. rural-to-urban dislocations, loss of family cohesiveness, homelessness and stresses that enhance needs for mental health and other types of services).

### The evidence of change



### The top 600 cities by GDP growth:<sup>139</sup>



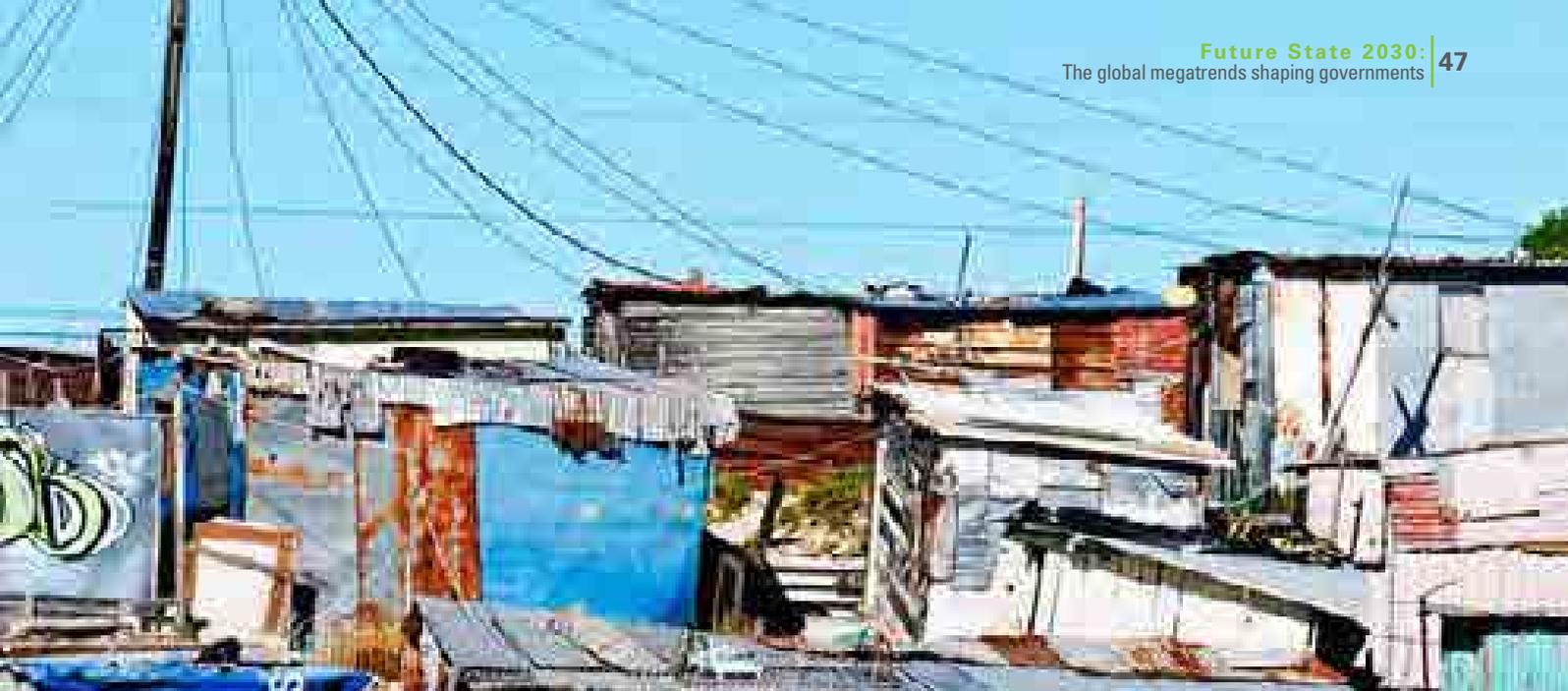
Are home to just over **20%** of the world’s population.



Generate **USD34 trillion**, or more than **50%**, of global GDP.



Are projected to nearly **double** their global GDP contribution to **USD65 trillion** by 2025.



The number of megacities (population 10+ million) will increase from:<sup>140</sup>

**20 TODAY**

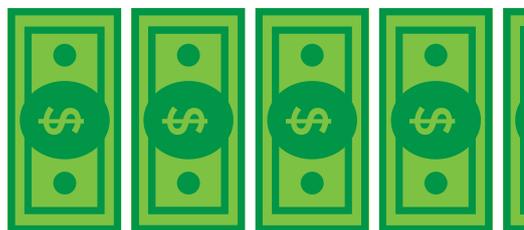


**37 IN 2025**



One building = two megacities

Global infrastructure costs to keep pace with urbanization have been estimated at **USD41 trillion** between 2005 and 2030.<sup>141</sup>



**1 billion** people currently live in city slums.



If insufficient action is taken to combat urban poverty, this figure could **double** by 2030.<sup>142</sup>



1 = 200 million

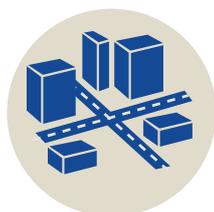
## The consequences of urbanization



Urban growth driven by developing world



Interrelationship between built environment and natural environment



Large-scale urban infrastructure needs



Urban poverty pressures including growing populations living in informal settlements

## Implications for government

### What governments need to change?

Governments may need to:

-  • Develop integrated, long-term infrastructure plans for cities and regions that:
  - consider a 50+ year view of population/urbanization growth
  - are multi-faceted, multi-disciplined and integrated in terms of their formation and focus.
- Better manage urbanization through balancing hard and soft infrastructure. For instance, whether people drive:
  - from home to work, requiring greater investment in transportation
  - work from home, requiring greater investment in technology.
- Ensure that city population growth aligns to economic growth and government service delivery capacity.
- Put into practice a fully empowered jurisdictional model whereby the government jurisdictional level that has the responsibility and accountability for service delivery also has the constitutional rights to taxation revenue mechanisms, which are commensurate with that responsibility.
-  • Develop service delivery models that take advantage of the efficiencies gained from a greater concentration of people and address the social challenges arising from urbanization.

### How governments need to change?

Governments may need to:

-  • Devise a long-term master plan that aligns transportation and utilities infrastructure, and a range of services such as education, health and municipal levels of services.
- Ensure that, for each level of government, the resource demands of their jurisdictional responsibilities, rights to revenue and incentives are aligned.
-  • Formulate cross-jurisdictional and cross-governmental planning forums and mechanisms that support integrated planning.

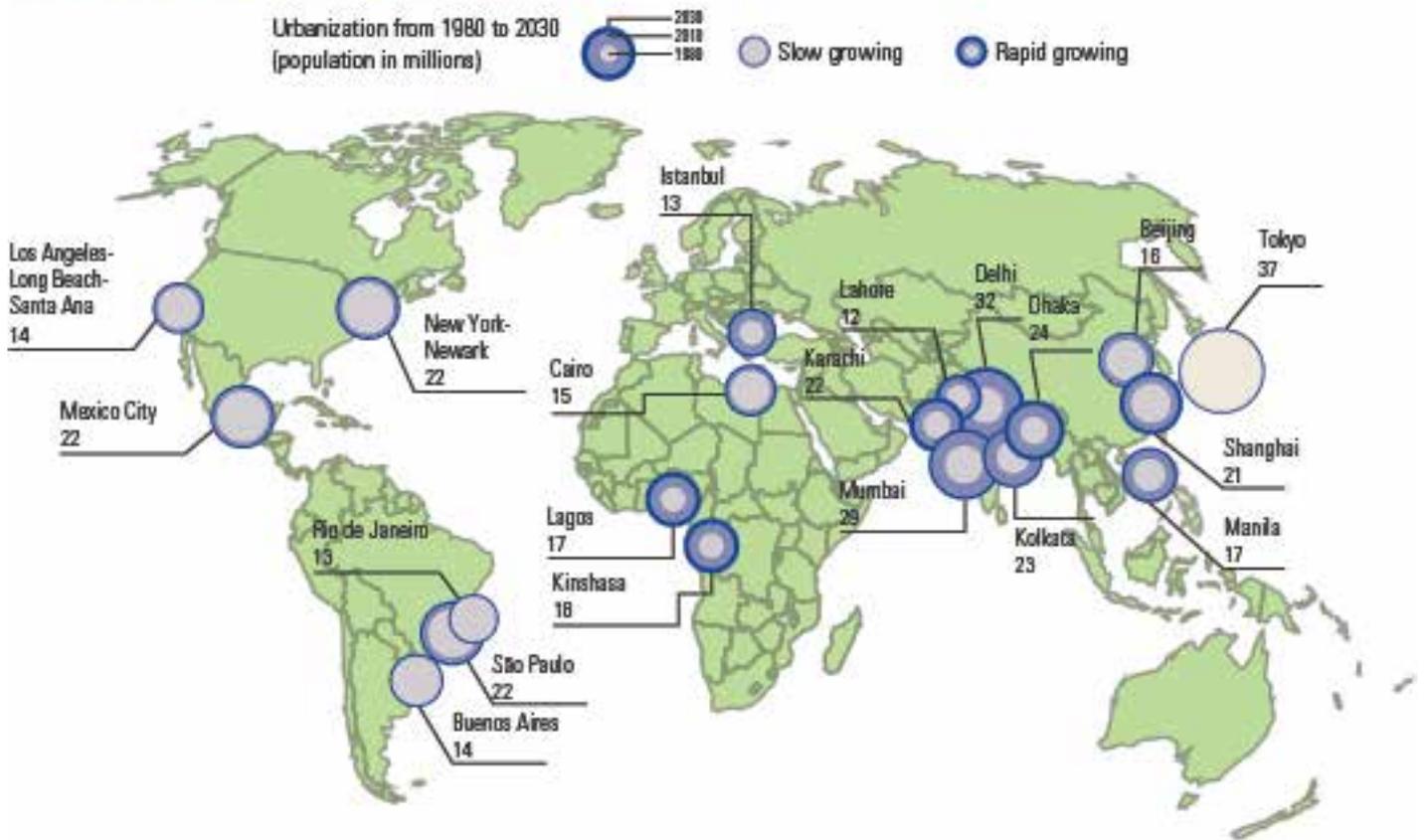
Developing country governments may need to:

-  • Build up robust city management skills in areas of economics, planning, infrastructure and transportation, etc.

“Growth and urbanization are intricately linked and go hand in hand, but policies at the national, state and local level need to be aligned and supportive of urbanization if national governments want to harness the true potential of urbanization for boosting shared prosperity and eradicating extreme poverty.

**Abha Joshi-Ghani,**  
Director, Knowledge and Learning, the World Bank Institute, The World Bank

## The 20 largest cities in 2030<sup>143</sup>



### Case study ▶▶

## San Francisco Bay Area

The challenges and opportunities presented by urbanization have led to a heightened interest in smart growth: an urban development concept that places human and social capital and environmental interest at the heart of building prosperous communities. While numerous cities have eagerly embraced the concept in the last several years – from New York City to rural towns in Xinjiang, China – the San Francisco Bay Area has positioned itself as a leader in this new wave of urbanism.

In the most recent showcase of the region's commitment to smart growth, the nine-county Bay Area has come together to devise the 'One Bay Area' initiative – an integrated long-range transportation and land-use/housing plan to support a growing economy, provide more housing and transportation choices and reduce pollution.<sup>144</sup>

Effectively accommodating the region's growing population, which is expected to increase from 7 million inhabitants today to 9 million by 2040, has been a key driver of the project.<sup>145</sup> However, according to the plan's developers, the explicit focus on sustainability can be directly linked to California's ambitious environmental goals, which aim to reduce GHG emissions to 80 percent below 1990 levels by 2050. These goals are enshrined in state law, which, through the Sustainable Communities and Climate Protection Act of 2008, require the Bay Area to eliminate GHG emissions from cars and light trucks by 7 percent per capita by 2020 and by 15 percent per capita by 2035.<sup>146</sup>

ICT has played a crucial role in facilitating these targets and contributing to smart urban development. For example, every parking space in San Francisco allows residents to monitor available spots through a mobile phone application, leading to reduced carbon emissions and congestion while also generating useful traffic data that can inform future development.<sup>147</sup>

Through its newest experiments with converted streetlights, San Francisco is also working toward a digitally integrated network of city operations and infrastructure in which services are organized around real-time data sharing. In one pilot currently underway, streetlights will be used to remotely read city-owned electric meters and transmit data from traffic lights and cameras. A second pilot will test 'adaptive lighting' that can be dimmed or brightened in response to sensors that register pedestrian activity or traffic volume.<sup>148</sup>

# Future state



# Conclusion:

## Analysis of megatrend impacts

The research results clearly project a challenging future in which governments across the world will need to take action to address megatrend-driven risks and capitalize on megatrend-driven opportunities. Governments can choose to either stay the course and attempt to deliver on core responsibilities within the current business model, or they can adapt and adjust to the new operating reality that is emerging as a result of the nine megatrends.

Successful jurisdictions will adapt. Their governments will look different in 2030 than they do today through well considered actions, taken sooner rather than later. They will be the ones that continue to deliver for their citizens.

In presenting the high-level business impacts to governments, our analysis finds that – on a global basis – certain areas emerge as being more pervasive. A summary of these trends is presented below.

### What governments need to change?

#### Changes in policy include:

1. The growth in the engagement of national governments in international, regional and jurisdictional forums where many of the interconnected and difficult issues confronting governments will need to find voice and resolution.

Certain megatrend consequences are more global in terms of their scope and thus better managed from an international co-operative perspective, which links in to national and sub-national government priorities.

For example, while there have been ongoing efforts to coordinate global responses to combat climate change, these will need to be accelerated to prevent the most devastating impacts of rising CO<sub>2</sub> emissions.

2. The growth in the quantity and quality of evidence-based policy that governments will need to have access to and which is also more deeply anchored in high-quality data and assisted by strong skills in data analytics. This shift features in virtually every assessment of what governments will need more of in a future state.

While many governments already have access to experienced and high-quality policy makers and professionals, future governments will need to marshal and develop added skills that require greater breadth of policy domain thinking and increased focus on the long-term versus the short-termism and political expediency that currently dominate the decision-making process.

This shift is also driven by the long-term nature of the megatrend challenges which requires governments to take a more deeply considered and well-evidenced path in order to find optimal solutions and best comprise pathways. Fortunately, governments have already started to move in this direction. For example, there has been a concerted effort to collect data on the issue of intergenerational aging, from country-specific intergenerational reports to comparative studies from the IMF and the Organisation for Economic Co-operation and Development (OECD). Today, governments are using the available data to implement well-considered policy, regulatory and program shifts and monitor the downstream impacts of an aging population.

“As the world becomes ever more multi-polar and interdependent, multilateral solutions are needed to fight the risks and reap the rewards of integration.”<sup>149</sup>

**Kemal Dervis,**  
former Head of the United Nations  
Development Programme (UNDP)



#### Changes in regulation include:

1. Regulatory shifts that seek to encourage behaviors or behavioral change in order to mitigate and manage downstream megatrend impacts where policy and program changes have been ineffective.

While many governments already have these types of regulatory mechanisms in place, they are likely to become more commonplace across a growing number of countries and governments may need to shift from ‘informing’ and ‘advising’ to ‘banning’ and ‘penalizing’.

Examples of regulatory mechanisms in this area can vary significantly and cover a wide range of actions:

- restricting or rationing water, food and/or energy (including electricity and fuels) during stress events
  - phasing out higher energy consuming technologies with more energy efficient ones, or cars of a certain age to improve air quality and safety
  - prohibiting the use of plastic bags that are not bio-degradable
  - requiring construction (commercial and residential) to meet particular standards of engineering, energy efficiency, water conservation, etc.
2. Regulatory shifts that seek to enforce market practices to align with government policy priorities and choices.

Regulation abounds in many free market economies in order to establish and maintain prudent market and key industry regulation, including controls over the extent and form of any foreign investment. Governments may need to consider changes to existing regulatory frameworks following shifts in investment and asset ownership approaches (for example, emerging from certain developing world economies).

Regulation may also be an appropriate tool when addressing issues that are complex (e.g. resulting from the interplay of multiple trends) or life-threatening, thus demanding stronger responses to protect the interests of their citizenry.

For example, future regulation may be essential to protect against foreign sovereign states that target the food producing or energy and resource assets of countries via direct asset ownership as a first-line strategy to secure food and/or energy supply chains.



### Changes in programs include:

1. Program shifts that seek to minimize a growing cost burden to governments by reducing unit costs/prices.

This may be achieved in a number of ways, from the introduction of greater cost competition between service providers to drive down unit costs, through to the introduction of co-payment or co-contributory arrangements in areas such as healthcare (e.g. payments of pharmaceuticals). For example, the UK government has updated its financing system for higher education – which requires graduates to contribute more towards their education – to ensure its long-term sustainability.<sup>150</sup>

Where possible, governments may even transfer the cost burden completely. For example, governments can introduce universal whole-of-working-life pension arrangements to fund retirements, thereby reducing the long-term aged pension burden for government.

2. Program shifts that seek to minimize a growing cost burden to governments by reducing unit demand and/or capping total demand for government services.

This may be achieved in a number of ways, from preventative measures which treat the underlying drivers of unit growth, through to implementing shifts in eligibility and entitlement which forcibly cuts total demand to an overall level that the government assesses as being sustainable.

3. Program shifts that seek to take a more holistic long-term view of infrastructure systems, encompassing both hard and soft infrastructure.

For example, governments in countries facing rapid urbanization, and consequently congested roadways and transportation systems, will need to consider how best to balance citizens who commute via transportation and those who telecommute. This may include greater investments in technology to enable connectivity required for flexible working arrangements.



## How governments need to change?



### Changes in strategies include:

#### Greater focus on and use of:

- 1. Long-term planning and scenario exercises:** As many of the challenges and opportunities brought on by the megatrends are long-term in nature, governments must adopt a long-term view in their responses.

For example, prudent financial planning can be strengthened by incorporating long-term economic forecasts and old-age dependency ratio projections. Infrastructure plans should take a 50+ year view of population growth and factor critical infrastructure renewal assessments into the budgetary planning process.

- 2. Behavioral insights:** Behavioral insights can be used to encourage people to act in ways that can proactively help mitigate or lessen the impacts of megatrend consequences.

For example, changes to food labeling can encourage healthier lifestyles, pricing signals can be instituted to decrease water and energy consumption and building codes can be altered to improve insulation, recycle water and/or enforce the use of carbon friendly materials, etc.

- 3. Outcomes and metrics:** Ongoing program evaluation will help ensure that funds are allocated to cost-effective programs. Evaluations should be supported by robust data collection practices, guided by clearly defined outcomes and metrics, and allow for a consideration of alternative program or service delivery options.

For example, to ensure the effectiveness of social programs, governments will need to pay greater attention to results if they want to ensure that public funds are truly yielding a return for the taxpayer.

- 4. Flexibility and 'paradigm' thinking:** Governments must exercise continuous flexibility and adaptability in their policy and planning capacity to address unexpected challenges and opportunities in an evolving economic order. While continuous improvement and total quality management (TQM) are ever present, governments will also need to consider strategies which encourage out-of-the-box thinking and the pursuit of paradigms.

For example, over-the-counter service delivery models have either been replaced, or are rapidly being replaced, by online and mobile communication service delivery models. These solutions not only yield a more accessible and functional service, but are also cheaper and faster.

- 5. Technology adoption:** Governments must overcome traditional barriers to technology utilization that have too often promoted lock-in, high costs and slow adoption.

For example, governments will need to adopt new technologies in transportation, energy and infrastructure to promote a lower-carbon future that can adapt to the pressures of climate change.



Technology has great potential to transform the delivery of public services. It will not always deliver massive cost reductions, but it can allow for much better results at similar costs.

**Alan Downey,**  
KPMG Partner



### Changes in structures include:

#### Shifts towards becoming more:

**1. Internationally integrated:** To ensure strategic alignment in an increasingly complex and fluid global economic environment, governments may need to pursue structures that include:

- active integration with international partners, or
- increased cooperation with international institutions.

For example, as cyber threats are quick to go global, governments will need to work together to address emerging cyber security threats. This includes establishing formal communications channels that enable quick and clear collaboration, particularly during a crisis.<sup>151</sup>

**2. Highly integrated:** There will be a need for governments to better establish and implement more highly integrated policy arrangements within and across relevant policy domains.

For example, as many resource stress issues are interrelated (such as the usage of water for mining, food and energy production) or in some cases conflicting (such as the use of land for food agriculture versus bio-fuel production), governments may need to institute multi-disciplined, multi-sector and multi-jurisdictional arrangements.

**3. Locally empowered:** While much of the world lives in cities, local governments frequently lack the funds and authority to meet their responsibilities. National and other sub-national levels of government will need to work with local authorities and other partners to disentangle roles and responsibilities to better position cities to properly address key challenges in their jurisdiction.

For example, local governments in cities such as Rotterdam are best placed to implement programs that minimize and mitigate potentially serious climate change impacts that may not apply to national governments on a whole.

**4. Networked:** Meaningful collaboration with citizens, other levels of government, neighboring regions and the private and non-profit sectors is essential to mobilizing the necessary knowledge, capital and resources required to sustain key areas of government service delivery.

For example, various government departments and third parties will need to work together to meet rising demands for integrated delivery in human and social services such as income security, employment assistance, social housing, aged care and child welfare.

**5. Flexible and adaptive:** Failure and change are essential to innovation, but it is important to 'fail fast', learn lessons quickly and move on. Governments will need to be flexible and adaptive in their planning to ensure they can facilitate greater risk taking and be responsive to unanticipated situations, and learn from other jurisdictions.

For example, governments can build flexibility into their structures by taking advantage of virtual teams and matrix approaches (rather than static and hierarchical organizations) to quickly marshal resources to address specific challenges, particularly those that are more short-term in nature.



We need better and stronger, international and regional (and national) regulatory mechanisms and controls ... provided they're put in place to monitor the right things.

**Mick Allworth,**  
KPMG Partner

 **Changes in skills include:**

**Greater capabilities and capacity in:**

- 1. International awareness:** Traditional domestic policy areas will increasingly take on international dimensions, requiring government practitioners to incorporate knowledge of global trends and impacts into their decision-making processes.

For example, the heightened global competition for people, business and resources as a result of the shift in economic power means that national policy makers will need to be increasingly aware of emerging international trends and strategies.

- 2. Financial sophistication:** As governments struggle to do more with less, they will need superior technical knowledge of financial administration and budgeting to ensure prudent fiscal management, effective long-term planning and management of outcomes-focused procurement strategies.

For example, the internationalization of capital markets – which can shape borrowing power and tax revenues – is driving many governments to strengthen and harmonize both their financial reporting alongside new reporting requirements for their firms.

- 3. Systems thinking:** While horizontal and vertically integrated structures and cross-functional teams are one piece of the puzzle, the other is an ability for public servants to understand the systemic interactions of policies and trends. In many instances this will require cultivating partnerships between specialists and those skilled in integrated thinking.

For example, to build a regulatory framework for a disruptive technology such as 3D printing, governments will need both a detailed understanding of the technology and an ability to understand its potential societal and economic impacts.

- 4. Effective stakeholder engagement:** With the many and varied challenges facing governments over the next two decades there will be an increasing requirement to institute more substantial and varied stakeholder engagement and management strategies. Governments will also need to explore greater use of new media, including social media, to engage in two-way communication with a more demanding and vocal citizenry.

For example, sensitizing populations to governments' fiscal challenges in many developed countries will be critical as governments seek to realize debt consolidation strategies.

- 5. Risk assessment and change management:** With a large array of complex risk issues to consider and an equally demanding need for better implementation of ongoing change management activities, governments will need to prioritize higher order risk management and change management skills.

For example, the global financial crisis demonstrated (inter alia) the consequences of inadequate risk assessment in an interconnected global economy. To address the subsequent fallout, including a greater focus on provisioning strategies to better manage risks by setting aside reserves for shock events such as economic downturns or environmental disasters, governments will need strong risk management skills.

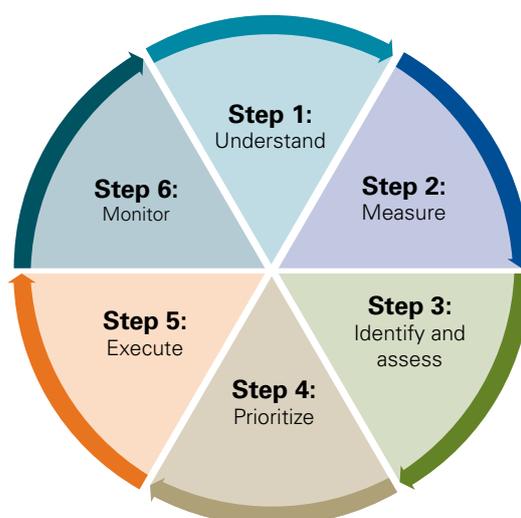
## Responding to megatrend impacts

The nature of the global megatrends – particularly the relationships between them, and consequently, the resulting implications – demand a combined and coordinated set of responses. Each government will need to craft country-specific changes to their business priorities and policy settings such that those changes are:

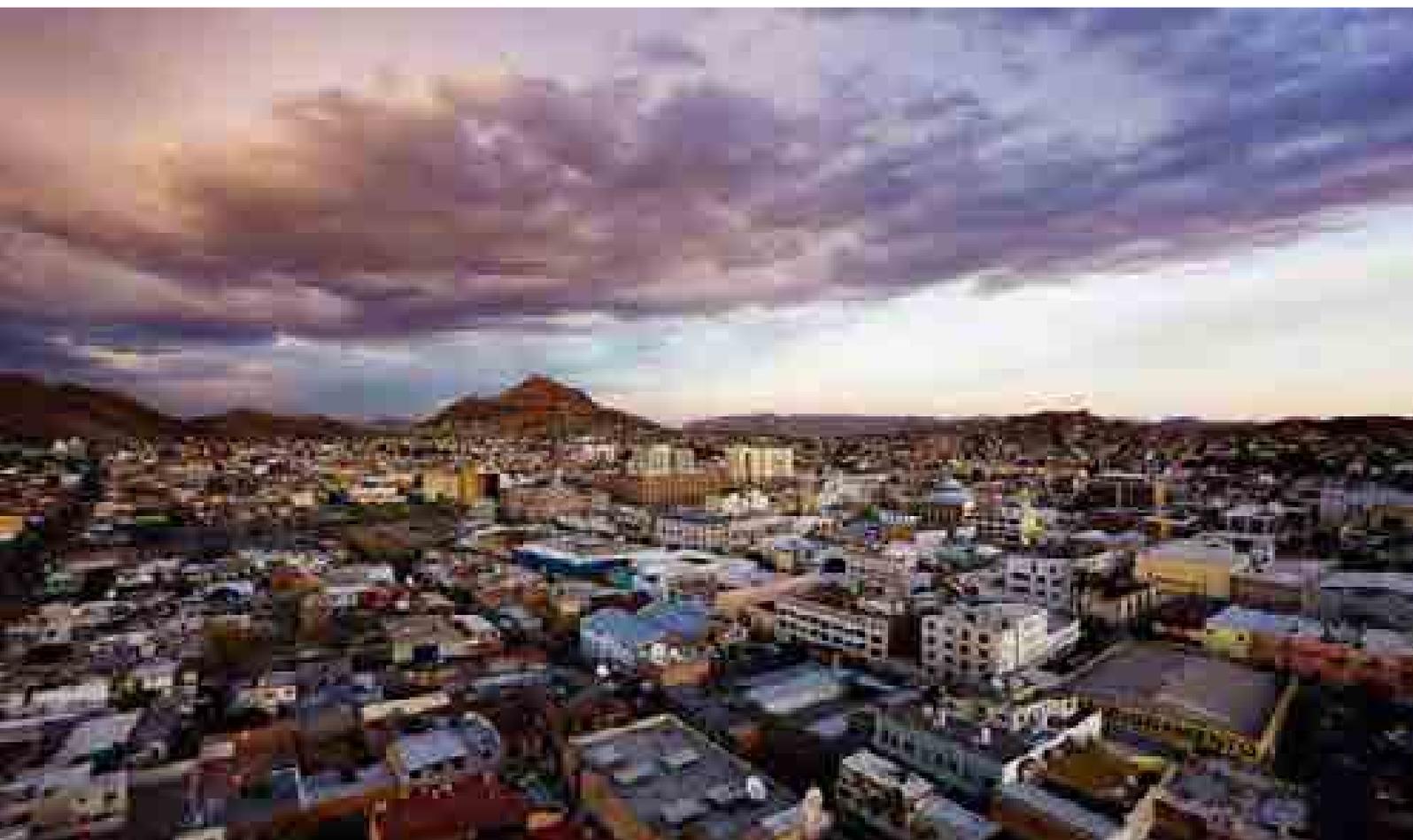
- readily aligned to existing country policy priorities
- commensurate with the risks and opportunities that specific megatrends engender for the country
- synergetic to the economic, societal and cultural aspirations of each nation’s citizenry.

Figure 3 illustrates the framework steps that KPMG recommends governments undertake when addressing the significant implications resulting from megatrend impacts.

**Figure 3: Framework for responding to megatrend impacts**



Source: KPMG International, 2013.



## Step 1

Understand the problem caused or opportunity provided by each megatrend.

## Step 2

Measure each megatrend impact:

- **directly** in terms of the:
  - cost to government (i.e. revenue attrition or expense pressure) or
  - opportunity for government (i.e. improving service delivery economy, efficiency or effectiveness).
- **indirectly** in terms of the whole nation and the key responsibilities of government:
  - economic prosperity
  - security
  - social cohesion
  - environmental sustainability.

## Step 3

Identify and assess the range of policy, regulatory and program shifts that can:

- **slow or extend the timeframes** over which megatrend impacts could be absorbed, accommodated or dispersed
- **mitigate the magnitude** of the megatrend impacts on both the direct cost to government or the indirect impacts to the broader nation, economy and society
- **take most advantage** of the opportunities provided by any megatrend consequences.

## Step 4

Prioritize efforts on the policy, regulatory and program shifts that deliver the highest, risk-adjusted return. This requires an assessment of the long-term costs to government under changed policy setting scenarios. It is also predicated on a view that early intervention and adjustment/adoption today will realize greater benefits (economy, efficiency, effectiveness) than delaying such changes to future years and future generations. This applies both to risk transference, treatment or mitigation actions as well as opportunity adoption actions.

## Step 5

Execute selected policy, regulatory and program shift options by appropriately resourcing the strategies, structures and skills (capability and capacity-building) needed to deliver them.

## Step 6

Continue to monitor and adjust initiatives as appropriate.

As governments respond proactively and responsibly to the challenges brought on by megatrend impacts, opportunities to improve policy, regulation and program service delivery outcomes through improved and expanded strategies, structures and skills will present themselves. Moreover, the value propositions arising from such endeavors have the potential to shape the characteristics of the future state for the better.

The comparative examples in Figure 4 below provide a salient and positive perspective of what is possible.

**Figure 4: Characteristics of a 'leading practice' future state**

<b>TODAY: Characteristics of typical constraints facing some governments today</b>	<b>FUTURE: Characteristics typical of 'leading practice' governments in the future</b>
Policy is subject to the vagaries of political expediency, trial-by-media and vested interests	<b>Policy is strongly evidence-based and directly focused on the national imperatives and priorities of citizens</b>
Fiscal sustainability settings for budgets are well intentioned but often fall short in practice	<b>Fiscal sustainability settings for budgets are well instituted and routinely achieved in results</b>
Government is reactive in addressing the issues of the day	<b>Government is proactive in addressing the problems of tomorrow</b>
Policy solutions are flavored by short to medium-term thinking	<b>Policy solutions are seasoned by medium to long-term thinking</b>
Performance and results are talked about	<b>Performance and results are acted upon</b>
Government-centric service delivery (how governments want to provide it)	<b>Citizen-centric service delivery (how citizens actually need to receive it)</b>
Program service delivery and operational design suits government needs	<b>Program service delivery and operational design meets citizen needs</b>
Policy design is considered separately from operational delivery	<b>Policy design is considered together with operational delivery</b>
Economy (financial) metrics can dominate considerations of efficiency and effectiveness metrics	<b>Economy (financial) metrics are equally assessed alongside efficiency and effectiveness metrics</b>
Key programs exist which may unintentionally entrench entitlement and/or generational dependency	<b>Key programs exist which intentionally entice and/or facilitate citizen self-reliance</b>
Government services delivered predominantly through uncontested bureaucracies	<b>Government services delivered predominantly through 'market tested' leading service providers, alliances and partners</b>
Government is a slow to medium technology adopter	<b>Government is a medium to fast technology adopter</b>
Service delivery models and service channels are slow to implement and cumbersome to change	<b>Service delivery models and service channels are quick to implement and easy to change</b>
Large project implementation is often over budget, over time and under delivered in terms of quality and function	<b>Large project implementation is frequently on budget, on time and meets both quality and functionality targets</b>
Regulation is frequently cumbersome, out-of-date or fails to adapt to a rapidly changing raison d'être	<b>Regulation is robust, necessary, sufficient and able to anticipate emerging global and national regulatory needs</b>
Significant assets and capital are planned, managed and reported on an agency or silo basis	<b>Significant assets and capital are planned, managed and reported on a whole-of-government basis</b>
Governance is misaligned to an entity's objectives and risk aversion is the substitute for risk management	<b>Governance is fit for purpose to an entity's objectives and risk management supports appropriate risk taking</b>

Source: KPMG International, 2013



**Ultimately, governments will need to evolve the way they do business, in some cases drastically, to govern in a world characterized by these pervasive and interconnected trends. They will need to look at what may need to change, as well as how, but most importantly, governments will need to manage change through strong leadership, superior teams and a clear and compelling vision to 2030.**

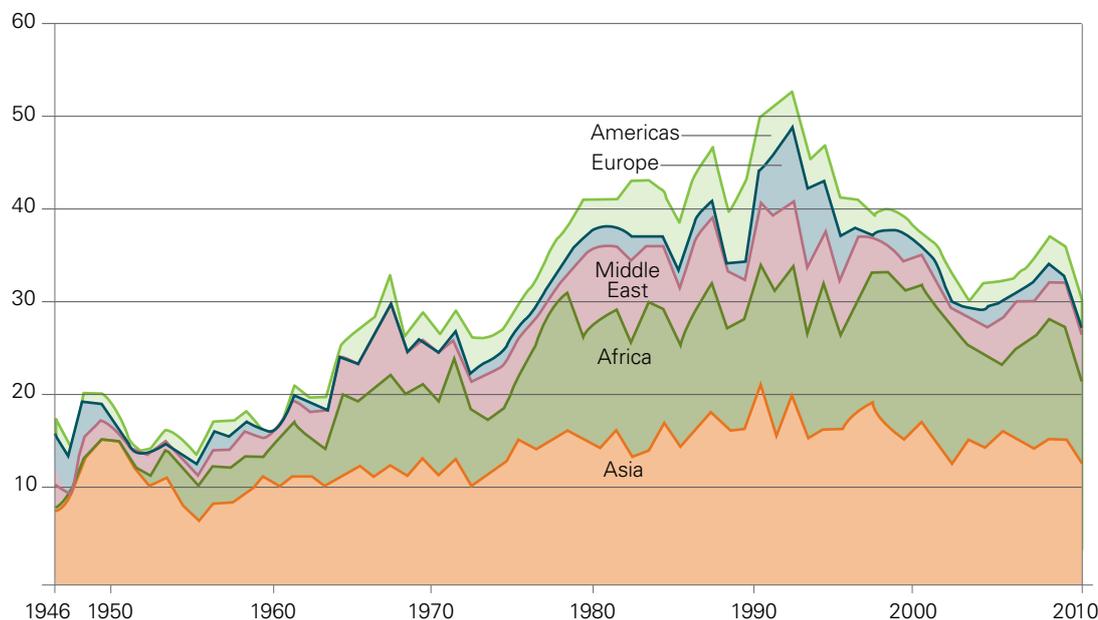
# Appendix:

## A view on security

As noted previously, security was not identified by the Mowat Centre as one of the global megatrends most salient to the future of governments. However, it is recognized that security will continue to influence the global landscape through to 2030. In particular, we believe that global megatrends such as the rise of the individual, enabling technology and resource stress and, to a lesser extent, changing demographics, are impacting the nature of security threats, thus demanding alternative responses by governments.

The data supports this view and conflict around the world has been on the decline since the mid-1990s, as illustrated in Figure 5 below.<sup>152</sup>

**Figure 5:** Conflict around the world from 1946-2010



However, armed violence is on the rise. The OECD estimates that approximately 740,000 people die annually as a result of armed violence (including crime and interpersonal violence) and over 66 percent of these fatalities occur in societies that are not affected by war.<sup>153</sup>

The internet and new technologies will inevitably increase the risk for cyber threats. Already, cyber attacks account for USD300 billion to USD1 trillion in global losses, with hackers stealing as much as one terabyte of data per day from governments, businesses, militaries and academic facilities.<sup>154</sup> In line with governments' growing concern for cyber threats, a recent survey showed that 80 percent of executives and IT professionals from around the world feel that nations are at a greater risk from cyber attacks than physical attacks.<sup>155</sup>

Social media also plays an important role. Terrorists use popular channels such as Facebook and Twitter to recruit and gather intelligence.<sup>156</sup> Civil unrest – such as the recent uprisings brought on by a growing middle class in the developing world – spreads faster than ever as individuals can connect more quickly and more broadly with like-minded individuals around common issues, using social networks to share grievances, organize protests and disseminate information with a global audience.

Conflict over scarce resources – further exacerbated by an increasing population and climate change – and oversized populations of unemployed youth will also be an increasing risk to governments.

These and other changes in world security concerns require governments to consider various options to address the evolved nature of the issue. These responses may range from changes to government policy for armed forces to greater use of social media and data analytics.

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# Bibliography

- 2030 Water Resources Group. 2009. "Charting our Water Future".  
[http://www.2030waterresourcesgroup.com/water\\_full/Charting\\_Our\\_Water\\_Future\\_Final.pdf](http://www.2030waterresourcesgroup.com/water_full/Charting_Our_Water_Future_Final.pdf).
- Alexander, Craig. March 2013. "America's Debt Woes". TD Economics. <http://www.td.com/document/PDF/economics/special/AmericasDebtWoes.pdf>.
- Amore, Luiz. 7 September 2011. "The Guarani Aquifer: From Knowledge to Water Management". *International Journal of Water Resources Development*. Volume 27, Issue 3.
- Anderson, Kim and Anna Strutt. August 2012. "The changing geography of world trade: Projections to 2030". *Journal of Asian Economics*. Volume 23, Issue 4.
- Anonymous. 14 April 2011. "Fail often, fail well". *The Economist*. <http://www.economist.com/node/18557776>.
- Anonymous. 10 December 2011. "Climate Change Trends: Carbon Emission Giants". *NPR.org*. <http://www.npr.org/2009/12/11/121240453/climate-change-trends-carbon-emissions-giants>. Accessed 23 August 2013.
- Anonymous. 10 January 2012. "Terrorist groups recruiting through social media". *CBC*. <http://www.cbc.ca/news/technology/story/2012/01/10/tech-terrorist-social-media.html>. Accessed 22 August 2013.
- Anonymous. 16 March 2013. "The Other Conclave". *The Economist*. <http://www.economist.com/news/finance-and-economics/21573549-can-wto-save-itself-irrelevance-other-conclave>. Accessed 3 May 2013.
- Anonymous. 7 May 2013. "Development finance in Africa". *The Economist*. <http://www.economist.com/blogs/graphicdetail/2013/05/focus-2?fsrc=scn%2Ffb%2Fwl%2Fbl%2Fdevelopmentfinance>. Accessed 29 May 2013.
- Arestis, Philip, Georgios Chortareas, Evangelia Desli and Theodore Pelagidis. March 2012. "Trade Flows Revisited: Further Evidence on Globalisation". *Cambridge Journal of Economics*. Volume 36, Issue 2.
- Asian Development Bank. 2011. "Asian Development Outlook – 2011 Update". <http://www.smh.com.au/business/from-demographic-dividend-to-deficit-20110926-1ktj8.html>.
- Association of Bay Area Government and Metropolitan Transportation Commission. 2013. "Draft Plan Bay Area". [http://onebayarea.org/pdf/Draft\\_Plan\\_Bay\\_Area/00-Overview.pdf](http://onebayarea.org/pdf/Draft_Plan_Bay_Area/00-Overview.pdf). Accessed 29 May 2013.
- Bangura, Yusuf. January 2007. "Big leap in China-Africa ties". UN Africa Renewal Online. <http://www.un.org/africarenewal/magazine/january-2007/big-leap-china-africa-ties>. Accessed 29 May 2013.
- Bowe, Rebecca. 15 January 2013. "Welcome to San Francisco's 'Internet of Things'". *San Francisco Bay Guardian Online*. <http://www.sfbg.com/politics/2013/01/15/welcome-san-francisco%E2%80%99s-internet-things>. Accessed 29 May 2013.
- Boyd, E.B. 31 January 2011. "How Social Media Accelerated the Uprising in Egypt". *Fast Company*. <http://www.fastcompany.com/1722492/how-social-media-accelerated-uprising-egypt>. Accessed 22 August 2013.
- Brabeck-Letmathe, Peter. 25 April 2013. "Addressing the Water Challenge". *Huff Post World Blog*. [http://www.huffingtonpost.com/peter-brabeckletmathe/addressing-the-water-chal\\_b\\_3152926.html](http://www.huffingtonpost.com/peter-brabeckletmathe/addressing-the-water-chal_b_3152926.html).
- Christensen, Benedicte Vibe. 5 November 2012. "China in Africa: A Macroeconomic Perspective". *Center for Global Development Working Paper No. 230*. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1824443##](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1824443##).
- Cisco. 2013. "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012-2017". [http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white\\_paper\\_c11-520862.pdf](http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf). Accessed 23 August 2013.
- Cline, William. September 2003. "CGD Brief. Trading up: Trade Policy and Global Poverty". Center for Global Development, Peterson Institute for International Economics. [http://www.cgdev.org/files/2856\\_file\\_cgdbrief007.pdf](http://www.cgdev.org/files/2856_file_cgdbrief007.pdf).
- Conference Board of Canada. "World Income Inequality". <http://www.conferenceboard.ca/hcp/hot-topics/worldinequality.aspx#ftn21-ref>. Accessed 1 May 2013.
- Congressional Research Service. 2011. "Rising Economic Powers and the Global Economy: Trends and Issues for Congress". <http://www.fas.org/sgp/crs/misc/R41969.pdf>. Accessed 29 May 2013.
- Cooley, Heather and Peter Gleick. 4 July 2011. "Climate-Proofing Transboundary Water Agreements". *Hydrogeological Sciences Journal*. 56:4.
- Cottarelli, Carlo. 20 March 2013. "Mountains of Debt: The Cliffs, Slopes and Uncharted Territories of Today's Public Finances in Advanced Economies". *Public Financial Management Blog*. <http://blog-pfm.imf.org/pfmblog/2013/03/mountains-of-debt-the-cliffs-slopes-and-uncharted-territories-of-todays-public-finances-in-advanced-.html>.
- Dervis, Kemal. September 2012. "Convergence, Interdependence, and Divergence". *IMF, Finance & Development*. <http://www.imf.org/external/pubs/ft/fandd/2012/09/pdf/dervis.pdf>.
- Development Bank of Southern Africa. 2011. "Towards a youth employment strategy for South Africa". <http://www.africaneconomicoutlook.org/fileadmin/uploads/aeo/PDF/DPD%20No28.pdf>.
- Dhoot, Vikas and Urmi Goswami. 10 April 2013. "Direct Benefit Transfer Plan Runs Into Red Tape". *Economic Times*. [http://articles.economicstimes.indiatimes.com/2013-04-10/news/38434327\\_1\\_aadhaar-numbers-dbt-43-districts](http://articles.economicstimes.indiatimes.com/2013-04-10/news/38434327_1_aadhaar-numbers-dbt-43-districts). Accessed 25 April 2013.

- Doesburg, Anthony. 11 May 2012. "Car Parks and Playgrounds to Help Make Rotterdam 'Climate Proof'". *The Guardian*. <http://www.guardian.co.uk/environment/2012/may/11/water-rotterdam-climate-proof>.
- Doshi, Viren, Gary Schulman and Daniel Gabaldon. 28 February 2007. "Lights! Water! Motion." Booz & Company. <http://www.strategy-business.com/article/07104?pg=all>. Accessed 29 May 2013.
- European Union Institute for Security Studies. 2011. "Citizens in an Interconnected and Polycentric World". [http://europa.eu/espas/pdf/espas\\_report\\_ii\\_01\\_en.pdf](http://europa.eu/espas/pdf/espas_report_ii_01_en.pdf).
- Forum on China-Africa Cooperation. 2010. "The Fifth Ministerial Conference Of The Forum On China-Africa Cooperation Beijing Action Plan (2013-2015)". <http://www.focac.org/eng/ltada/dwjbzjjhys/t954620.htm>.
- Foster, Stephen, Ricardo Hirata, Ana Vidal, Gerhard Schmidt and Hector Garduño. November 2009. "The Guarani Aquifer Initiative – Towards Realistic Groundwater Management in a Transboundary Context". World Bank Water Partnership Program. [http://www.un-igrac.org/dynamics/modules/SFIL0100/view.php?fil\\_id=186](http://www.un-igrac.org/dynamics/modules/SFIL0100/view.php?fil_id=186).
- Friedman, Thomas. 3 February 2013. "The virtual middle class rises". *New York Times*. <http://www.nytimes.com/2013/02/03/opinion/sunday/friedman-the-virtual-middle-class-rises.html>.
- Gagnon, Joseph with Marc Hinterschweiger. June 2011. "The Global Outlook for Government Debt Over the Next 25 Years: Implications for the Economy and Public Policy". Peterson Institute for International Economics, Policy Analyses in International Economics 94. [http://www.piie.com/publications/chapters\\_preview/6215/iie6215.pdf](http://www.piie.com/publications/chapters_preview/6215/iie6215.pdf).
- Gorman, Siobhan and Siobhan Hughes. 13 March 2013. "US Steps up Alarm over Cyberattacks". *The Wall Street Journal*. <http://online.wsj.com/article/SB10001424127887323826704578356182878527280.html>. Accessed 2 May 2013.
- Gram Power. "How does Gram Power's Smart Micro Grid work?" <http://www.grampower.com/solutions>. Accessed 29 May 2013.
- Hamblen, Matt. 15 July 2013. "App economy expected to double by 2017 to \$151B". *Computer World*. [http://www.computerworld.com/s/article/9240794/App\\_economy\\_expected\\_to\\_double\\_by\\_2017\\_to\\_151B](http://www.computerworld.com/s/article/9240794/App_economy_expected_to_double_by_2017_to_151B). Accessed 9 September 2013.
- HSBC. February 2013. "Global Connections Report". <https://globalconnections.hsbc.com/downloads/hsbc-trade-forecast-global-february-2013.pdf>.
- Human Sciences Resource Council. 5 May 2010. Presentation: "Addressing the challenge of youth unemployment in South Africa". [http://siteresources.worldbank.org/INTLM/Resources/390041-1141141801867/2275364-1273091267203/Altman-Youth\\_Employability\\_Interventions\\_5May2010.pdf](http://siteresources.worldbank.org/INTLM/Resources/390041-1141141801867/2275364-1273091267203/Altman-Youth_Employability_Interventions_5May2010.pdf). Accessed 29 May 2013.
- IBM. 2013. "What is Big Data?" <http://www-01.ibm.com/software/data/bigdata/>. Accessed 17 February 2013.
- ICLEI. "Member in the spotlight: Rotterdam, the Netherlands". <http://www.iclei-europe.org/members/member-in-the-spotlight/archive/rotterdam/>.
- International Labour Organization. 2013. "Global Employment Trends for Youth". [http://www.ilo.org/wcmsp5/groups/public/-/dgreports/-/dcomm/documents/publication/wcms\\_212423.pdf](http://www.ilo.org/wcmsp5/groups/public/-/dgreports/-/dcomm/documents/publication/wcms_212423.pdf).
- Ighobor, Kingsley. January 2013. "China in the heart of Africa". UN, Africa Renewal Online. <http://www.un.org/africarenewal/magazine/january-2013/china-heart-afric>. Accessed 29 May 2013.
- International Atomic Energy Agency. "Guarding the Guarani: Improving Management of South America's Precious Groundwater". <http://www.iaea.org/Publications/Booklets/Ssp/guarani.html>. Accessed 26 August 2013.
- International Energy Agency. 2012. "World Energy Outlook Factsheet". <http://www.worldenergyoutlook.org/media/weowebbsite/2012/factsheets.pdf>.
- International Monetary Fund. 2013. "Fiscal Monitor – Fiscal Adjustment in an Uncertain World". <http://www.imf.org/external/pubs/ft/fm/2013/01/pdf/fm1301.pdf>.
- International Monetary Fund World Economic Outlook Database, April 2013 update, via IMF Data Mapper: <http://www.imf.org/external/datamapper/index.php>. Accessed 23 August 2013.
- Internet World Stats. "Internet Usage Statistics". <http://www.internetworldstats.com/stats.htm>. Accessed 30 May 2013.
- Kelto, Anders. 28 May 2012. "Over Half of Youth Unemployed in South Africa". Interview with NPR. <http://www.npr.org/2012/05/28/153883339/over-half-of-youth-unemployed-in-south-africa>.
- Kerr, Dana. 22 July 2013. "Cyberattacks account for up to \$1 trillion in global losses". *CNET*. [http://news.cnet.com/8301-1009\\_3-57594989-83/cyberattacks-account-for-up-to-\\$1-trillion-in-global-losses/](http://news.cnet.com/8301-1009_3-57594989-83/cyberattacks-account-for-up-to-$1-trillion-in-global-losses/). Accessed 23 August 2013.
- Ki-moon, Ban. 2012. Message on International Day of Older Persons. New York, New York, 1 October, 2012. <http://www.un.org/sg/statements/?nid=6338>.
- Kotkin, Joel. 27 October 2011. "Overpopulation Isn't The Problem: It's Too Few Babies". *Forbes*. <http://www.forbes.com/sites/joelkotkin/2011/10/27/overpopulation-isnt-the-problem-its-too-few-babies/>. Accessed 23 August 2013.
- KPMG International. January 2013. "Walking the Fiscal Tightrope". <http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/government-fiscal-sustainability/Documents/walking-fiscal-tightrope-final.pdf>.

- Lagarde, Christine. September 2012. "Fragmentation Risks". *IMF, Finance & Development*. <http://www.imf.org/external/pubs/ft/fandd/2012/09/straight.htm>.
- Lamy, Pascal. 26 November 2012. "The Future of the Multilateral Trading System." Speech, Richard Snape Lecture in Melbourne, Australia.
- Lewis, James Andrew. 2013. "What's next in Cyber Security?" in *Critical Questions for 2013: Global Challenges*. Center for Strategic and International Studies. ed. Gerald Hyman. <http://csis.org/publication/critical-questions-2013-global-challenges#k>. Accessed 22 April 2013.
- Lim, C.L., Deborah Elms and Patrick Low. 2012. "What is high quality, twenty-first century anyway?" in *The Trans-Pacific Partnership: A Quest for a Twenty-first century Agreement*. Cambridge, Cambridge UP.
- Lok-Dessallien, Renata. 2012. Speech to a Commemoration of the International Day of Peace 2012 and China-Southeast Asia Peace and Development Forum. 21 September 2012.
- Mark, Laura. 28 June 2012. "Open House: Smarter Cities: Smarter Thinking". *Architects' Journal*. <http://www.architectsjournal.co.uk/footprint/footprint-blog/open-house-smarter-cities-smarter-thinking/8632257.article>. Accessed 29 May 2013.
- McKinsey & Company. 2012. "Urban World: Cities and the rise of the consuming class". [http://www.mckinsey.com/insights/urbanization/urban\\_world\\_cities\\_and\\_the\\_rise\\_of\\_the\\_consuming\\_class](http://www.mckinsey.com/insights/urbanization/urban_world_cities_and_the_rise_of_the_consuming_class). Accessed 29 May 2013.
- Mejia, Abel, Miguel Nucete Hubner, Enrique Ron Sanchez and Miguel Doria. 2012. "Water and Sustainability: A Review of Targets, Tools and Regional Cases". United Nations World Water Assessment Programme. <http://www.zaragoza.es/contenidos/medioambiente/onu/newsletter12/789-eng-ed4-res15.pdf>.
- Mello Jr, John P. 26 June 2013. "Cyberattacks the greatest threat to nations, say global execs". *Network World*. <http://www.networkworld.com/news/2013/062613-cyberattacks-the-greatest-threat-to-271280.html>. Accessed 23 August 2013.
- Merkel, Angela. 2007. Opening Address at the World Economic Forum. Davos, Switzerland, 24 January 2007. [http://www.eu2007.de/en/News/Speeches\\_Interviews/January/0124BKinDavos.html](http://www.eu2007.de/en/News/Speeches_Interviews/January/0124BKinDavos.html).
- Mishra, Pankaj. 27 January 2013. "Mobile Phones Disrupt India, for Better and Worse". *Bloomberg*. <http://www.bloomberg.com/news/2013-01-27/mobile-phones-disrupt-india-for-better-and-worse.html>.
- Myers, Norman. 2005. "Environmental Refugees: an emergent security issue". Paper presented at OSCE 13th Economic Forum. Prague, 23-27 May 2005. <http://www.osce.org/eea/14851>.
- National Institute on Aging, National Institutes of Health. March 2007. "Why Population Aging Matters: A Global Perspective". <http://www.nia.nih.gov/sites/default/files/WPAM.pdf>. pg. 6-7.
- National Institute of Public Finance and Policy. 9 November 2012. "A Cost Benefit Analysis of Aadhaar". [http://planningcommission.nic.in/reports/genrep/rep\\_uid\\_cba\\_paper.pdf](http://planningcommission.nic.in/reports/genrep/rep_uid_cba_paper.pdf).
- National Intelligence Council. 2008. "Global Trends 2025: A Transformed World". [http://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/2025\\_Global\\_Trends\\_Final\\_Report.pdf](http://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/2025_Global_Trends_Final_Report.pdf).
- National Intelligence Council. 2012. "Global Trends 2030: Alternative Worlds". [http://www.dni.gov/files/documents/GlobalTrends\\_2030.pdf](http://www.dni.gov/files/documents/GlobalTrends_2030.pdf).
- Newton, Joshua. "Case Study of Transboundary Dispute Resolution: The Guarani Aquifer". Oregon State University Program in Water Conflict Management and Transformation. [http://www.transboundarywaters.orst.edu/research/case\\_studies/GuaraniAquifer\\_New.htm](http://www.transboundarywaters.orst.edu/research/case_studies/GuaraniAquifer_New.htm). Accessed 26 August 2013.
- Obama, Barack. 2006. "Energy Independence and the Safety of Our Planet". Speech. Chicago, Illinois, 6 April 2006.
- OECD. 2008. "Environmental Outlook to 2030". [http://www.oecd-ilibrary.org/fr/environment/oecd-environmental-outlook-to-2030\\_9789264040519-en](http://www.oecd-ilibrary.org/fr/environment/oecd-environmental-outlook-to-2030_9789264040519-en).
- OECD. 2010. "Cities and Climate Change". <http://www.oecd.org/gov/regional-policy/citiesandclimatechange.htm>.
- OECD. 2010. "Perspectives on Global Development 2010: Shifting Wealth". <http://www.oecd.org/dev/pgd/45451514.pdf>.
- Office of the United States Trade Representative. USTR Fact Sheet on Trans-Pacific Partnership Agreement Outline. <http://london.usembassy.gov/trade018.html>.
- One Bay Area. 22 March 2013. "Draft Plan Bay Area Released". <http://onebayarea.org/regional-initiatives/plan-bay-area/draft-plan-bay-area.html>. Accessed 29 May 2013.
- One Bay Area. "Fact Sheet". [http://www.onebayarea.org/pdf/SB375\\_OneBayArea-Fact\\_Sheet2.pdf](http://www.onebayarea.org/pdf/SB375_OneBayArea-Fact_Sheet2.pdf). Accessed 29 May 2013.
- Oxfam. 2012. "Extreme Weather, Extreme Prices". <http://www.oxfam.org/en/grow/policy/extreme-weather-extreme-prices>.
- Petri, Peter A. and Michael G. Plummer, *The Trans-Pacific Partnership and Asia-Pacific Integration: Policy Implications* (June 15, 2012). Peterson Institute for International Economics Policy Brief, <http://ssrn.com/abstract=2108399>. Accessed 3 May 2013.
- Rapoza, Kenneth. 22 February 2013. "As China Changes, Infamous Foxconn Goes Robotic". *Forbes*. <http://www.forbes.com/sites/kenrapoza/2013/02/22/as-china-changes-infamous-foxconn-goes-robotic/>. Accessed 22 April 2013.
- Redvers, Louise. 31 October 2012. "Youth unemployment: The big question and South Africa". *BBC*. <http://www.bbc.co.uk/news/business-20125053>. Accessed 29 May 2013.
- Robinson, Neil, Luke Gribbon, Veronika Horvath and Kate Robertson. 2013. "Cyber-Security Threat Characterisation: A Rapid Comparative Analysis". *Rand Europe*. [http://www.rand.org/content/dam/rand/pubs/research\\_reports/RR200/RR235/RAND\\_RR235.pdf](http://www.rand.org/content/dam/rand/pubs/research_reports/RR200/RR235/RAND_RR235.pdf). Accessed 22 April 2013.
- Roland Berger. 2011. "Trend Compendium 2030". <http://www.rolandberger.com/gallery/trend-compendium/tc2030/content/assets/trendcompendium2030.pdf>. Accessed 22 August 2012.

Romero, Joshua. 1 March 2012. "India's Big Bet on Identity". *IEEE Spectrum*. <http://spectrum.ieee.org/computing/software/indias-big-bet-on-identity>. Accessed 21 August 2013.

Rotterdam Climate Initiative. "Mitigation: 50% Carbon Reduction in 2025". <http://www.rotterdamclimateinitiative.nl/en/english-2011-design/50percent-reduction>. Accessed 24 April 2013.

Schneider, Howard. 24 April 2013. "Could a program tracking identities of 1.3 billion Indians be the secret to ending poverty?" *The Washington Post*. <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/04/24/could-a-program-tracking-identities-of-1-3-billion-indians-be-the-secret-to-ending-poverty/>. Accessed 24 April 2013.

Schott, Jeffrey, Barbara Kotschwar and Julia Muir. January 2013. *Understanding the Trans-Pacific Partnership*. Policy Analyses in International Economics 99. Peterson Institute of International Economics.

Sivak, Michael. September-October 2013. "Will AC Put a Chill on the Global Energy Supply?" *American Scientist* <http://www.americanscientist.org/issues/pub/2013/5/will-ac-put-a-chill-on-the-global-energy-supply/1>. Accessed 27 August 2013.

Symington, Anabel. 13 April 2010. "The Guarani Aquifer: A Little Known Water Resource in South America Gets a Voice". *Columbia University Earth Institute*.

The Presidency, Republic of South Africa. 2009. "National Youth Policy 2009-2014". <http://www.thepresidency.gov.za/MediaLib/Downloads/Home/Publications/YouthPublications/NationalYouthPolicyPDF/NYP.pdf>. Accessed 29 May 2013.

UK Government. "Making the higher education system more efficient and diverse". <https://www.gov.uk/government/policies/making-the-higher-education-system-more-efficient-and-diverse>. Accessed 27 August 2013.

UK Government. 2006. "Stern Review: The Economics of Climate Change". [http://www.wvf.se/source.php/1169157/Stern%20Report\\_Exec%20Summary.pdf](http://www.wvf.se/source.php/1169157/Stern%20Report_Exec%20Summary.pdf). Accessed 29 May 2013.

UK Government. 2013. Budget 2013. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/188357/budget2013\\_complete.pdf.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/188357/budget2013_complete.pdf.pdf).

Unique Identification Authority of India. "About UIDAI". <http://uidai.gov.in/about-uidai.html>. Accessed 24 April 2013.

United Nations Conference on Trade and Development. Goods and services trade openness, annual, 1980-2011. Last Updated 15 August 2012.; Inward and outward FDI stock, annual, 1980-2011. Last updated 12 July 2012.

United Nations Department of Economic and Social Affairs Population Division. 2006. "World Urbanization Prospects – The 2005 Revision". <http://www.un.org/esa/population/publications/WUP2005/2005wup.htm>.

United Nations Department of Economic and Social Affairs Population Division. 2012. "World Urbanization Prospects – The 2011 Revision". <http://esa.un.org/unup/>.

United Nations Department of Economic and Social Affairs Population Division. 2013. "World Urbanization Prospects – The 2012 Revision". <http://esa.un.org/unpd/wpp/index.htm>.

United Nations Development Program. 2013. "Human Development Report: The Rise of the South – Human Progress in a Diverse World". [http://hdr.undp.org/en/media/HDR\\_2013\\_EN\\_complete.pdf](http://hdr.undp.org/en/media/HDR_2013_EN_complete.pdf).

United Nations Educational Scientific and Cultural Organization. 2011. "Education Counts". <http://unesdoc.unesco.org/images/0019/001902/190214e.pdf>.

United Nations Educational Scientific and Cultural Organization Institute for Statistics. 2011. "UIS Statistics in Brief". [http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=364&IF\\_Language=eng](http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=364&IF_Language=eng). Accessed 29 May 2013.

United Nations Environment Program. 2012. "The Emissions Gap Report". <http://www.unep.org/pdf/2012gapreport.pdf>. Accessed 29 May 2013.

United Nations Food and Agriculture Organization. 2012. "World Agriculture Towards 2030/2050, the 2012 Revision". <http://www.fao.org/docrep/016/ap106e/ap106e.pdf>.

Wang, Yue. 25 March 2013. "More People Have Cell Phones Than Toilets, U.N. Study Shows". *TIME*. <http://newsfeed.time.com/2013/03/25/more-people-have-cell-phones-than-toilets-u-n-study-shows/#ixzz2UhRVezGg>.

Williams, Brock R. 29 January 2013. "Trans-Pacific Partnership (TPP) Countries: Comparative Trade and Economic Analysis". Congressional Research Service (US). Washington, DC.

Wolf, Charles. 24 January 2011. "China's Next Buying Spree: Foreign Companies". *The Wall Street Journal*. <http://online.wsj.com/article/SB10001424052748704754304576095880533686442.html>. Accessed 29 May 2013.

World Bank. 2010. "Economics of Adaptation to Climate Change". <http://www.worldbank.org/en/news/feature/2011/06/06/economics-adaptation-climate-change>.

World Bank. 2012. "Information and Communications for Development". [https://publications.worldbank.org/index.php?main\\_page=product\\_info&products\\_id=24288](https://publications.worldbank.org/index.php?main_page=product_info&products_id=24288).

World Economic Forum. 2012. "Global Agenda Council on Youth Unemployment". <http://www.weforum.org/content/global-agenda-council-youth-unemployment-2012-2013>.

World Economic Forum. 2013. "Resilience Practices: One-Year Follow-Up Analysis Of Global Risks 2012 Cases". <http://reports.weforum.org/global-risks-2013/section-seven-online-only-content/resilience-practices-one-year-follow-up-analysis-of-global-risks-2012-cases/>. Accessed 22 April 2013.

World Trade Organization Regional Trade Agreements Information System: <http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx>. Accessed 29 May 2013.

Yukhananov, Anna. 23 September 2013. "IMF warns of slow progress achieving gender equality". *Reuters*. <http://www.reuters.com/article/2013/09/23/us-imf-gender-idUSBRE98M11Q20130923>. Accessed 23 September 2013.

# Endnotes

1. European Union Institute for Security Studies. 2011. "Citizens in an Interconnected and Polycentric World:" [http://europa.eu/espas/pdf/espas\\_report\\_ii\\_01\\_en.pdf](http://europa.eu/espas/pdf/espas_report_ii_01_en.pdf)
2. United Nations Population Division. 2012. "World Urbanization Prospects – The 2011 Revision." <http://esa.un.org/unup/>
3. United Nations Food and Agriculture Organization. 2012. "World Agriculture Towards 2030/2050, the 2012 Revision:" <http://www.fao.org/docrep/016/ap106e/ap106e.pdf>.
4. Michael Sivak. September-October 2013. "Will AC Put a Chill on the Global Energy Supply?" *American Scientist*. <http://www.americanscientist.org/issues/pub/2013/5/will-ac-put-a-chill-on-the-global-energy-supply/1>. Accessed 27 August 2013.
5. Sivak, 2013.
6. National Institute on Aging, National Institutes of Health. March 2007. "Why Population Aging Matters: A Global Perspective:" <http://www.nia.nih.gov/sites/default/files/WPAM.pdf>, pp. 6-7.
7. Ibid.
8. United Nations Population Division. 2013. "World Urbanization Prospects - The 2012 Revision:" <http://esa.un.org/unpd/wpp/index.htm>.
9. International Monetary Fund. 2013. "Fiscal Monitor - Fiscal Adjustment in an Uncertain World:" <http://www.imf.org/external/pubs/ft/fm/2013/01/pdf/fm1301.pdf>, pp. 79-80.
10. World Economic Forum. 2012. "Global Agenda Council on Youth Unemployment:" <http://www.weforum.org/content/global-agenda-council-youth-unemployment-2012-2013>.
11. International Labour Organization. 2013. "Global Employment Trends for Youth:" [http://www.ilo.org/wcmsp5/groups/public/-dgreports/-dcomm/documents/publication/wcms\\_212423.pdf](http://www.ilo.org/wcmsp5/groups/public/-dgreports/-dcomm/documents/publication/wcms_212423.pdf).
12. Asian Development Bank. 2011. "Asian Development Outlook - 2011 Update:" <http://www.smh.com.au/business/from-demographic-dividend-to-deficit-20110926-1ktj8.html>.
13. Ban Ki-moon. 2012. Message on International Day of Older Persons. New York, New York, 1 October, 2012. <http://www.un.org/sg/statements/?nid=6338>.
14. Joel Kotkin. 27 October 2011. "Overpopulation Isn't The Problem: It's Too Few Babies:" *Forbes*. <http://www.forbes.com/sites/joelkotkin/2011/10/27/overpopulation-isnt-the-problem-its-too-few-babies/>. Accessed 23 August 2013.
15. The Presidency, Republic of South Africa. 2009. "National Youth Policy 2009-2014:" <http://www.thepresidency.gov.za/MediaLib/Downloads/Home/Publications/YouthPublications/NationalYouthPolicyPDF/NYP.pdf>. Accessed 29 May 2013.
16. Human Sciences Resource Council. 5 May 2010. Presentation: "Addressing the challenge of youth unemployment in South Africa:" [http://siteresources.worldbank.org/INTLM/Resources/390041-1141141801867/2275364-1273091267203/Altman-Youth\\_Employability\\_Interventions\\_5May2010.pdf](http://siteresources.worldbank.org/INTLM/Resources/390041-1141141801867/2275364-1273091267203/Altman-Youth_Employability_Interventions_5May2010.pdf). Accessed 29 May 2013.
17. Development Bank of Southern Africa. 2011. "Towards a youth employment strategy for South Africa:" <http://www.africaneconomicoutlook.org/fileadmin/uploads/aeo/PDF/DPD%20No28.pdf>.
18. Anders Kelto. 28 May 2012. "Over Half of Youth Unemployed in South Africa:" Interview with NPR. <http://www.npr.org/2012/05/28/153883339/over-half-of-youth-unemployed-in-south-africa>.
19. Development Bank of Southern Africa, 2011.
20. Kelto, 2012.
21. Louise Redvers. 31 October 2012. "Youth unemployment: The big question and South Africa:" *BBC*. <http://www.bbc.co.uk/news/business-20125053>. Accessed 29 May 2013.
22. European Union Institute for Security Studies, 2011.
23. United Nations Educational Scientific and Cultural Organization Institute for Statistics. 2011. "UIS Statistics in Brief:" [http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=364&IF\\_Language=eng](http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=364&IF_Language=eng). Accessed 29 May 2013.
24. United Nations Education Scientific and Cultural Organization. 2011. "Education Counts:" <http://unesdoc.unesco.org/images/0019/001902/190214e.pdf>.
25. Given 2005 Purchasing Power Parity terms at \$10-\$100 a day. United Nations Development Program. 2013. "Human Development Report: The Rise of the South – Human Progress in Diverse World:" [http://hdr.undp.org/en/media/HDR\\_2013\\_EN\\_complete.pdf](http://hdr.undp.org/en/media/HDR_2013_EN_complete.pdf).
26. Ibid.
27. Anna Yukhananov. 23 September 2013. "IMF warns of slow progress achieving gender equality:" *Reuters*. <http://www.reuters.com/article/2013/09/23/us-imf-gender-idUSBRE98M11Q20130923>. Accessed 23 September 2013.

28. Conference Board of Canada. "World Income Inequality"  
<http://www.conferenceboard.ca/hcp/hot-topics/worldinequality.aspx#ftn21-ref>. Accessed 1 May 2013.
29. World Bank. 2012. "Information and Communications for Development"  
[https://publications.worldbank.org/index.php?main\\_page=product\\_info&products\\_id=24288](https://publications.worldbank.org/index.php?main_page=product_info&products_id=24288).
30. European Union Institute for Security Studies, 2011.
31. Internet World Stats. "Internet Usage Statistics" <http://www.internetworldstats.com/stats.htm>. Accessed 30 May 2013.
32. E.B. Boyd. 31 January 2011. "How Social Media Accelerated the Uprising in Egypt." *Fast Company*.  
<http://www.fastcompany.com/1722492/how-social-media-accelerated-uprising-egypt>. Accessed 22 August 2013.
33. European Union Institute for Security Studies, 2011.
34. This term was coined by Thomas Friedman in a February 2013 New York Times article titled "The virtual middle class rises" <http://www.nytimes.com/2013/02/03/opinion/sunday/friedman-the-virtual-middle-class-rises.html>.
35. Pankaj Mishra. 27 January 2013. "Mobile Phones Disrupt India, for Better and Worse." *Bloomberg*.  
<http://www.bloomberg.com/news/2013-01-27/mobile-phones-disrupt-india-for-better-and-worse.html>.
36. Ibid.
37. Yue Wang. 25 March 2013. "More People Have Cell Phones Than Toilets, U.N. Study Shows" *TIME*.  
<http://newsfeed.time.com/2013/03/25/more-people-have-cell-phones-than-toilets-u-n-study-shows/#ixzz2UhrVezGg>.
38. Gram Power. "How does Gram Power's Smart Micro Grid work?" <http://www.grampower.com/solutions/>. Accessed 29 May 2013.
39. Internet World Stats, 2012.
40. Matt Hamblen. 15 July 2013. "App economy expected to double by 2017 to \$151B" *Computer World*.  
[http://www.computerworld.com/s/article/9240794/App\\_economy\\_expected\\_to\\_double\\_by\\_2017\\_to\\_151B](http://www.computerworld.com/s/article/9240794/App_economy_expected_to_double_by_2017_to_151B). Accessed 9 September 2013.
41. IBM. 2013. "What is Big Data?" <http://www-01.ibm.com/software/data/bigdata/>. Accessed 17 February 2013.
42. Kenneth Rapozo. 22 February 2013. "As China Changes, Infamous Foxconn Goes Robotic" *Forbes*. <http://www.forbes.com/sites/kenrapozo/2013/02/22/as-china-changes-infamous-foxconn-goes-robotic/>. Accessed 22 April 2013.
43. Anonymous. 14 April 2011. "Fail often, fail well!" *The Economist*. <http://www.economist.com/node/18557776>.
44. Kerr, 2013.
45. European Union Institute for Security Studies, 2011.
46. National Intelligence Council. 2012. "Global Trends 2030: Alternative Worlds"  
[http://www.dni.gov/files/documents/GlobalTrends\\_2030.pdf](http://www.dni.gov/files/documents/GlobalTrends_2030.pdf).
47. Siobhan Gorman and Siobhan Hughes. 13 March 2013. "US Steps up Alarm over Cyberattacks" *The Wall Street Journal*.  
<http://online.wsj.com/article/SB10001424127887323826704578356182878527280.html>. Accessed 2 May 2013.
48. James Andrew Lewis. "What's next in Cyber Security?" in *Critical Questions for 2013: Global Challenges*. Center for Strategic and International Studies. ed. Gerald Hyman. <http://csis.org/publication/critical-questions-2013-global-challenges#k>. Accessed 22 April 2013.
49. World Economic Forum. 2013. "Resilience Practices: One-Year Follow-Up Analysis Of Global Risks 2012 Cases"  
<http://reports.weforum.org/global-risks-2013/section-seven-online-only-content/resilience-practices-one-year-follow-up-analysis-of-global-risks-2012-cases/>. Accessed 22 April 2013.
50. Neil Robinson, Luke Gribbon, Veronika Horvath and Kate Robertson. 2013. "Cyber-Security Threat Characterisation: A Rapid Comparative Analysis" *Rand Europe*. [http://www.rand.org/content/dam/rand/pubs/research\\_reports/RR200/RR235/RAND\\_RR235.pdf](http://www.rand.org/content/dam/rand/pubs/research_reports/RR200/RR235/RAND_RR235.pdf). Accessed 22 April 2013.
51. Cisco. 2013. "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012-2017"  
[http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white\\_paper\\_c11-520862.html](http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html). Accessed 23 August 2013.
52. Unique Identification Authority of India. "About UIDAI" <http://uidai.gov.in/about-uidai.html>. Accessed 24 April 2013.
53. Howard Schneider. 24 April 2013. "Could a program tracking identities of 1.3 billion Indians be the secret to ending poverty?" *The Washington Post*. <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/04/24/could-a-program-tracking-identities-of-1-3-billion-indians-be-the-secret-to-ending-poverty/>. Accessed 24 April 2013.
54. Vikas Dhoot and Urmi Goswami. 10 April 2013. "Direct Benefit Transfer Plan Runs Into Red Tape" *Economic Times*.  
[http://articles.economicstimes.indiatimes.com/2013-04-10/news/38434327\\_1\\_aadhaar-numbers-dbt-43-districts](http://articles.economicstimes.indiatimes.com/2013-04-10/news/38434327_1_aadhaar-numbers-dbt-43-districts). Accessed 25 April 2013.

55. Joshua Romero. 1 March 2012. "India's Big Bet on Identity". *IEEE Spectrum*. <http://spectrum.ieee.org/computing/software/indias-big-bet-on-identity>. Accessed 21 August 2013.
56. National Institute of Public Finance and Policy. 9 November 2012. "A Cost Benefit Analysis of Aadhaar". [http://planningcommission.nic.in/reports/genrep/rep\\_uid\\_cba\\_paper.pdf](http://planningcommission.nic.in/reports/genrep/rep_uid_cba_paper.pdf).
57. William Cline. September 2003. "CGD Brief. Trading up: Trade Policy and Global Poverty". Center for Global Development, Peterson Institute for International Economics. [http://www.cgdev.org/files/2856\\_file\\_cgdbrief007.pdf](http://www.cgdev.org/files/2856_file_cgdbrief007.pdf).
58. UNCTAD data. Goods and services trade openness, annual, 1980-2011. Last Updated 15 August 2012.
59. HSBC. February 2013. "Global Connections Report". <https://globalconnections.hsbc.com/downloads/hsbc-trade-forecast-global-february-2013.pdf>.
60. UNCTAD data. Inward and outward FDI stock, annual, 1980-2011. Last updated 12 July 2012.
61. Kym Anderson and Anna Strutt. August 2012. "The changing geography of world trade: Projections to 2030". *Journal of Asian Economics*. Volume 23, Issue 4.
62. Philip Arestis, Georgios Chortareas, Evangelia Desli and Theodore Pelagidis. March 2012. "Trade Flows Revisited: Further Evidence on Globalisation". *Cambridge Journal of Economics*. Volume 36, Issue 2. pp. 481-493.
63. World Trade Organization Regional Trade Agreements Information System: <http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx>. Accessed 29 May 2013.
64. Christine Lagarde. September 2012. "Fragmentation Risks". *IMF, Finance & Development*. <http://www.imf.org/external/pubs/ft/fandd/2012/09/straight.htm>.
65. Anonymous. 16 March 2013. "The Other Conclave". *The Economist*. <http://www.economist.com/news/finance-and-economics/21573549-can-wto-save-itself-irrelevance-other-conclave>. Accessed 3 May 2013.
66. Jeffrey Schott, Barbara Kotschwar and Julia Muir. January 2013. *Understanding the Trans-Pacific Partnership*. Policy Analyses in International Economics 99. Peterson Institute of International Economics.
67. Brock. R. Williams. 29 January 2013. "Trans-Pacific Partnership (TPP) Countries: Comparative Trade and Economic Analysis". Congressional Research Service (US). Washington, DC.
68. Schott et. al, 2013.
69. Office of the United States Trade Representative. USTR Fact Sheet on Trans-Pacific Partnership Agreement Outline. <http://london.usembassy.gov/trade018.html>.
70. Schott et. al, 2013.
71. C.L.Lim, Deborah Elms and Patrick Low. 2012. "What is high quality, twenty-first century anyway?" in *The Trans-Pacific Partnership: A Quest for a Twenty-first century Agreement*. Cambridge, Cambridge UP.
72. Peter A. Petri. and Michael G. Plummer, *The Trans-Pacific Partnership and Asia-Pacific Integration: Policy Implications* (June 15, 2012). Peterson Institute for International Economics Policy Brief, <http://ssrn.com/abstract=2108399>. Accessed 3 May 2013.
73. KPMG International. January 2013. "Walking the Fiscal Tightrope". <http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/government-fiscal-sustainability/Documents/walking-fiscal-tightrope-final.pdf>
74. International Monetary Fund. 2013. "Fiscal Monitor – Fiscal Adjustment in an Uncertain World". <http://www.imf.org/external/pubs/ft/fm/2013/01/pdf/fm1301.pdf>, pp. 71.
75. Joseph Gagnon with Marc Hinterschweiger. June 2011. "The Global Outlook for Government Debt Over the Next 25 Years : Implications for the Economy and Public Policy". Peterson Institute for International Economics, Policy Analyses in International Economics 94. [http://www.piie.com/publications/chapters\\_preview/6215/ie6215.pdf](http://www.piie.com/publications/chapters_preview/6215/ie6215.pdf).
76. Ibid.
77. International Monetary Fund. 2013. "Fiscal Monitor – Fiscal Adjustment in an Uncertain World". <http://www.imf.org/external/pubs/ft/fm/2013/01/pdf/fm1301.pdf>, pp. 79-80.
78. International Monetary Fund World Economic Outlook Database, April 2013 update, via IMF Data Mapper: <http://www.imf.org/external/datamapper/index.php>. Accessed 23 August 2013.
79. Carlo Cottarelli. 20 March 2013. "Mountains of Debt: The Cliffs, Slopes and Uncharted Territories of Today's Public Finances in Advanced Economies". Public Financial Management Blog. <http://blog-pfm.imf.org/pfmblog/2013/03/mountains-of-debt-the-cliffs-slopes-and-uncharted-territories-of-todays-public-finances-in-advanced-.html>.
80. Craig Alexander. March 2013. "America's Debt Woes". TD Economics. <http://www.td.com/document/PDF/economics/special/AmericasDebtWoes.pdf>.

81. International Monetary Fund. 2013. "Fiscal Monitor – Fiscal Adjustment in an Uncertain World" <http://www.imf.org/external/pubs/ft/fm/2013/01/pdf/fm1301.pdf>, pp. 71.
82. UK Government Budget 2013. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/188357/budget2013\\_complete.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/188357/budget2013_complete.pdf), pp. 22.
83. Compiled from data in the UK Government Budget 2013.
84. Congressional Research Service. 2011. "Rising Economic Powers and the Global Economy: Trends and Issues for Congress" <http://www.fas.org/sgp/crs/misc/R41969.pdf>. Accessed 29 May 2013.
85. OECD. 2010. "Perspectives on Global Development 2010: Shifting Wealth" <http://www.oecd.org/dev/pgd/45451514.pdf>.
86. McKinsey. 2012. "Urban World: Cities and the rise of the consuming class" [http://www.mckinsey.com/insights/urbanization/urban\\_world\\_cities\\_and\\_the\\_rise\\_of\\_the\\_consuming\\_class](http://www.mckinsey.com/insights/urbanization/urban_world_cities_and_the_rise_of_the_consuming_class). Accessed 29 May 2013.
87. European Union Institute for Security Studies, 2011.
88. OECD. 2010. "Perspectives on Global Development 2010: Shifting Wealth" <http://www.oecd.org/dev/pgd/45451514.pdf>.
89. Charles Wolf. 24 January 2011. "China's Next Buying Spree: Foreign Companies" *The Wall Street Journal*. <http://online.wsj.com/article/SB10001424052748704754304576095880533686442.html>. Accessed 29 May 2013.
90. Pascal Lamy. 26 November 2012. "The Future of the Multilateral Trading System." Speech, Richard Snape Lecture in Melbourne, Australia.
91. Angela Merkel. 2007. Opening Address at the World Economic Forum. Davos, Switzerland, 24 January 2007. [http://www.eu2007.de/en/News/Speeches\\_Interviews/January/0124BKinDavos.html](http://www.eu2007.de/en/News/Speeches_Interviews/January/0124BKinDavos.html).
92. Roland Berger. 2011. "Trend Compendium 2030" <http://www.rolandberger.com/gallery/trend-compendium/tc2030/content/assets/trendcompendium2030.pdf>. Accessed 22 August 2013.
93. Kingsley Ighobor. January 2013. "China in the heart of Africa" UN., Africa Renewal Online. <http://www.un.org/africarenewal/magazine/january-2013/china-heart-afric>. Accessed 29 May 2013.
94. Benedicte Vibe Christensen. 5 November 2012. "China in Africa: A Macroeconomic Perspective" *Center for Global Development Working Paper No. 230*. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1824443##](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1824443##).
95. Anonymous. 7 May 2013. "Development finance in Africa" *The Economist*. <http://www.economist.com/blogs/graphicdetail/2013/05/focus-2?fsrc=scn%2Ffb%2Fwl%2Fbl%2Fdevelopmentfinance>. Accessed 29 May 2013.
96. Christensen, 2012.
97. Ibid.
98. Yusuf Bangura. January 2007. "Big leap in China-Africa ties" UN Africa Renewal Online. <http://www.un.org/africarenewal/magazine/january-2007/big-leap-china-africa-ties>. Accessed 29 May 2013.
99. Ibid.
100. Forum on China-Africa Cooperation. 2010. "The Fifth Ministerial Conference Of The Forum On China-Africa Cooperation Beijing Action Plan (2013-2015)" <http://www.focac.org/eng/ltada/dwjbzjjhys/t954620.htm>.
101. Christensen, 2012.
102. Ibid.
103. Ibid.
104. United Nations Environment Program. 2012. "The Emissions Gap Report" <http://www.unep.org/pdf/2012gapreport.pdf>. Accessed 29 May 2013.
105. UK Government. 2006. "Stern Review: The Economics of Climate Change" [http://www.wwf.se/source.php/1169157/Stern%20Report\\_Exec%20Summary.pdf](http://www.wwf.se/source.php/1169157/Stern%20Report_Exec%20Summary.pdf). Accessed 29 May 2013.
106. World Bank. 2010. "Economics of Adaptation to Climate Change" <http://www.worldbank.org/en/news/feature/2011/06/06/economics-adaptation-climate-change>.
107. UK Government, 2006.
108. Norman Myers. 2005. "Environmental Refugees: an emergent security issue". Paper presented at OSCE 13th Economic Forum. Prague, 23-27 May 2005. <http://www.osce.org/eea/14851>.
109. World Bank, 2010.
110. OECD. 2010. "Cities and Climate Change" <http://www.oecd.org/gov/regional-policy/citiesandclimatechange.htm>.

111. Barack Obama. 2006. "Energy Independence and the Safety of Our Planet." Speech. Chicago, Illinois, 6 April 2006.
112. Anonymous. 10 December 2011. "Climate Change Trends: Carbon Emission Giants." *NPR.org*. <http://www.npr.org/2009/12/11/121240453/climate-change-trends-carbon-emissions-giants>. Accessed 23 August 2013.
113. ICLEI. "Member in the spotlight: Rotterdam, the Netherlands." <http://www.iclei-europe.org/members/member-in-the-spotlight/archive/rotterdam/>.
114. ICLEI, 2013.
115. Rotterdam Climate Initiative. "Mitigation: 50% Carbon Reduction in 2025" <http://www.rotterdamclimateinitiative.nl/english-2011-design/50percent-reduction>. Accessed 24 April 2013.
116. ICLEI, 2013.
117. Anthony Doesburg. 11 May 2012. "Car Parks and Playgrounds to Help Make Rotterdam 'Climate Proof'." *The Guardian*. <http://www.guardian.co.uk/environment/2012/may/11/water-rotterdam-climate-proof>.
118. Doesburg, 2012.
119. Ibid.
120. United Nations Food and Agriculture Organization, 2012.
121. 2030 Water Resources Group. 2009. "Charting our Water Future." [http://www.2030watergroup.com/water\\_full/Charting\\_Our\\_Water\\_Future\\_Final.pdf](http://www.2030watergroup.com/water_full/Charting_Our_Water_Future_Final.pdf).
122. International Energy Agency. 2012. "World Energy Outlook Factsheet." <http://www.worldenergyoutlook.org/media/weowebiste/2012/factsheets.pdf>.
123. Peter Brabeck-Letmathe. 25 April 2013. "Addressing the Water Challenge." Huff Post World Blog. [http://www.huffingtonpost.com/peter-brabeckletmathe/addressing-the-water-chal\\_b\\_3152926.html](http://www.huffingtonpost.com/peter-brabeckletmathe/addressing-the-water-chal_b_3152926.html).
124. OECD. 2008. "Environmental Outlook to 2030." [http://www.oecd-ilibrary.org/fr/environment/oecd-environmental-outlook-to-2030\\_9789264040519-en](http://www.oecd-ilibrary.org/fr/environment/oecd-environmental-outlook-to-2030_9789264040519-en).
125. Oxfam. 2012. "Extreme Weather, Extreme Prices." <http://www.oxfam.org/en/grow/policy/extreme-weather-extreme-prices>
126. Renata Lok-Dessallien. 2012. Speech to a Commemoration of the International Day of Peace 2012 and China-Southeast Asia Peace and Development Forum. 21 September 2012.
127. National Intelligence Council. 2008. "Global Trends 2025: A Transformed World." [http://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/2025\\_Global\\_Trends\\_Final\\_Report.pdf](http://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/2025_Global_Trends_Final_Report.pdf).
128. Anabel Symington. 13 April 2010. "The Guarani Aquifer: A Little Known Water Resource in South America Gets a Voice." *Columbia University Earth Institute*.
129. International Atomic Energy Agency. "Guarding the Guarani: Improving Management of South America's Precious Groundwater." <http://www.iaea.org/Publications/Booklets/Ssp/guarani.html>. Accessed 26 August 2013.
130. Abel Mejia, Miguel Nucete Hubner, Enrique Ron Sanchez and Miguel Doria. 2012. "Water and Sustainability: A Review of Targets, Tools and Regional Cases". United Nations World Water Assessment Programme. <http://www.zaragoza.es/contenidos/medioambiente/onu/newsletter12/789-eng-ed4-res15.pdf>. pp. 35.
131. International Atomic Energy Agency.
132. Joshua Newton. "Case Study of Transboundary Dispute Resolution: The Guarani Aquifer". Oregon State University Program in Water Conflict Management and Transformation. [http://www.transboundarywaters.orst.edu/research/case\\_studies/GuaraniAquifer\\_New.htm](http://www.transboundarywaters.orst.edu/research/case_studies/GuaraniAquifer_New.htm). Accessed 26 August 2013.
133. Luiz Amore. 7 September 2011. "The Guarani Aquifer: From Knowledge to Water Management." *International Journal of Water Resources Development*. Volume 27, Issue 3. pp. 463-476.
134. Stephen Foster, Ricardo Hirata, Ana Vidal, Gerhard Schmidt and Hector Garduño. November 2009. "The Guarani Aquifer Initiative – Towards Realistic Groundwater Management in a Transboundary Context". World Bank Water Partnership Program. [http://www.un-igrac.org/dynamics/modules/SFIL0100/view.php?fil\\_id=186](http://www.un-igrac.org/dynamics/modules/SFIL0100/view.php?fil_id=186), pp.13.
135. Heather Cooley and Peter Gleick. 4 July 2011. "Climate-Proofing Transboundary Water Agreements." *Hydrogeological Sciences Journal*. 56:4. pp. 711-718.
136. United Nations Population Division. 2012. "World Urbanization Prospects – The 2011 Revision." <http://esa.un.org/unup/>.
137. Ibid.

138. United Nations Population Division. 2006. "World Urbanization Prospects – The 2005 Revision." <http://www.un.org/esa/population/publications/WUP2005/2005wup.htm>.
139. McKinsey & Company, 2012.
140. Ibid.
141. Viren Doshi, Gary Schulman, and Daniel Gabaldon. "Lights! Water! Motion" Booz & Company. <http://www.strategy-business.com/article/07104?pg=all>. Accessed 29 May 2013.
142. OECD, 2008.
143. European Union Institute for Security Studies, 2011.
144. One Bay Area. 22 March 2013. "Draft Plan Bay Area Released" <http://onebayarea.org/regional-initiatives/plan-bay-area/draft-plan-bay-area.html>. Accessed 29 May 2013.
145. Association of Bay Area Government and Metropolitan Transportation Commission. 2013. "Draft Plan Bay Area" [http://onebayarea.org/pdf/Draft\\_Plan\\_Bay\\_Area/00-Overview.pdf](http://onebayarea.org/pdf/Draft_Plan_Bay_Area/00-Overview.pdf). Accessed 29 May 2013.
146. One Bay Area. "Fact Sheet" [http://www.onebayarea.org/pdf/SB375\\_OneBayArea-Fact\\_Sheet2.pdf](http://www.onebayarea.org/pdf/SB375_OneBayArea-Fact_Sheet2.pdf). Accessed 29 May 2013.
147. Laura Mark. 28 June 2012. "Open House: Smarter Cities: Smarter Thinking" *Architects' Journal*. <http://www.architectsjournal.co.uk/footprint/footprint-blog/open-house-smarter-cities-smarter-thinking/8632257.article>. Accessed 29 May 2013.
148. Rebecca Bowe. 15 January 2013. "Welcome to San Francisco's 'Internet of Things'" *San Francisco Bay Guardian Online*. <http://www.sfbg.com/politics/2013/01/15/welcome-san-francisco%E2%80%99s-internet-things>. Accessed 29 May 2013.
149. Kemal Dervis. September 2012. "Convergence, Interdependence, and Divergence" *IMF, Finance & Development*. <http://www.imf.org/external/pubs/ft/fandd/2012/09/pdf/dervis.pdf>.
150. UK Government. "Making the higher education system more efficient and diverse" <https://www.gov.uk/government/policies/making-the-higher-education-system-more-efficient-and-diverse>. Accessed 27 August 2013.
151. World Economic Forum, 2013.
152. European Union Institute for Security Studies, 2011.
153. European Union Institute for Security Studies, 2011.
154. Dana Kerr. 22 July 2013. "Cyberattacks account for up to \$1 trillion in global losses" *CNET*. [http://news.cnet.com/8301-1009\\_3-57594989-83/cyberattacks-account-for-up-to-\\$1-trillion-in-global-losses/](http://news.cnet.com/8301-1009_3-57594989-83/cyberattacks-account-for-up-to-$1-trillion-in-global-losses/). Accessed 23 August 2013.
155. John P Mello Jr. 26 June 2013. "Cyberattacks the greatest threat to nations, say global execs" *Network World*. <http://www.networkworld.com/news/2013/062613-cyberattacks-the-greatest-threat-to-271280.html>. Accessed 23 August 2013.
156. Anonymous. 10 January 2012. "Terrorist groups recruiting through social media" *CBC*. <http://www.cbc.ca/news/technology/story/2012/01/10/tech-terrorist-social-media.html>. Accessed 22 August 2013.

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