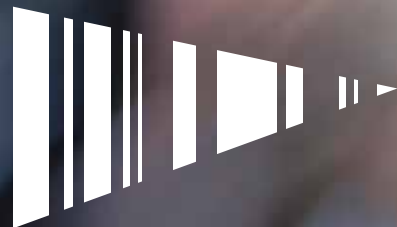


Megatrends 2015

Making sense of a world in motion



EY

Building a better
working world

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Welcome



At EY, we describe megatrends as large, transformative global forces that define the future by having a far-reaching impact on business, economies, industries, societies and individuals.

We live in a world in constant motion. Goods, capital and labor are traveling globally at a faster pace than ever and moving in novel patterns. Technological innovation, including digital, is rewriting every industry and the way in which human beings manage their lives. In this world, the ever-increasing acceleration of change is one of the few constants.

EY has identified six megatrends. We think that each has the present and future capacity to disrupt and reshape the world in which we live in surprising and unexpected ways. We call them digital future; entrepreneurship rising; global marketplace; urban world; resourceful planet; and health reimaged.

With each megatrend, we present a set of observations and facts designed to cover what we deem to be the most important and interesting aspects. In total, they provide a “best guess” from where we sit today as to how these megatrends might unfold in the future.

As with any exercise of this type, we don't claim to have a crystal ball. We do, however, believe in the fundamental importance of thinking critically about the implications embedded in these megatrends today, as well as scanning the horizon for new developments. For EY, the megatrends process is one of the key ways in which we gain insights that inform our mission of building a better working world. The process helps us to better understand the challenges and opportunities that our clients face so that we can effectively respond to their shifting needs.

In this spirit, EY invites you to peruse this report to consider how these megatrends might also be impacting your business, your partners and your customers – opening up new opportunities to achieve adaptation, growth and success in the near and longer-term future.

A handwritten signature in white ink that reads "U. Schreiber".

Uschi Schreiber

EY Global Vice Chair – Markets and Chair, Global Accounts Committee

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Making sense of a world in motion

Megatrends are large, transformative global forces that impact everyone on the planet. EY has identified six megatrends that define our future by having a far-reaching impact on business, society, culture, economies and individuals.

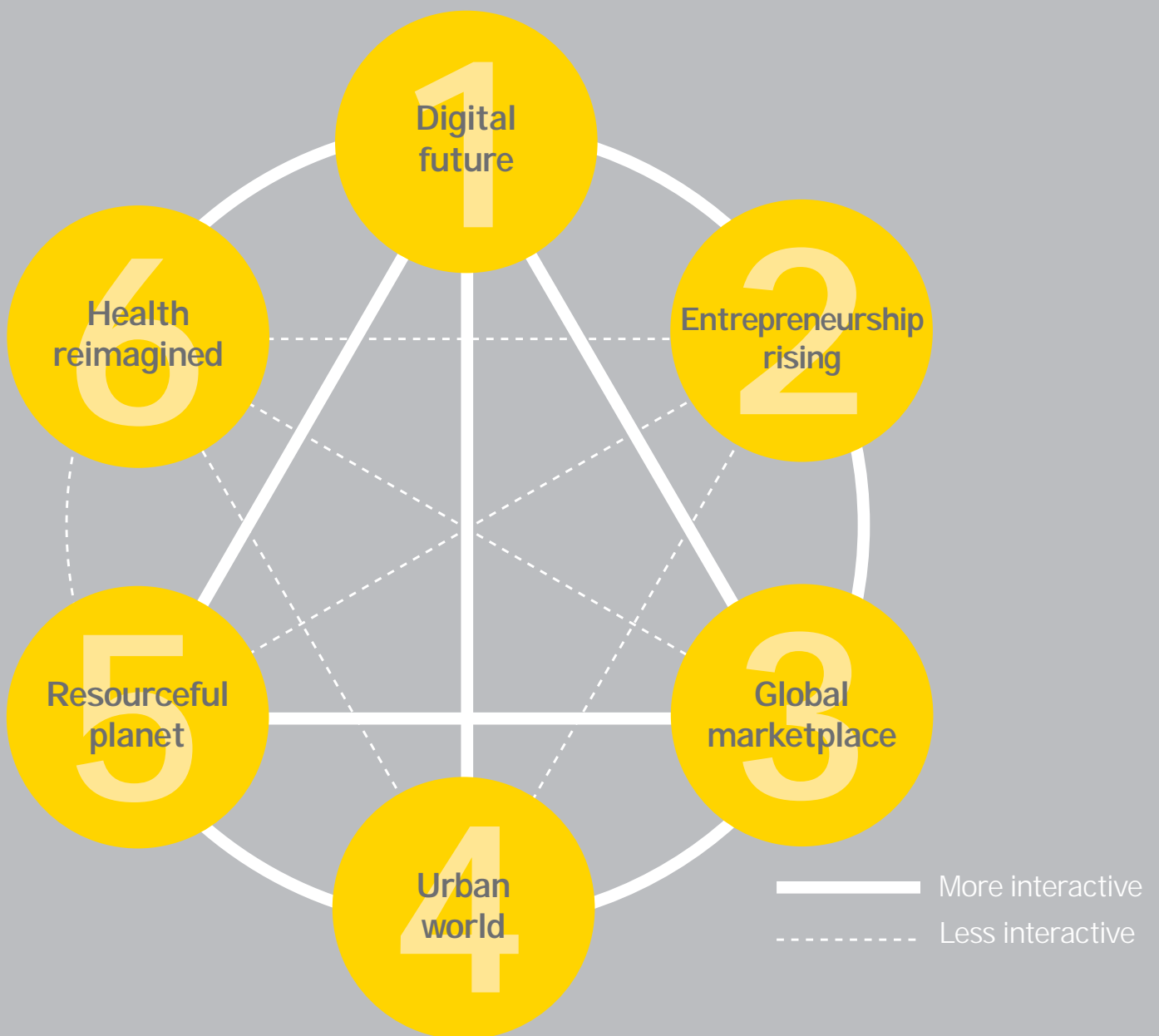
While each of the megatrends stands on its own, there is clear interactivity. Digital, for example, is closely intertwined with expected transformations across the other five megatrends. Big data, sensors and social applications will underpin the reimagining of health management. Digital technologies will drive the realization of tomorrow's "intelligent cities." Digital oil fields will lead to increased savings and output in the energy space, while "smart grids" will revolutionize the production, delivery and use of electricity worldwide. The ability to create digitally based business models has lowered the barrier to creating new and innovative ventures for entrepreneurs around the world.

In some cases, successful outcomes in one megatrend are related to

developments in another. As the world urbanizes to the tune of 750 cities contributing 61% of global GDP by 2030, urban areas will require sustainable and resilient solutions to optimize resources, reduce risks and promote the well-being of all citizens. The economic promise of an increasingly global marketplace will be dependent on major investment in infrastructure and related financing in the world's new and existing cities.

The megatrends illustrate a world in motion. Economic power continues to shift eastward. New markets and new trade linkages are emerging. The boundaries between industry sectors are blurring. New entrants that are digitally native are overturning existing business models. Existing players in one sector (technology) are entering other sectors (health) with exciting new propositions. As we hurtle toward 2030, developments within these six megatrends, as well as the interplay between them, will certainly bear close watching.

Each megatrend is important in its own right. But they are also closely related to one another.



The forces driving our future

Digital future

Fueled by the convergence of social, mobile, cloud, big data and growing demand for anytime anywhere access to information, technology is disrupting all areas of the business enterprise. Disruption is taking place across all industries and in all geographies. Enormous opportunities exist for enterprises to take advantage of connected devices enabled by the “Internet of Things” to capture vast amounts of information, enter new markets, transform existing products, and introduce new business and delivery models. However, the evolution of the digital enterprise also presents significant challenges, including new competition, changing customer engagement and business models, unprecedented transparency, privacy concerns and cybersecurity threats.

Entrepreneurship rising

Technology is also changing the ways that people work, and is increasingly enabling machines and software to substitute for humans. Enterprises and individuals who can seize the opportunities offered by digital advances stand to gain significantly, while those who cannot may lose everything.

The growth and prosperity of all economies, rapid-growth and mature, remains highly dependent on entrepreneurial activity. Entrepreneurs are the lifeblood of economic growth – they provide a source of income and employment for themselves, create employment for others, produce new and innovative products or services, and drive greater upstream and downstream value-chain activities. While some entrepreneurial activity around the world is still driven by necessity, “high-impact” entrepreneurship, once largely confined to mature markets, is now an essential driver of economic expansion in rapid-growth markets. In some cases, these high-impact entrepreneurs are building innovative and scalable enterprises that capitalize on local needs and serve as role models for new entrepreneurs.

The face of entrepreneurship is also changing – across the world, entrepreneurs are increasingly young and/or female. Many of these new enterprises are digital from birth. Access to funding remains the primary obstacle for entrepreneurs from all markets. The public and private sector each have an important role to play in creating entrepreneurial ecosystems that, in addition to funding, are essential to promoting entrepreneurial success.

Global marketplace

Faster growth rates and favorable demographics in key rapid-growth markets will continue to be a feature of the next decade or so. The gulf between “mature” and “rapid-growth” countries continues to shrink. A new tier of emerging nations, driven by their own nascent middle classes, will draw global attention. Innovation will increasingly take place in rapid-growth markets, with Asia surfacing as a

major hub. In the global marketplace, the war for talent will become increasingly fierce, necessitating greater workforce diversity to secure competitive advantage. The economies of the world will remain highly interdependent through trade, investment and financial system linkages, driving the need for stronger global policy coordination among nations and resilient supply chains for companies operating in this environment. At the same time, domestic interests will continue to clash and compete with the forces of global integration. Pushback and opposition to global integration manifests itself in various economic, political and cultural forms, including trade and currency protectionism, the imposition of sanctions to achieve political aims, anti-globalization protests, as well as the strengthening of nationalistic, religious and ethnic movements around the world.

Urban world

The number and scale of cities continues to grow across the globe – driven by rapid urbanization in emerging markets and continued urbanization in mature markets. The United Nations (UN) reports that 54% of the world's population currently live in cities, and by 2050, this proportion will increase to 66%.

In order to harness the economic benefits of urbanization, policy-makers and the private sector must do effective planning and attract sustained investment in railroads, highways, bridges, ports, airports, water, power, energy, telecommunications and other types of infrastructure. Effective policy responses to the challenges that cities face, including climate change and poverty, will be essential to making cities of the future competitive, sustainable and resilient.

Resourceful planet

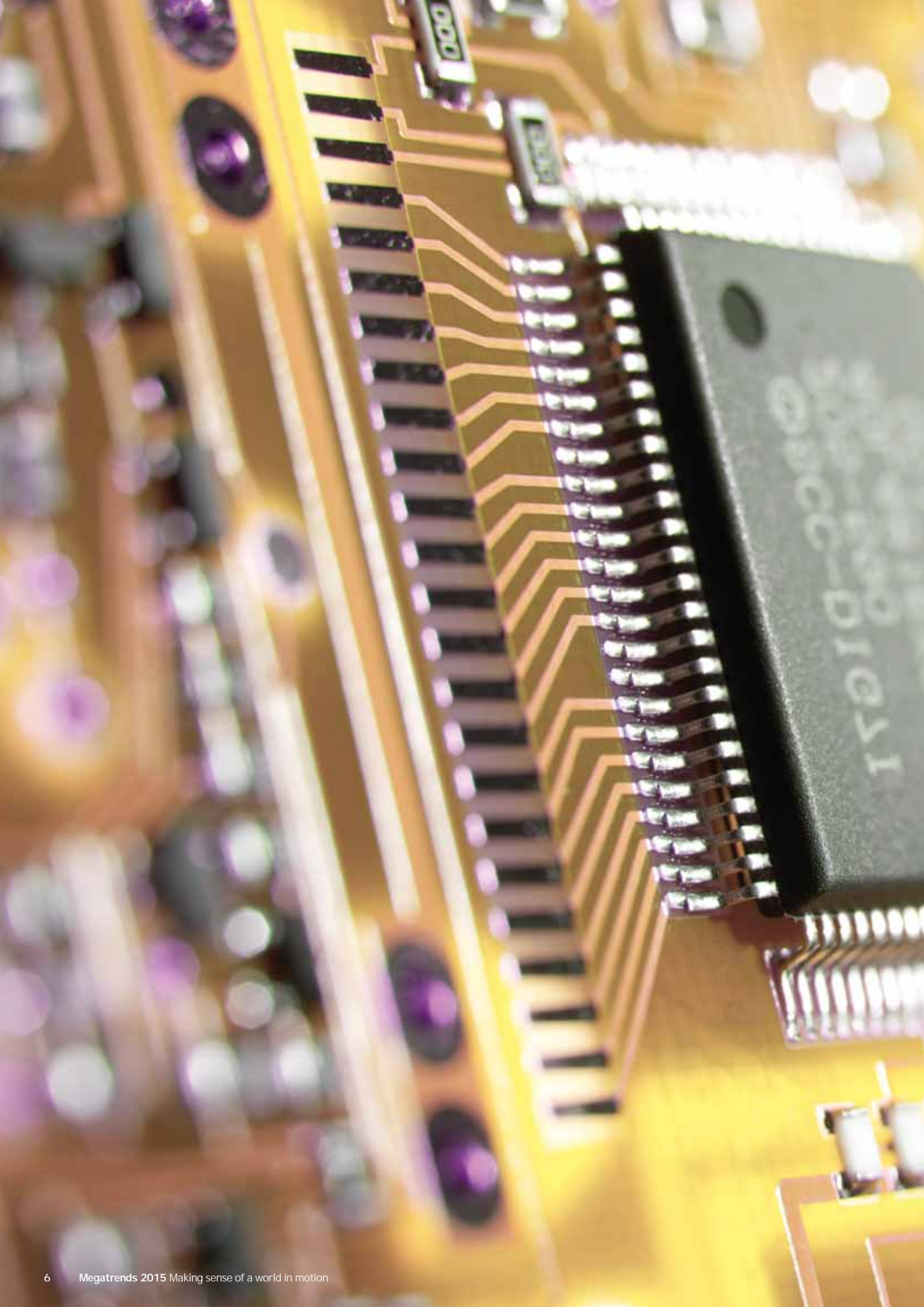
Absolute population growth, economic development and more middle-class consumers will drive increasing global demand for natural resources – both renewable and non-renewable. While the world's supply of non-renewable resources is technically finite, new technologies continue to impact the future supply picture by allowing access to formerly hard-to-reach and valuable oil, gas and strategic mineral reserves. The application of new technologies, as well as the shifting supply environment, will drive business model adaptation and innovation in multiple sectors – as well as impact the geopolitical balance of power.

At the same time, natural resources must be more effectively managed, particularly from an environmental impact perspective. Growing concern over environmental degradation, securing strategic resources and the fate of our food and water supply are indicative of the fact that protecting and restoring the planet is a critical future imperative. Governments, societies and businesses must work in tandem to develop more sustainable approaches to the task of achieving economic growth while leveraging natural resource inputs.

Health reimaged

Health care – which already accounts for 10% of global GDP – is embarking on a once-in-a-lifetime transformation. Health systems and players are under increasing cost pressure – driving them to seek more sustainable approaches, including incentives that emphasize value. These cost pressures are exacerbated by changing demographics, rising incomes in rapid-growth markets and an imminent chronic-disease epidemic. An explosion in big data and mobile health technologies is enabling real-time information creation and analysis. Companies beyond health care as traditionally defined are entering the fray, providing new sources of competition and partnering.

These trends are starting to drive a fundamentally different approach – moving beyond the delivery of health care (by traditional health care companies in traditional ways, i.e., “sick care”) to the management of health (by diverse sets of players, with more focus on healthy behaviors, prevention and real-time care). Success, in other words, demands that we reimagine our approach to health.



1

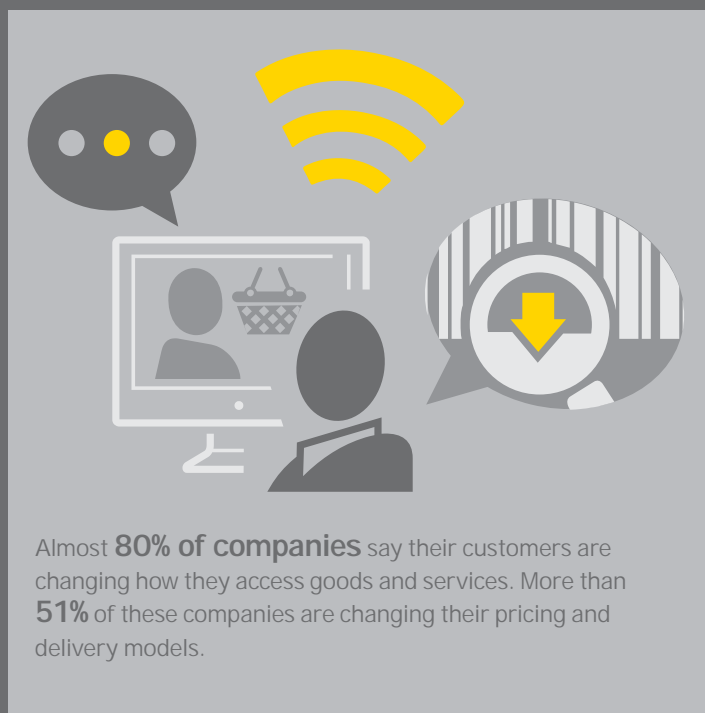
Digital future

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Technology is also changing the ways that people work, and is increasingly enabling machines and software to substitute for humans. Enterprises and individuals who can seize the opportunities offered by digital advances stand to gain significantly, while those who cannot may lose everything.

Technology is disrupting all areas of enterprise, driving myriad opportunities and challenges

1. Digital transformation is changing business models – including revenue models



Source: *Supply on demand: Adapting to change in consumption and delivery models*, Economist Intelligence Unit, 2013.

Rapid advances in cloud computing, connected devices, mobile, social media and data analytics are prompting many companies to reassess fundamental aspects of their business, including what products and services they sell, how they deliver these and how they need to organize to support their operations. Digital technologies are facilitating the introduction of new products and services, and are providing new ways to develop recurring revenue streams after an initial sale. A recent Economist Intelligence Unit survey reveals that almost 80% of companies are seeing changes in how their customers access goods and services, and more than 51% are in the process of changing how they price and deliver their goods and services.¹ Subscription-based revenue models are gaining in popularity, while micropayments such as “freemium” and pay-per-use models are also becoming more prevalent.

Integrating digital technologies into product development and sales operations requires companies to adapt their pricing strategies, sales processes and distribution models. Selling digital products and services demands a different set of skills and proceeds on a different cycle to traditional goods. New organizational structures are needed to manage these operations.

Finally, the distribution of goods and services via digital channels (e.g., cloud) raises significant issues for revenue recognition and customer privacy that must be resolved. While these challenges are substantial, companies need to be able to manage them in order to serve their customers in the future.

2. Declining PC usage and increasing mobile device adoption is driving a “mobile first” world

Mobile is leapfrogging fixed broadband in many countries, particularly in rapid-growth markets. Webpage views from mobile phones now outnumber those from PCs in 48 countries.²

Ericsson estimates that today's 2 billion mobile broadband connections will expand to almost 8 billion by 2019.³ Users are expecting and demanding functionality using the cloud, mobile and social technologies that have become staples of their daily lives. They are interacting with brands through mobile devices more than via PCs, and they are using mobile more frequently to make purchases.

Mobile devices are also becoming preferred tools for work and communication. As more employees insist on the ability to “bring your own device” to the workplace, companies need to be able to support the latest mobile technologies. All of this presents significant challenges to many companies, where legacy IT infrastructures are not ready for “mobile first” strategies. Remedying this will require major investments and large-scale restructuring efforts. To address the changing market dynamics, technology companies are shifting their application development priorities. These firms are increasingly building applications and interfaces on a mobile platform first, instead of creating applications for the desktop or web browser and then developing compatible mobile apps.



Source: “Mobile Web has now overtaken PC in 40 nations, including India, Nigeria and Bangladesh,” *mobiForge* website, 19 September 2014, mobiforge.com/news-comment/mobile-web-has-now-over-taken-pc-40-nations-including-india-nigeria-and-bangladesh, accessed 7 January 2015.



Source: Bill Siwicki, “Mobile commerce will be nearly half of e-commerce by 2018,” *Internet Retailer* website, 10 March 2014, www.internetretailer.com/2014/03/10/mobile-commerce-will-be-nearly-half-e-commerce-2018, accessed 8 January 2015.

3. Digital transformation and a proliferation of data are fundamentally changing the relationship between businesses and their customers

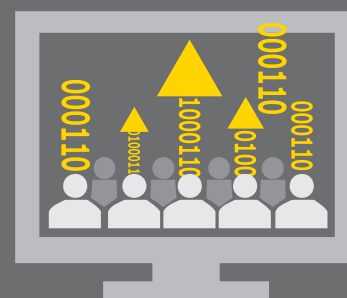
Businesses are gaining unprecedented opportunities to understand consumer needs, preferences and behaviors. The amount and types of customer data available from sources, including social media, online shopping behavior and geo-location information, are expanding at a rapid rate. Making sense of the volume and variety of this information, however, is a challenge.

Firms that can extract value from this information using data analytics will benefit greatly. They will gain a more precise understanding of customer segments. Products and services can be tailored to the level of the individual. Altogether, they can deliver a much richer customer experience. This is important because consumers' expectations are growing. They are demanding greater choice and control, more transparency, and anytime anywhere access to information. They also want their voices heard, and digital technologies are making it easier to gather and understand consumer feedback.

Reacting to these demands, businesses are engaging individual consumers and virtual communities as co-creators.

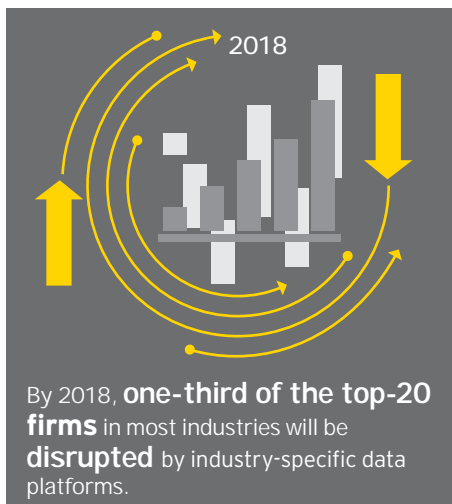
As social media amplifies the voice of the customer, there are benefits and risks for companies. Individual "prosumers" may serve as powerful brand or product ambassadors, and online communities may provide key platforms for introducing and testing products, or for communicating important messages. On the other hand, companies are having a harder time controlling messages about themselves in this new era. An organization that fails to engage in a timely or appropriate manner through social media, or that issues an ill-fated message, can suffer rapid and significant damage to their brand. Real or perceived missteps made by companies or even their supply chain partners can go viral without warning – with negative repercussions. In this environment, companies need to increase transparency, while proactively cultivating and managing relationships with their stakeholders and customers.

Businesses are **failing** to use approximately **80% of customer data** now generated.



Source: Beth Schultz, "IDC: Tons of Customer Data Going to Waste," *AllAnalytics* website, 19 December 2013, www.allanalytics.com/author.asp?section_id=1411&doc_id=270622&mc=MP_IW_EDT_STUB, accessed 8 January 2015.

4. Digital disruption is changing the market context and competitive landscape of most industries



Source: *Perspectives: TCS Consulting Journal, Vol. 05: The Digital Enterprise: A Framework for Transformation.* Tata Consultancy Services, 2013.

Technology is no longer just an industry unto itself; it continues to reshape nearly every other industry in dramatic ways. The pervasiveness and power of new technologies are blurring sector boundaries as companies across industries develop their own digital strategies and solutions (either in-house, through acquisitions, or via partnerships with “traditional” technology firms). Many companies not traditionally thought of as technology players are positioning themselves in the market with their own digital platforms providing innovative solutions to meet the unique needs of their customers and partners. Increasingly, companies are pricing and delivering their products as a service via the cloud. In some cases, these companies are establishing their own best-of-breed platforms, commercializing their proprietary technology and selling it to others within their industry.

The growing prevalence of these industry-focused solutions and those already offered by traditional technology firms is enabling the expansion of digital ecosystems and is changing the competitive dynamics of the market. Industry solutions providers do not always own the end-to-end value chain and often rely on technology partners to help connect their offerings to the ecosystem.⁴

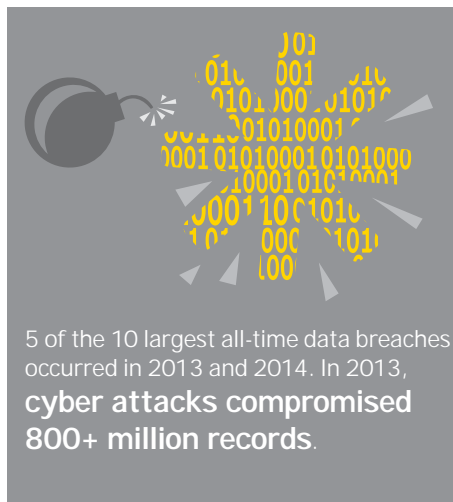
As this ecosystem expands, industry players are buying and implementing digital technologies from their competitors, as well as competing with their existing technology business partners in the market offering similar vertical solutions. The relationships between companies in this environment will continue to be very fluid, as partners in one channel are becoming competitors in another.⁵

5. As cyber threats continue to multiply, it is becoming harder to safeguard data, intellectual property, and personal information

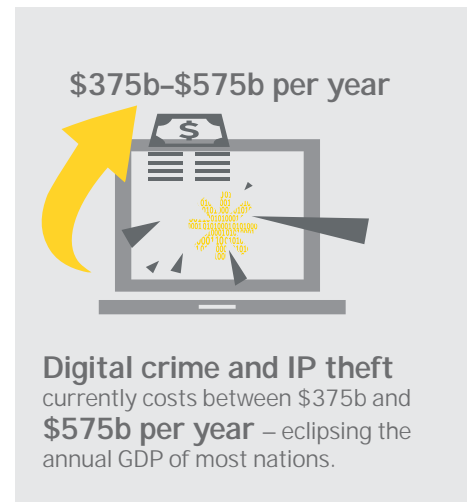
Data breaches are growing in size and frequency, with 5 of the 10 largest ever incidents occurring in 2013 and 2014.⁶ Theft of data and other forms of cybercrime are creating a significant economic toll. The Center for Strategic and International Studies (CSIS) estimates that digital crime and intellectual property (IP) theft currently costs between US\$375b and US\$575b per year – eclipsing the annual GDP of most nations.⁷

The mounting digitization of the world and the rising connectivity of people, devices and organizations provide new vulnerabilities for cybercriminals to exploit. Greater use of the internet, smartphones and tablets (in combination with bring-your-own-device policies) has made organizations' data more accessible and vulnerable. There are also more access points to company and personal data as digital connections between entities and people increase.

Cloud-based services and third-party data management and storage have opened new channels of risk.⁸ As cyber risks increase rapidly, organizations and governments will need to mount concerted and sustained efforts to secure digital assets and protect confidential information.



Sources: Dave Smith, "Chart of the Day: The Worst Company Data Breaches Ever," *Business Insider* website, 6 August 2014, www.businessinsider.com/chart-of-the-day-the-worst-organizational-data-breaches-ever-2014-8#ixzz3lDdEeF4y, accessed 7 January 2015; *Special report: Cyber-security: Defending the digital frontier*, *The Economist*, July 2014, www.economist.com/sites/defaultfiles/20140712_cyber-security.pdf, accessed 8 January 2015.



Source: *Net Losses: Estimating the Global Cost of Cybercrime*, Center for Strategic and International Studies and McAfee, June 2014.



Source: Jakob Morgan, "Five Trends Shaping the Future of Work," *Forbes* website, 20 June 2013, www.forbes.com/sites/jacobmorgan/2013/06/20/five-trends-shaping-the-future-of-work, accessed 7 January 2015.

6. Workstyles and the means to engage talent are becoming more agile in the digital world

While some industries (e.g., mining and manufacturing) still require workers that are time and location bound, it will become common in many sectors for workforces to be virtual, connecting to work anytime, from anywhere, and on any device. Mobile, social and cloud technologies, along with the ubiquity of Wi-Fi and broadband connections, are making it possible for more employees to work at times and places of their own choosing. Office configurations that remain will be more flexible, and will support higher levels of collaboration among colleagues – all in alignment with the preferences of younger employees.⁹ By 2020, the Millennials and Generation Z will comprise more than half of the workforce. These individuals have grown up connected, collaborative and mobile, and their attitudes and expectations

will have a major impact upon how work is organized.¹⁰

Greater autonomy and flexibility of employee workstyles will be matched by new means of engaging with talent. Technological advances are making it easier for companies to tap into networks of anonymous workers through online "crowdsourcing" and freelance platforms.

Firms that are making use of these models are in essence "network orchestrators," connecting to skills and resources on demand rather than owning them.¹¹ All of this will create new challenges for leaders, who must keep widely distributed workforces motivated, productive and satisfied.¹² Not only are different skill sets required to manage remote and contingent workers, but existing organizational cultures will be harder to maintain.



Source: Carl Benedikt Frey and Michael A. Osborne, "The Future of Employment: How Susceptible are Jobs to Computerisation?" Oxford Martin School, 17 September 2013.

7. Digital and robotic technologies will increasingly augment or replace workers

Automation has long been a factor in eliminating jobs and unsafe work environments, but this is set to accelerate and expand over the next decade. The focus of automation historically has been on work that requires routine, repetitive tasks. Technological limitations and capital costs provided boundaries around the types of work affected. This is changing. Advancements in technology are allowing for the mechanization of new categories of jobs, including some that previously seemed immune. Innovations in artificial intelligence and machine learning, exponential growth in computer processing power, and sophisticated mobile robotics are all fueling this expansion. While automation has traditionally impacted blue-collar jobs and will continue to do so, it will increasingly target white-collar jobs as well.¹³

The impact of the new technologies will not be entirely destructive to the job market, however. New opportunities to develop, service or operate the next generation of software and machines will arise. Drivers of mining trucks, for example, will be replaced with radio technicians who will monitor and control many driverless trucks. These positions will require advanced skills. While those at the top end of the skills continuum may benefit greatly, a much larger number of individuals will be relegated to lower-skilled service occupations that cannot easily be mechanized, or to the unemployment line. This will place significant pressure upon governments and social systems, and will require robust, flexible educational systems to develop and retool workers to operate in the new environment.



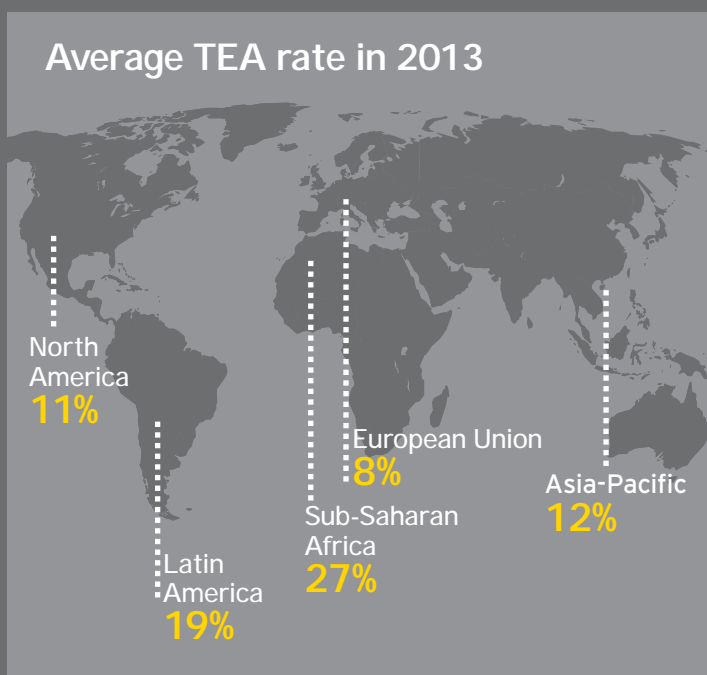
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Entrepreneurship rising

The growth and prosperity of all economies, rapid-growth and mature, remain highly dependent on entrepreneurial activity. Entrepreneurs are the lifeblood of economic growth – they provide a source of income and employment for themselves, create employment for others, produce new and innovative products or services, and drive greater upstream and downstream value-chain activities. While some entrepreneurial activity around the world is still driven by necessity, high-impact entrepreneurship, once largely confined to mature markets, is now an essential driver of economic expansion in rapid-growth markets. In some cases, these high-impact entrepreneurs are building innovative and scalable enterprises that capitalize on local needs and serve as role models for new entrepreneurs. The face of entrepreneurship is also changing – across the world, entrepreneurs are increasingly young and/or female. Many of these new enterprises are digital from birth. Access to funding remains the primary obstacle for entrepreneurs from all markets. The public and private sector each have an important role to play in creating entrepreneurial ecosystems that, in addition to funding, are essential to promoting entrepreneurial success.

Entrepreneurship around the world is growing, driving the need for more supportive ecosystems

1. The drivers of entrepreneurial activity in rapid-growth markets are moving from necessity to opportunity



Rapid-growth markets have long had high rates of entrepreneurial activity, as measured by the Total Early Stage Entrepreneurial Activity Index (TEA rate), which represents the percentage of individuals aged 18 to 64 in an economy who are in the process of starting or are already running new businesses.

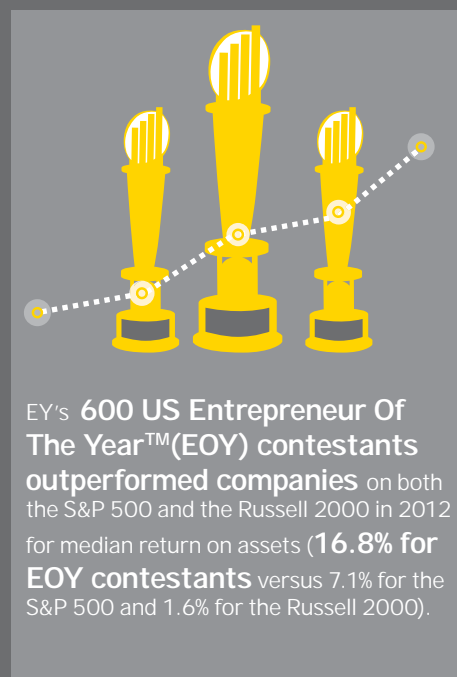
Rapid-growth economies often exhibit much higher TEA rates than mature economies due to the fact that entrepreneurs in these markets launch businesses out of necessity, including poverty and lack of wage-based employment opportunities. For example, the percentage of the TEA rate that is necessity driven is 31% for Sub-Saharan Africa versus 19% for North America and 23% for the EU (rates that both rose in the wake of the financial crisis and are likely to fall again as formal employment rebounds significantly).¹ Looking forward, an increase in the number of innovative rapid-growth market startups is expected. Innovative entrepreneurship may be defined as creating a product, service or process that represents a significant commercial opportunity (as opposed to necessity-driven entrepreneurship).

Source: José Ernesto Amorós and Niels Bosma, *Global Entrepreneurship Monitor: 2013 Global Report*, Babson College, Universidad del Desarrollo, and Universiti Tun Abdul Razak, 2014.

2. High-impact entrepreneurs will continue to build transformative businesses in both rapid-growth and mature markets

Mature markets have seen numerous start-ups with great ideas scale and take off, making a high-impact. In some cases, these new companies have disrupted existing industries and created new industries or industry segments. Google, Facebook, Twitter, Virgin Airlines, and GoPro are among the examples that come to mind. Rapid-growth markets are beginning to see their fair share of high impact entrepreneurs. For example, recent EY World Entrepreneur Of The Year™ (WEOY) winners have come from India (Kotak Mahindra Bank), Kenya (Kenya's Equity Bank Limited), Singapore (Hyflux Limited), and China (Fuyao Glass Industry Group).² The expansion of successful new businesses in rapid-growth markets is due, in part, to growing consumer power in these regions and opportunities for frugal

innovation – offering lower-cost products and services tailored to unmet and local market needs. The democratization of code-writing is lowering the barrier to creating an innovative venture, while digital technologies are also facilitating the rapid scaling up of new businesses at a lower cost. The opportunity for new companies to expand their business models into other rapid-growth markets is enormous. Looking ahead, more innovative ventures are expected in the developing world as countries such as China and India actively seek to create more vibrant regulatory and financing environments in which to launch and nurture native-born enterprises. But what stands out today is the financial success that these high-impact entrepreneurs are enjoying across the world.



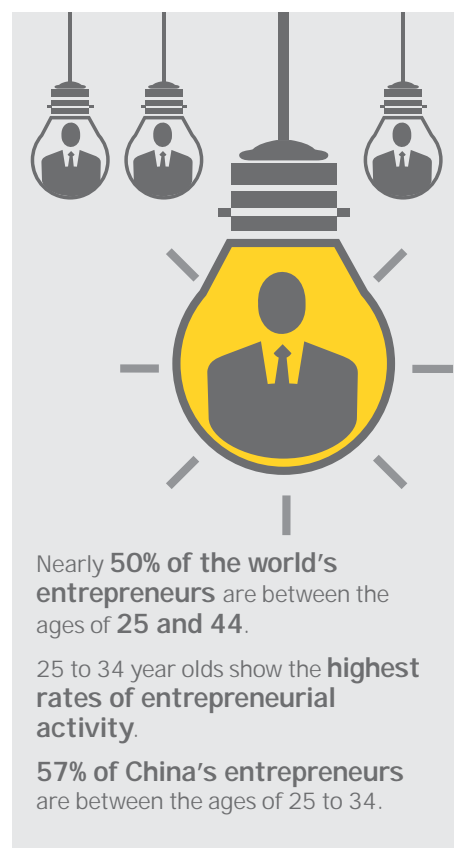
Source: *The Bold Ones – High-Impact Entrepreneurs Who Transform Industries*, World Economic Forum, September 2014.

3. The face of entrepreneurship is increasingly young

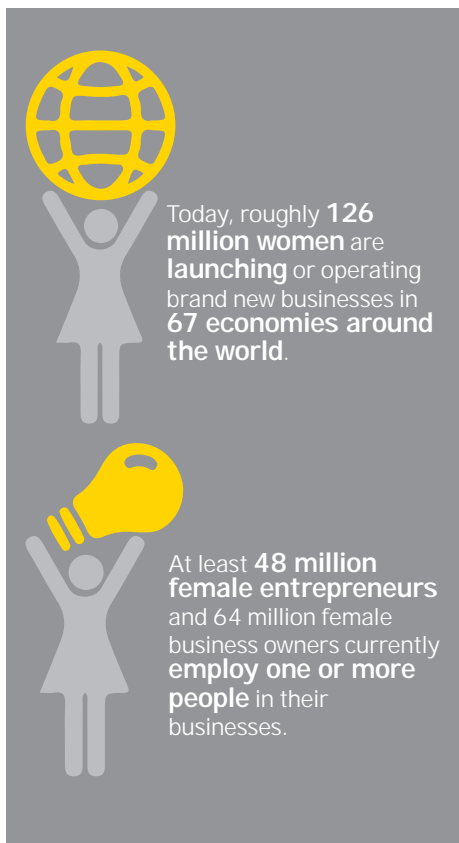
Youth unemployment has reached a critical level in most G20 countries. The International Labour Organization (ILO) reports that globally, almost 13% of young people (close to 75 million people) are unemployed.³ The real rate is likely higher. In response to this, young people are increasingly turning to entrepreneurship, particularly in regions where wage employment is difficult to obtain.

In mature economies, entrepreneurship has emerged as a desired course for Millennials (those born between 1984 and 1996), as a function of both job losses during the great recession, the decaying social contract between employers and employees, as well as changing work and lifestyle preferences.

In a Universum survey of 16,000 Millennials from 42 countries, 70% of respondents viewed themselves as entrepreneurs.⁴ Another key driver has been the boom in entrepreneurial education. The Kauffman Foundation reports that more than 5,000 entrepreneurship courses are offered in the US today, compared with 100 in 1975.⁵ This is important because, along with training, young entrepreneurs across the G20 need additional support to launch and scale their enterprises, including an expanded range of funding alternatives, mentoring, tax incentives and a reduction in red tape.⁶



Source: José Ernesto Amorós and Niels Bosma, *Global Entrepreneurship Monitor: 2013 Global Report*, Babson College, Universidad del Desarrollo, and Universiti Tun Abdul Razak, 2014.



4. The face of entrepreneurship is increasingly female

Millions of women across the world are starting or operating new businesses, many of whom are driven by opportunity rather than necessity (see p.16). Women's entrepreneurial ventures are also an increasingly important source of new jobs.

From the perspective of small and medium-size enterprises (SMEs), the World Bank reports that women-owned companies in the US are expanding at more than double the rate of all other firms, contributing nearly US\$3t to the US\$16b US economy (19%) and directly delivering 23 million jobs (16% of all jobs).⁷ In developing countries, women-run SMEs are also increasing. Across the globe, there are roughly 8 million to 10 million formal SMEs with at least one woman owner.⁸ Women entrepreneurs also intend to expand their businesses. A predicted 7 million female entrepreneurs

and 5 million female established business owners plan to grow their businesses by at least six employees over the next five years.⁹ Access to finance remains a hurdle for female entrepreneurs, particularly in countries where financial markets are less developed, but also in countries with more sophisticated entrepreneurial systems. From 2011-13, just 15% of US companies receiving venture capital funding had a woman on the executive team. This is up 10 percentage points since 1999, but all-men teams in 2013 are still more than four times more likely to receive funding from venture capital investors.¹⁰ Policy-makers and other stakeholders will be increasingly challenged to create enabling environments for female entrepreneurs across the globe.

Source: *Global Entrepreneurship Monitor: 2012 Women's Report*, Babson College Universidad del Desarrollo, Universiti Tun Abdul Razak, and London Business School 2013.

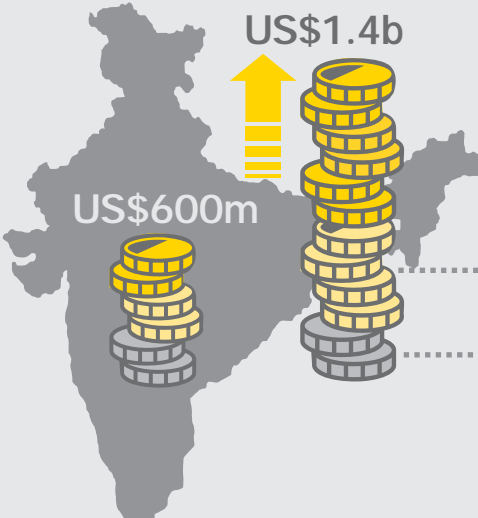
5. More supportive environments are evolving to underpin entrepreneurial growth

Overall climate for fostering entrepreneurship among the

G20  in 2013

- ▶ Countries ranked in the top were all mature markets.
- ▶ 9 of the bottom 10 were rapid-growth markets.

Source: *The Power of Three: The EY G20 Entrepreneurship Barometer*, EY, 2013.



US\$600m

US\$1.4b

In India, venture capital investment more than doubled from US\$600m to US\$1.4b between 2006 and 2012, driven by regulatory changes:

- Elimination of tax on capital gains
- Relaxation of rules preventing foreign investment

Source: *Adapting and evolving: Global venture capital insights and trends 2014*, EY, 2014.

Supportive environments are increasingly essential to successful entrepreneurship and these are evolving across the world. The ideal entrepreneurial environment has five pillars: (1) access to funding; (2) entrepreneurial culture; (3) supportive regulatory and tax regimes; (4) educational systems that support entrepreneurial mindsets; and (5) a coordinated approach that links the public, private and voluntary sectors.¹¹ There are still huge areas where G20 countries need to take urgent action to improve support for their entrepreneurs.

The developed economies are ahead of the emerging markets, as they tend to have deeper and more extensive funding options, stronger education systems, more mature and stable tax and regulatory environments, and more well-developed entrepreneurial cultures.

However, rapid-growth markets are beginning to act relative to the imperatives these pillars represent. China's Ministry of Commerce recently acknowledged that entrepreneurial ventures are currently responsible for 75% of new jobs each year

and 68% of exports and has started to focus on improving the regulatory and tax environment for new ventures and SMEs.¹²

Many rapid-growth markets also have high-profile projects underway to stimulate clusters of entrepreneurial activity. In 2014, there were more than 90 technology hubs, many offering incubators and accelerators, across Africa.¹³

6. Access to funding remains the biggest hurdle – a range of options is essential



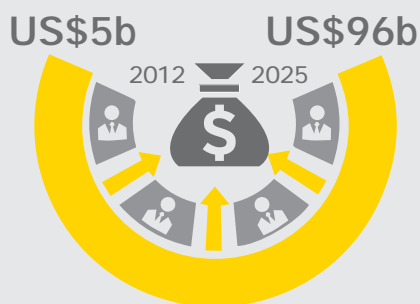
An EY survey of **G20 entrepreneurs** identified **improved access to funding** as the most effective way to accelerate entrepreneurship – while **70%** reported it is difficult to obtain financing in their own countries.

Source: *The Power of Three: The EY G20 Entrepreneurship Barometer*, EY, 2013.

Entrepreneurs point to funding shortfalls in both launching and scaling new businesses as the single area where improvements are most urgently needed. Along with failure to be profitable, lack of funding is cited as the primary reason for business discontinuance around the world.¹⁴

As entrepreneurial businesses grow and develop, the sources of finance they rely on change. The traditional venture capital industry continues to globalize, but smart governments are creating a range of mechanisms and institutions to provide entrepreneurs with financing options to

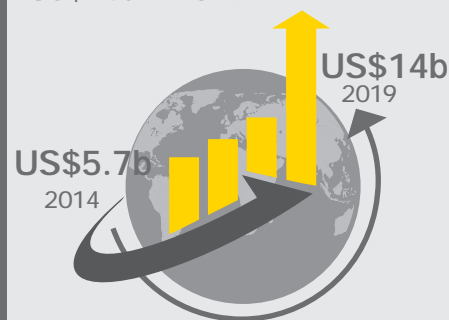
Crowdfunding market for developing countries – which was **US\$5b in 2013** – could rise to **US\$96b by 2025**, since there are 344 million households in rapid-growth economies capable of making crowdfunding investments in their local communities.



Source: *Crowdfunding's Potential for the Developing World*, The World Bank, 2013.

meet these changing requirements. They are establishing targeted venture capital funds and incentivizing private sector investors to focus more on startups through improved tax incentives. Alternative funding platforms, such as crowdfunding and microfinance, are gaining traction for seed and early-stage companies, but require regulatory support to achieve scale. The global microfinance market has the potential to help small enterprises become tax-paying members of the formal economy.¹⁵

Global microfinance market is expected to **grow at 19% annually** for the next five years, **rising** from **US\$5.7b in 2014** to nearly **US\$14b in 2019**.



Source: *Microfinance Market Outlook 2015: Growth driven by vast market potential, responsibility*, November 2014.

In many countries, credit guarantee schemes (CGSs) are used by banks, often with public sector support, to ease the constraints SMEs face in accessing finance. Government start-up programs have become one of the most valuable sources of help. Public money is a powerful catalyst, particularly when delivered in partnership with private sector funds. Corporate venturing also continues to grow, with almost 1,000 units worldwide – and becoming more widespread in rapid-growth markets.¹⁶





3

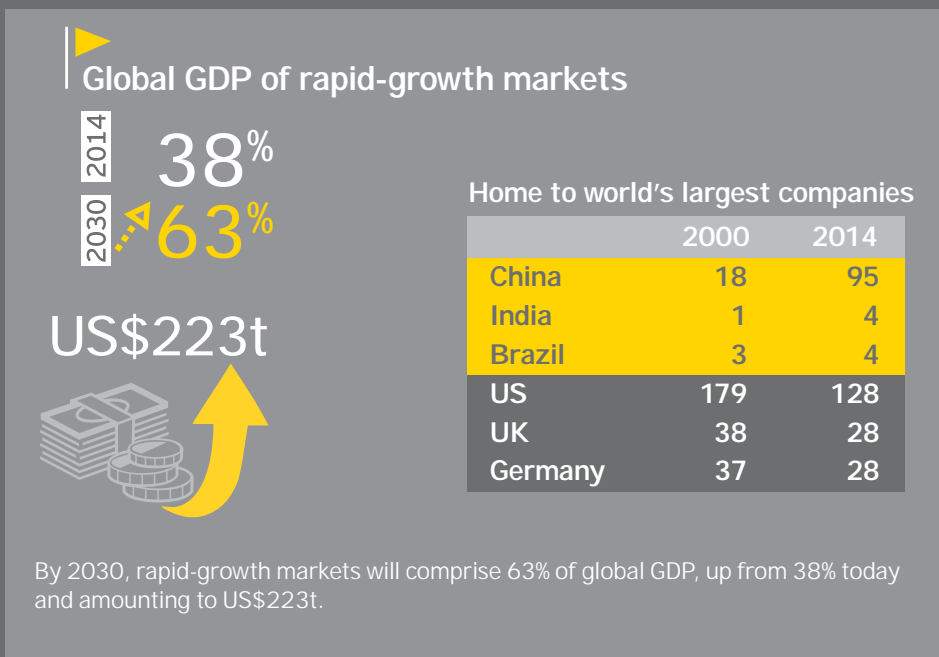
Global marketplace

Faster growth rates and favorable demographics in key rapid-growth markets will continue to be a feature of the next decade or so. The gulf between mature and rapid-growth countries continues to shrink. A new tier of emerging nations, driven by their own nascent middle classes, will draw global attention. Innovation will increasingly take place in rapid-growth markets, with Asia surfacing as a major hub. In the global marketplace, the war for talent will become increasingly fierce, necessitating greater workforce diversity to secure competitive advantage.

The economies of the world will remain highly interdependent through trade, investment and financial system linkages, driving the need for stronger global policy coordination among nations and resilient supply chains for companies operating in this environment. At the same time, domestic interests will continue to clash and compete with the forces of global integration. Pushback and opposition to global integration manifests itself in various economic, political and cultural forms, including trade and currency protectionism, the imposition of sanctions to achieve political aims, anti-globalization protests, as well as the strengthening of nationalistic, religious and ethnic movements around the world.

Economic power continues to shift east and south, driving new patterns of trade and investment

1. Global economic power will continue shifting to rapid-growth economies

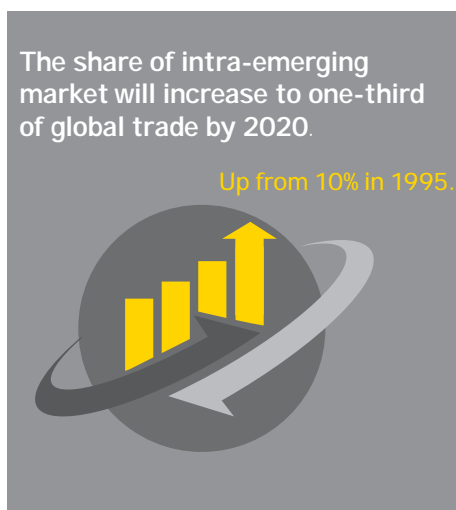


Growth in rapid-growth markets is expected to taper somewhat going forward, but should nevertheless remain very healthy. For 2014-2030, projected growth rates for major players such as China (+5.9%), and India (+6.7%), as well as fast-developing regions such as Sub-Saharan Africa (+5.8) and the Middle East and North Africa (MENA) (+4.9%) will continue tipping the world's center of economic gravity toward the east and south.¹

With growing economies, and supported by socioeconomic trends such as urban migration, declining dependency ratios, favorable demographics and growing income levels, rapid-growth markets will become increasingly important venues for conducting global business. For all companies with global ambitions – both established multinationals and their rapid-growth market challengers – this great shift in economic power will force major adjustments in strategy.

Sources: "The super-cycle lives: emerging markets growth is key," Standard Chartered, November 2013, www.sc.com/en/news-and-media/news/global/2013-11-06-super-cycle-EM-growth-is-key.html; and EY Analysis of 2000 and 2014 Global Fortune 500 lists, November 2014.

2. Trade-flow patterns will undergo continued transformation

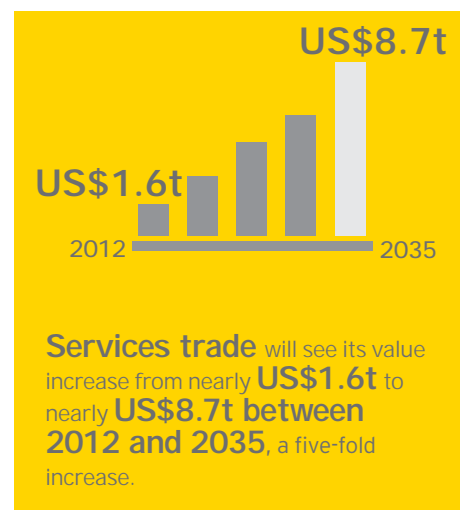


Source: "Lamy says Europe needs a good compass to sail through crisis," World Trade Organization website, www.wto.org/english/news_e/sppl_e/sppl275_e.htm, accessed 17 October 2014.

Global merchandise trade is forecast to grow 8% annually to 2030, and should outpace GDP growth.²

China, which is already the largest goods trader, will further consolidate its position in world trade. Other emerging markets, such as India and Vietnam, are also expected to post double-digit annual export growth over the next seven years.³ The increasing role of the developing world in trade, coupled with rapid advances in communication and technology, will lead to further fragmentation of supply chains. By 2030, the World Trade Organization estimates that the import content of exports will rise to 60%, as compared to 20% in 1990s and 40% in 2012.⁴

Overall, the global trade landscape will be marked by increasingly high levels



Source: *World Trade Report 2013*, World Trade Organization, July 2013.

of integration. Asia is likely to emerge as the fulcrum of future global trade architecture, and will remain at the center of the world's fastest-growing trade routes (e.g., Asia-MENA, Asia-Latin America and Asia-Africa).⁵ The Middle East and Africa will become new trade hubs, driven by economic integration with Asia, proximity to Europe, capacity for low-cost production and growing domestic markets. The major brake on increasing trade will be protectionist impulses. While dealing with the ever-present spectre of protectionism, the economies of the world will remain highly interdependent through trade and financial system linkages, driving the need for stronger global policy coordination among nations and resilient supply chains for companies operating in this environment.

3. Developing countries will continue to grow their share of capital inflows and outflows

By 2030, rapid-growth markets will account for **47% of gross global inflows**, up from 23% in 2010.



China and India will become the world's largest investors.

Source: *Capital for the Future: Saving and Investment in an Interdependent World*, World Bank, 2013.

Rapid-growth markets are expected to comprise a far greater share of gross capital inflows and outflows (including foreign investment, equity and debt portfolio investment, bank loans and other investment) in the future, according to the World Bank. By 2030, rapid-growth markets will account for 47% of gross global inflows, up from 23% in 2010. The increasing maturity of political institutions and the ongoing global and regional integration of financial markets make developing countries more attractive sources and destinations for capital flows. These developments also increase their potential to perform as intermediaries of global capital flows in the future. Looking at 2013 foreign direct investment (FDI) flows, rapid-growth economies garnered 54% of total investment, while mature markets attracted 39%, and frontier or transitional markets drew 7%.

Changing patterns of investment are becoming apparent. Intra-African flows are becoming a larger component of Africa's 4% growth in FDI. Developing Asia

remains the world's leading FDI destination (30% share), with China also continuing to emerge as a source for outward FDI, particularly to Latin America and Southeast Asia. Sectoral reforms in Mexico and shale gas development in Argentina, along with strong automotive manufacturing prospects in Brazil and Mexico, will continue to attract investment dollars in Latin America.

The share of FDI in the extractive sectors across rapid-growth markets appears to be tapering off. In 2013, greenfield investment in manufacturing and services comprised 90% of inward African FDI.⁶ All of these shifts put the onus on national policy-makers to create more business-friendly investment environments in rapid-growth markets, or they will fall behind. Political and other kinds of volatility could also continue to deter FDI inflows in rapid-growth markets. For example, Russia has seen inward FDI diminish drastically as a result of the Ukraine conflict, while the Ebola virus outbreak has dampened investor enthusiasm at least temporarily in West Africa.

4. The growing global middle class will continue to drive the emergence of lucrative new markets



Source: *Hitting the Sweet Spot: The Growth of the Middle Class in Emerging Markets*, EY and Skolkovo Institute for Emerging Market Studies, 2013.



Source: Tassos Stassopoulos, "Growing Older in Emerging Markets," AllianceBernstein website, 19 September 2014, blog.alliancebernstein.com/index.php/2014/09/19/growing-older-in-emerging-markets.

Rapidly growing, young populations combined with strong economic growth are producing a surge of middle income consumers in key rapid-growth markets. The World Bank projects that 50% of the total global stock of capital will reside in the developing world by 2030 (up from 33% in 2010), illustrating the shift in the global distribution of wealth.⁷ Nowhere is this trend stronger than in the Asia-Pacific region.

Moreover, a significant proportion of the new Asian middle class will reside at the upper end of the income bracket and possess significant spending power. The rapid expansion of middle income populations will be matched by a rapid increase in consumer spending.

As a result, these fast-growing countries are becoming prime markets for global and home-grown companies, and competition is increasing apace. In these crowded marketplaces, companies need to carefully position their brands and portfolios to meet the needs of increasingly empowered and diverse consumer bases.

5. A “new knowledge world order” is emerging, with Asia as a hub

There is a growing shift in knowledge production toward Asia, primarily China. Whereas countries like the US, Japan, the UK and Germany traditionally led the way in investment in research and education, rapid-growth markets are steadily increasing their academic and research output, particularly in Asia.

China's heavy investment in education is bearing fruit, as the country has overtaken the US in the number of doctorates awarded in science and engineering.⁸ China currently has around 1.6 million researchers and academics and more than 30 million students enrolled in higher education institutions.⁹ Since 2011, China has also accounted for the greatest number of patent applications globally.¹⁰ By 2022, China is expected to overtake the US as the largest global spender on research and development (R&D).¹¹ While the major developed nations will continue to have

very significant educational and research capabilities going forward, momentum in this sphere is shifting from West to East, along with global growth patterns.

One of the expected outcomes of this knowledge shift will be increased home-grown innovation and more outsourcing of services to the wealthiest rapid-growth markets. Along with this shift, diminishing labor cost advantages in markets that were once premier outsourcing destinations for both Western manufacturing and shared services is driving these markets to outsource lower-value work to the next set of rapid-growth markets. As their labor costs rise, Chinese companies, for example, have begun to outsource manufacturing to Africa, South America and the Middle East.¹²



Source: 2014 Global R&D Funding Forecast, Battelle and R&D (rdmag.com), December 2013.

6. The war for talent grows increasingly fierce, with greater workforce diversity providing competitive advantage

The worldwide competition for qualified talent is at its highest level since the pre-recession period.¹³ Employers in a majority of the 31 countries covered by the Hays Global Skills Index had more difficulty hiring talent in 2014 than 2013.¹⁴ The situation is particularly acute when trying to find employees skilled in science, technology, engineering and mathematics.

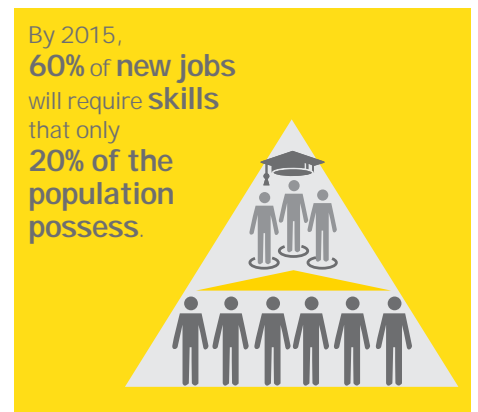
The greatest labor market pressures currently exist in mature economies. Emerging market countries, such as Brazil, Mexico and India, have seen conditions ease somewhat, due in part to investments made in education.¹⁵ Many emerging markets have rapidly expanded the number of college graduates that they produce.

By 2025, the South rather than the North may become the major source of technical talent in the global economy.¹⁶ As companies continue to globalize and as talent becomes harder to find, they will employ more highly diverse workforces.

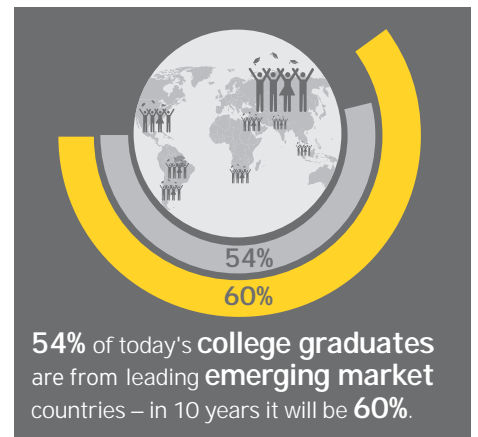
The labor force for many organizations will become multigenerational, with four generations working side-by-side.¹⁷ The composition of the workforce will become more multicultural, as companies spread their operations geographically and tap into local talent pools.

Increased worker mobility and technological advances allowing for cross-border collaboration are bringing together workers from many different backgrounds.

Finally, workforces are becoming more gender-balanced. While women have long been a big part of labor markets in many countries, they are currently moving in force into the workplace in many other locations (particularly in emerging markets).



Source: *Talent Acquisition Forecast 2015*, Qualigence, 2014.



Source: *Global Talent 2021: How the new geography of talent will transform human resources strategies*, Oxford Economics, 2012.





4

Urban world

The number and scale of cities continues to grow across the globe – driven by rapid urbanization in emerging markets and continued urbanization in mature markets. The United Nations (UN) reports that 54% of the world's population currently live in cities, and by 2050, this proportion will increase to 66%.

In order to harness the economic benefits of urbanization, policy-makers and the private sector must do effective planning and attract sustained investment in railroads, highways, bridges, ports, airports, water, power, energy, telecommunications, and other types of infrastructure. Effective policy responses to the challenges that cities face, including climate change and poverty, will be essential to making cities of the future competitive, sustainable and resilient.

Effective infrastructure investment and sound planning will make future cities competitive and resilient

1. Global cities will accrue greater economic power and affluence

A 2014 study conducted by Oxford Economics and EY projects that the pace and scale of global urbanization is set to continue, with Asia and Africa urbanizing at the fastest rate among regions. Rapid urbanization will drive the world's future economic growth.

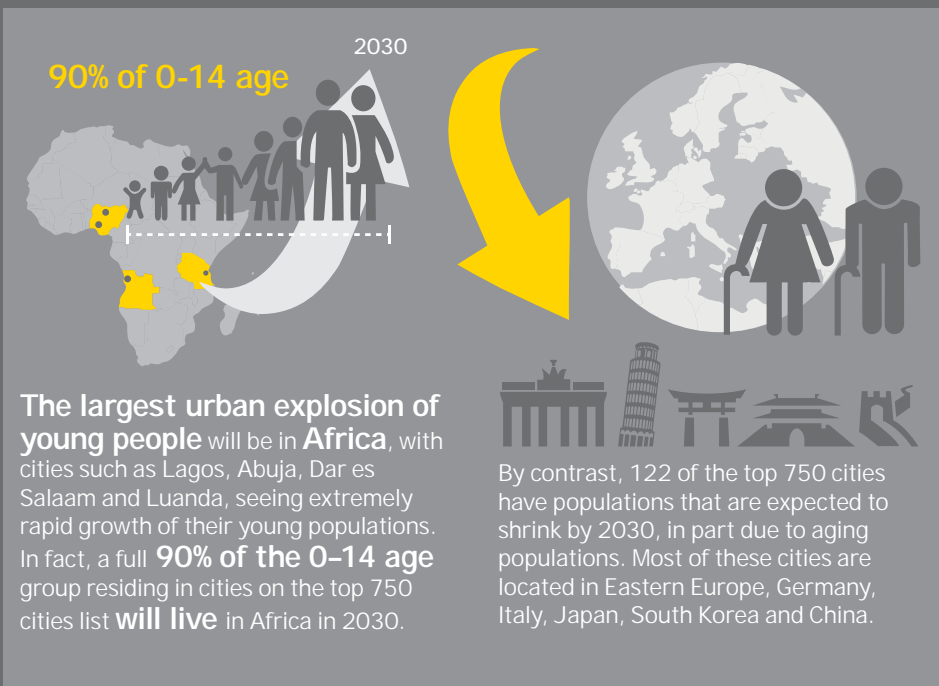
The impact will be seen in the shift in spending power to urban areas.

Growth in spending on non-essential products for the world's largest cities will outpace growth in consumer spending on essential items, reflecting the rising affluence of urban residents across the globe.



Source: *Future Trends and Market Opportunities in the World's Largest 750 Cities*, Oxford Economics, 2014.

2. Demographic patterns will help steer the trajectory of urban growth around the globe



From a demographic perspective, “old” and “new” cities will arise. Both will face risks. Young populations can help to create large and productive labor forces, but also drive unrest in countries with underemployment and other social ills. Aging populations leave the work force without an adequate younger cohort to replace them, depressing growth and straining public resources.

While the populations of 30 of China’s top 150 cities are expected to contract, others (e.g., Beijing, Tianjin, Shanghai and Guangzhou) will grow as working-age people are drawn to the economic opportunities in these cities. Cities in the Middle East are also expected to see expansions in their working age populations. Cities forecast to shrink as their populations grow elderly are in Latin America (e.g., São Paulo and Mexico City) and other parts of Asia (e.g., Mumbai and Jakarta).²

Source: *Future Trends and Market Opportunities in the World’s Largest 750 Cities*, Oxford Economics, 2014.

3. The economic order of cities will shift eastward

The balance of economic power held by cities will shift eastward, tilting particularly toward China.

In addition, the fastest-growing urban economies over the next 15 years will actually be mid-sized cities. As their per capita incomes begin to climb, mid-sized cities will begin to register on the radars of global companies as potential new markets. This group includes cities such as Surat (India), Luanda (Angola), Ho Chi Minh City (Vietnam), Phnom Penh (Cambodia), Yangon (Myanmar) and Dhaka (Bangladesh). But even as new megacities and mid-sized cities continue to grow in Asia and Latin America, mature markets will still retain some of the largest and most important urban centers in the world.³



Source: *Future Trends and Market Opportunities in the World's Largest 750 Cities*, Oxford Economics, 2014.

4. Urbanization will drive important sector shifts

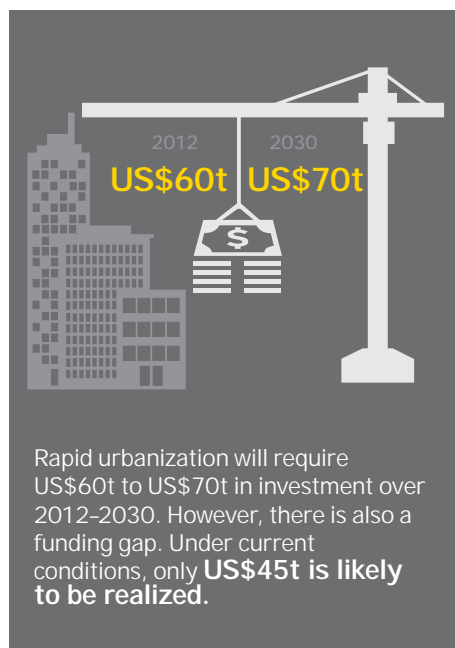
Urbanization will drive sector shifts and changing employment patterns over the period lasting until 2030. Rapid urbanization in Africa is helping new service industries to emerge, as well as a steady shift from agriculture to manufacturing. Asian cities will continue to dominate jobs growth in the industrial sector, while mature market cities such as Tokyo, Osaka, Seoul and Taipei, which have high land and labor costs, will shed these kinds of jobs.

Manufacturing is forecast to expand specifically in rapid-growth market cities

with adequate space to grow, such as Chongqing in China, where industry is moving further inland. Seaboard cities with proximity to China's large manufacturing centers, such as Jakarta and Ho Chi Minh City, are also expected to enjoy large increases in industrial employment. Urban areas such as Delhi and Hanoi will continue to benefit from their relatively competitive labor costs, attracting both manufacturing and outsourced services jobs, including software development.

Beijing, Lagos and Mumbai are all expected to create more financial service sector jobs than London from 2013 to 2030. However, New York, London and Hong Kong will still remain the world's largest financial hubs. Financial and business service jobs growth will, in turn, drive the real estate office sector. The need to build new infrastructure in emerging cities, while upgrading infrastructure in mature market cities, will continue to drive growth in construction and related sectors.⁴

5. An urban world requires major investment in infrastructure, but funding will remain challenging



Source: *B20 Infrastructure and Investment Taskforce: Policy Summary*, B20 Australia 2014, July 2014.

Nearly all cities have a growth agenda; high-quality infrastructure contributes to well-functioning, growth-primed cities that can attract new residents and keep their existing ones. Many emerging nations face the challenge of building new urban infrastructure from scratch, while many developed nations face the problem of aging infrastructure.

The B20 Infrastructure and Investment Taskforce's six recommendations for actions that G20 nations should take include: setting specific targets for infrastructure in their national growth plans, establishing a Global Infrastructure Hub and increasing the availability of long-term financing for investment.

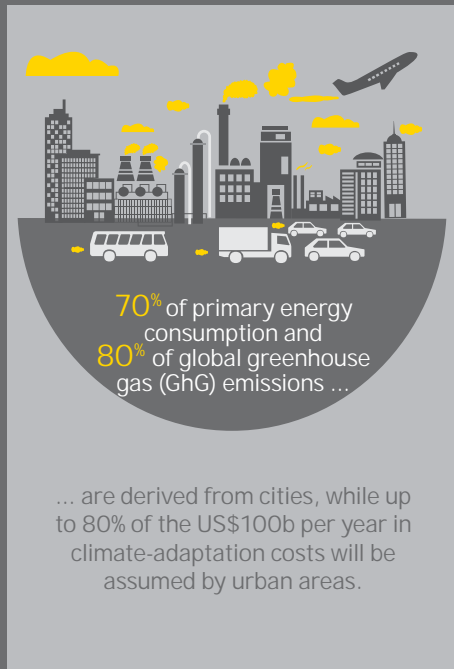
With government budgets around the world under pressure, many will continue to finance infrastructure projects using public-private partnership (PPP) models, with new "flavors" emerging to meet local needs.

Infrastructure funds and pension funds are expected to invest more in infrastructure, as investors focus on alternative assets for diversification or potentially higher returns. Those markets that harness the promise of urbanization by finding creative solutions to financing infrastructure needs will be those that enjoy economic growth.

6. Sustainable and resilient urbanization will be instrumental to the world's future prospects

While urbanization affords economic opportunity, it also presents significant resource risks. Rapid urbanization is contributing to global resource depletion, while some of the effects of climate change (e.g., rising sea levels around coastal cities and extreme weather events) will hit cities hardest. The World Health Organization (WHO) reports that 7 million people died – one in eight of total global deaths – as a result of air pollution exposure in 2012, a large proportion residing in urban areas.⁵ Roughly 50% of the urban population being monitored (which is just 12% of the total global urban population) is exposed to air pollution that is at least 2.5 times higher than WHO recommended levels.⁶

Local and national policy-makers, along with other important stakeholders, will need to work closely together to plan, build and govern more sustainable cities. "Green" and "smart" will become important features of the sustainable and competitive city. Green cities will have energy-efficient buildings, reduced waste and rely heavily on renewable energy sources and energy-efficient transportation systems. Enabled by digital, competitive cities will also make use of state-of-the-art information and communication technology (ICT) to build smart mobility solutions, smart grids and other solutions.



Source: "Global Dialogue on Climate Resilient Cities," World Bank Climate Change Practice, May 2011.

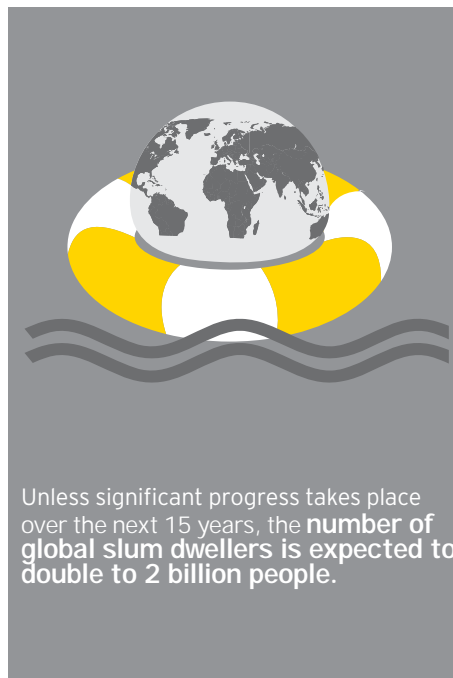


Source: *GeSI SMARTer: The Role of ICT in Driving a Sustainable Future*, Global e-Sustainability Initiative and Boston Consulting Group, December 2012.

7. Truly sustainable cities must also target urban poverty and marginalized populations



Source: United Nations.



Source: Naison Mutizwa-Mangiza, *Sustainable Urbanization in the Post-2015 UN Development Agenda*, Experts Group meeting on the Post-2015 UN Development Agenda, UN Habitat, 27–29 February, 2012.

While urban areas are projected to grow more affluent on the whole, cities will also face significant social problems – including the fact that not all citizens are reaping the positive aspects of urbanization. A negative byproduct of rapid urbanization is unplanned growth. Local municipal governments struggle to provide the basic requirements – adequate food, water, health care, and shelter – to slums and informal settlements, many of which are located in cities in the developing world.

Nearly 1 billion people currently live in slums, most of whom are located in emerging countries. But urban poverty is not reserved for just rapid-growth markets. For example, the 100 largest metro areas in the US are home to 70% of the country's economically distressed census areas.⁷

The urban poor bear the brunt of traffic congestion, air pollution, crime and unsafe food and water supplies. The fact that the slum-dwelling global population could double over the next 15 years is a strong call for action. Truly sustainable cities must include effective planning, policy making, job-creation, institution-building, investment and governance to target and relieve urban poverty.



5

Resourceful planet

Absolute population growth, economic development and more middle-class consumers will drive increasing global demand for natural resources – both renewable and non-renewable. While the world's supply of non-renewable resources is technically finite, new technologies continue to impact the future supply picture by allowing access to formerly hard-to-reach and valuable oil, gas and strategic mineral reserves. The application of new technologies, as well as the shifting supply environment, will drive business model adaptation and innovation in multiple sectors – as well as impact the geopolitical balance of power.

At the same time, natural resources must be more effectively managed, particularly from an environmental impact perspective. Growing concern over environmental degradation, securing strategic resources and the fate of our food and water supply are indicative of the fact that protecting and restoring the planet is a critical future imperative. Governments, societies and businesses must work in tandem to develop more sustainable approaches to the task of achieving economic growth while leveraging natural resource inputs.

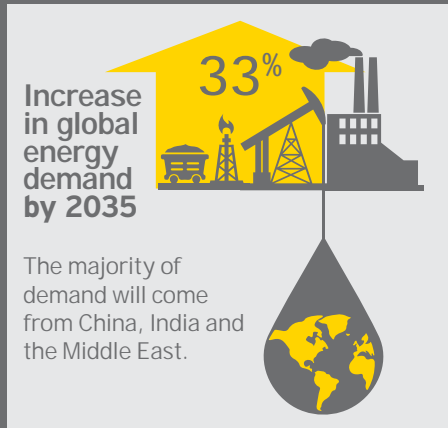
Growing demand and shifting supply are driving innovation in the energy and resources space

1. Competition for limited resources will intensify



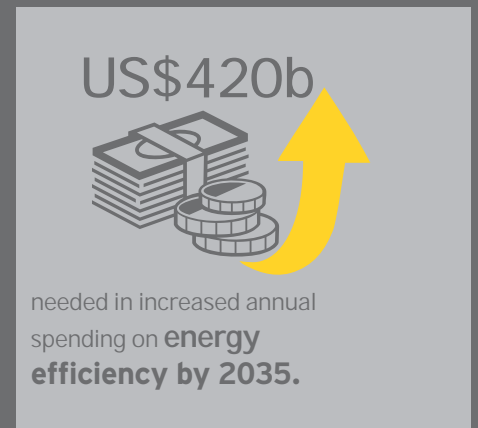
Source: *World Population Prospects: The 2012 Revision*, United Nations, esa.un.org/wpp, accessed 12 January 2015.

The addition of 1.2 billion people to the world population by 2030 (notably in developing nations) will significantly increase the demand for energy, commodities food and water.¹ Technological developments have allowed for access to resources previously thought impractical or impossible to recover, thus evolving notions of the finite limits of these



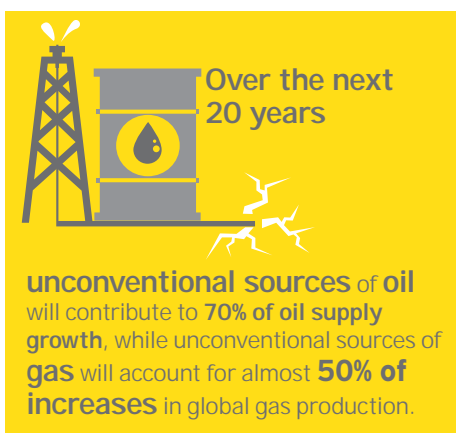
Source: *The United Nations World Water Development Report 2014: Water and Energy – Volume 1*, UN Water, 2014.

resources. Nonetheless, finding and accessing new sources of supply will be increasingly difficult and expensive.¹ As the strategic value and competition for natural resources increase, governments will put a price on resource security through taxes and regulations. This will give rise to protectionism and community activism to control the resources. Such a scenario will

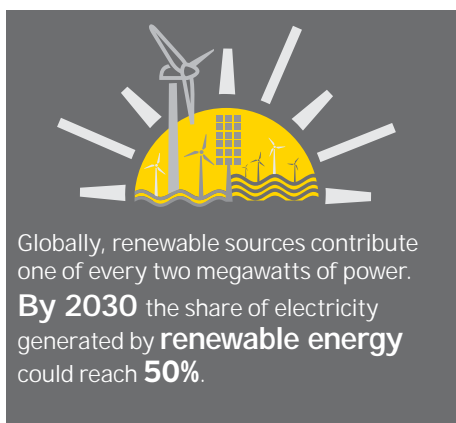


Source: *World Energy Investment Outlook 2014*, International Energy Agency, 2014.

encourage greater energy and resource efficiency at the consumer, corporate and national levels. The International Energy Agency estimates that increased annual spending on energy efficiency needs to rise from US\$130b today to more than US\$550b by 2035.²



Sources: *BP Energy Outlook 2030*, BP, January 2013; and *World Energy Outlook 2012*, International Energy Agency, 2012.



Source: "The People's Climate," Project Syndicate website, 24 September 2014, www.project-syndicate.org/commentary/monica-araya-and-hans-verolme-say-that-the-people-s-climate-march-was-just-the-start-of-popular-pressure-on-world-leaders, accessed 12 January 2015.

2. Increasing supply of unconventional and renewable sources of energy will change the dynamics of the global energy mix

Fossil fuel-based energy sources will be with us for some time, particularly given recent technological advances to uncover unconventional supply. Horizontal drilling and hydraulic fracturing have released natural gas from shale formations. Along with natural gas, producers have developed advanced drilling and completion processes to produce oil from tight formations.

Meanwhile, the number of ultra-deepwater drilling rigs has increased 22% since 2012.³ With these advances, global energy production has begun to shift away from traditional suppliers in Eurasia and the Middle East to suppliers in North America, Australia, Brazil and Africa, with the potential to change trade patterns and the geopolitical balance of power. As ever, supply will be in tension with demand, thus influencing energy prices and impacting net importing and exporting countries in different ways. Oil and gas companies will need to adjust their production and spending plans to meet the demands of shifting price environments.

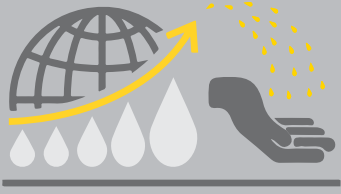
Newly found or newly exploitable unconventional energy sources will require a reassessment of government

budgets, energy policies and oil and gas contracts. Many countries will have to develop expertise, sign technology transfer agreements and find cost-efficient ways to unleash the potential of unconventional resources.

Alongside the increased supply of unconventional energy resources, renewable energy will grow rapidly as clean technologies become more cost competitive. Globally, one out of two newly added megawatts of power comes from renewable sources.⁴

Consumers are increasingly taking matters into their own hands through the deployment of clean, distributed generation solutions such as rooftop solar photovoltaic units. The changing energy mix and empowerment of consumers will produce significant infrastructure demands from the public and private sector. This will require new models and sources of financing from banks and capital markets. Investors will become increasingly attuned to issues of carbon exposure and risk, and will be more likely to favor companies that have effective and transparent carbon reduction and energy-efficiency programs in place.

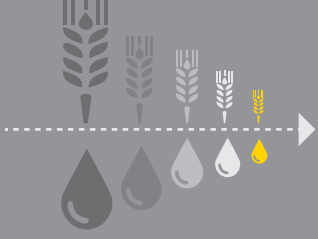
3. Water scarcity will challenge food and energy security



The UN estimates that by 2030 demand for water may be 40% more than supply, and water shortages could affect almost 50% of the world's population.

Source: *The United Nations World Water Development Report 2014: Water and Energy – Volume 1*, UN Water, 2014.

Water usage has been growing at more than twice the rate of population growth in the last century. The UN estimates that by 2030 demand for water may be 40% more than supply, and water shortages could affect almost 50% of the world's population, and nearly half the global population may be facing water scarcity.⁵ The situation will be more acute in emerging economies. By 2025, it is projected that water withdrawals will increase by 50% in emerging countries and 18% in developed countries.⁶ Given this situation, there will be growing tensions

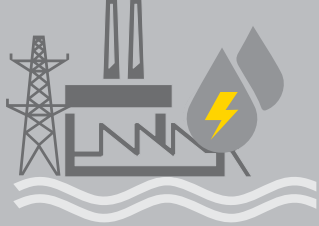


By 2030, **freshwater shortages** could cause a **30% reduction in grain production.**

Source: *Global Risks 2014: Ninth Edition*, World Economic Forum, 2014.

over the use of water and the impact that it has upon energy and food production ("water-food-energy nexus"). On a global level, agriculture is the largest consumer of freshwater, accounting for some 70% of total withdrawals. An estimated 870 million people are currently undernourished due to a lack of food or a lack of access to food, and the situation may get worse.⁷

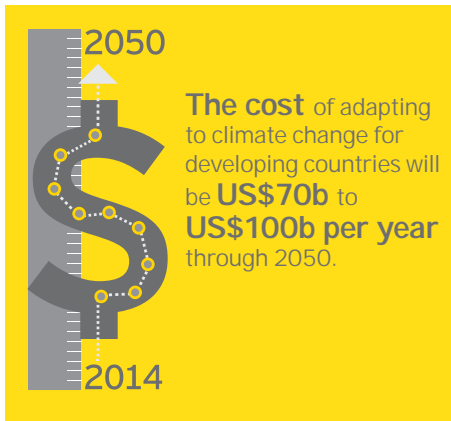
The need to reconcile the demands of food production (required to feed a growing population) with domestic and industrial use will rise.



90% of the world's energy production depends on water.

Source: *World Water Development Report 2014*, United Nations, 2014.

In the face of competing demands, accessing dwindling water supplies for energy production or private consumption will become harder. The critical interdependence between food, energy and water requires a response that addresses all three. Stronger collaboration between governments and businesses will be required to drive innovation and tackle supply-side risks.



Source: "Economics of Adaptation to Climate Change," World Bank, 6 June 2011, www.worldbank.org/en/news/feature/2011/06/06/economics-adaptation-climate-change, accessed 12 January 2015.

4. Climate change and extreme weather events will demand proactive measures to adapt or develop resiliency

Between 1950 and 2010, the Earth's average surface temperature rose at a rate six times higher than in 1890-1950.⁸ The UN forecasts that the number of people in large cities who are exposed to cyclonic winds, earthquakes and flooding will more than double in the first half of this century.⁹

Changes to the climate and increased incidence of extreme weather events will have significant economic costs, and may pose serious security challenges in some regions. A recent report concludes that climate change impacts are already accelerating instability in vulnerable areas of the world and are serving as catalysts for conflict.¹⁰ The stresses created by climate change and weather events will be particularly acute for the world's growing urban centers. As urban populations grow in the face of these challenges, action will

be needed to create resilient infrastructure, particularly in developing nations.

There will also be a pressing need to strengthen legacy infrastructure in the developed world to protect it from extreme weather events. As countries work to build (and retrofit) infrastructure that is climate-resilient, there will be an increased need for new funding models to raise the necessary capital. Beyond identifying and preparing for downside risks, governments and industry players are also taking more direct actions to manage the problem. Many governments are working to move toward lower-carbon economies through policy instruments such as carbon taxes and emission trading programs. Leading companies are increasingly factoring a broad range of variables, including carbon costs, into their decision-making processes.

5. Transparency and security of global supply chains will become critical

In a recent World Economic Forum survey, more than 90% of respondents indicated that supply chain and transport risk management has become a greater priority in their organizations over the last five years.¹¹ The *Allianz Risk Barometer* for 2014 states that business interruption and supply chain losses account for around 50% to 70% of all insured property losses.¹² Environmental, geopolitical, economic and technological triggers will continue to cause systemic disruptions to global supply chains. Businesses will pursue greater control over their raw materials through vertical integration and co-development partnerships with suppliers.

Practices such as sharing logistics may become popular, and resource efficiency and recycling will move up the agenda.

Product and process innovation, aimed at improving supply chain efficiency and security, will become a competitive differentiator. So too will transparency. In today's hyperconnected world, companies are under greater scrutiny from all quarters. Regulators and conscientious consumers, empowered through social media channels, will demand greater raw material traceability and transparency of sourcing strategies. Companies with subpar social or environmental performance are at risk of suffering serious reputational damage in real time. With a wider variety of stakeholders taking interest, and with more powerful means of communication evolving, transparency will be an increasingly important attribute for all organizations.





6

Health reimagined

Health care – which already accounts for 10% of global GDP – is embarking on a once-in-a-lifetime transformation. Health systems and players are under increasing cost pressure – driving them to seek more sustainable approaches, including incentives that emphasize value. These cost pressures are exacerbated by changing demographics, rising incomes in rapid-growth markets and an imminent chronic-disease epidemic. An explosion in big data and mobile health technologies is enabling real-time information creation and analysis. Companies beyond health care as traditionally defined are entering the fray, providing new sources of competition and partnering.

These trends are starting to drive a fundamentally different approach – moving beyond the delivery of health care (by traditional health care companies in traditional ways, i.e., “sick care”) to the management of health (by diverse sets of players, with more focus on healthy behaviors, prevention and real-time care). Success, in other words, demands that we reimagine our approach to health.

Technology and demographics converge to drive a once-in-a-lifetime transformation

1. Cost, quality and access challenges will continue to spur health care reform initiatives

Health care systems across the globe are grappling with three goals: taming escalating costs, improving quality and outcomes, and expanding access.

Indeed, the reform programs being considered or actively implemented in so many markets are essentially attempts to reconcile often conflicting pressures imposed by these three imperatives. Payers and providers are implementing measures

to boost the efficiency of current systems. They are experimenting with new delivery and payment models based on outcomes and value. And they are increasing the transparency of information on quality, price and other metrics – enabling patients and others to make better decisions.

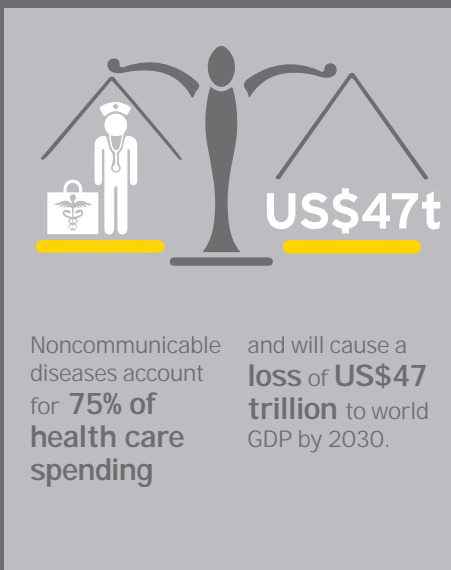
Health care costs are an increasingly urgent issue everywhere.



- **US** – health care's share of GDP will increase from 17% in 2012 to 23% in 2023.
- **Europe** – 13% of adults in France and 6% in the UK have serious problems in paying medical bills.
- **India** – health care costs are a leading cause of poverty.



Sources: "NHE Fact Sheet," Centers for Medicare & Medicaid Services website, September 2014, www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NHE-Fact-Sheet.html; "Health Affairs Web First," The Common Wealth Survey 2013, November 2013; and Kamayani Bali-Mahabal, "Health Workers Central to Improved Health Outcomes in India," 9 April 2014, www.ghets.org/2014/04/health-workers-central-improved-health-outcomes-india. Websites accessed 12 January 2015.



2. Incidence of chronic disease will explode, requiring behavioral solutions

We are on the cusp of a global chronic disease epidemic. This chronic disease burden is projected to increase dramatically in the years ahead, thanks in part to aging populations in the West, Japan and China, where the number of people over the age of 60 will more than double between 2010 and 2030.¹

While chronic diseases were once largely present in more affluent countries, the number of chronically ill individuals across the globe will also swell due to increasing incomes, changed diets and increasingly

sedentary lifestyles in rapid-growth markets. Today, 80% of chronic disease deaths occur in low- and middle-income countries, up from just under 40% in 1990.² Since chronic diseases progress slowly and have a strong behavioral component, tackling them requires new approaches to driving desirable behavioral change. Areas for new behavioral approaches include tobacco use, harmful use of alcohol, physical inactivity and poor diet.

Source: *The Global Economic Burden of Non-communicable Diseases*, Harvard School of Public Health and World Economic Forum, September 2011.

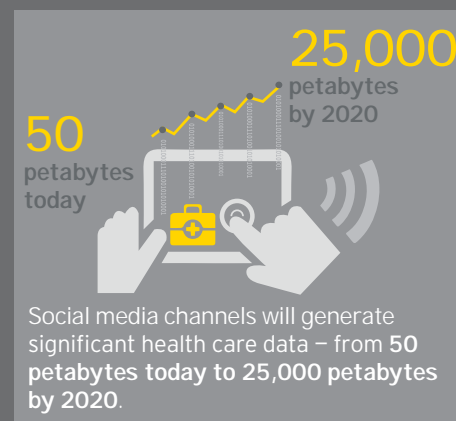
3. Health care will become more connected to daily life through the growth of mobile and social health solutions



Source: Robert J. Szczerba, *Why Mobile Health Technologies Haven't Taken Off (Yet)*, Forbes website, 16 July 2014, www.forbes.com/sites/robertszczerba/2014/07/16/why-mobile-health-technologies-havent-taken-off-yet, accessed 12 January 2015.



Source: *Infiniti Research Limited report*, HIT Consultant, September 2014.



Source: *Care customization: applying big data to clinical analytics and life sciences*, Healthcare IT News, October 2013.

An explosion in mobile health technologies is empowering patients with more transparent information and more control over their health. Smartphone apps and wirelessly connected medical devices are creating real-time data and enabling real-time interventions.

Social media sites are also playing an increasingly important role, connecting patients and providers, and allowing them to interact and learn from each other in new ways.

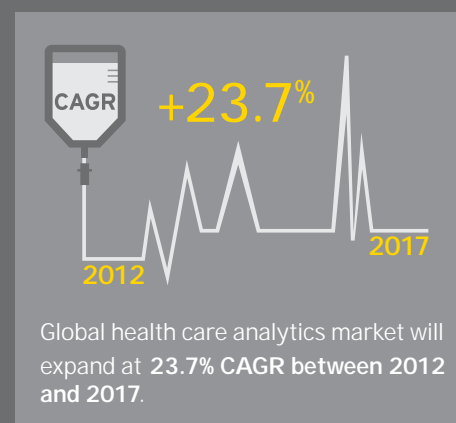
The emerging field of wearable and implantable sensors promises to integrate

mobile health technologies even more seamlessly into our everyday lives. These technologies are transforming “health care” (delivered primarily in hospitals and clinics) into “health” (managed wherever the patient is).

4. Health care has entered the era of big data

Reams of information being generated by electronic health records, payer claims, pharmacy data, mobile health technologies and more offer enticing possibilities to utilize “big data” technologies in the service of health care. Many entities – from startups to consortiums to large firms – are actively integrating and analyzing these disparate streams of data to improve the efficiency of everything from drug R&D to care-coordination. Life sciences R&D will improve the sector’s productivity, using big

data analytics to recognize research failures more quickly, to design more streamlined clinical trials, and speed the discovery and approval of new medicines. The ability to build and analyze large repositories of genetic, phenotypic, prescribing, health outcomes, population and other kinds of data will be integral to the ultimate success of both predictive and preventive health care.



Source: Denise Amrich, “Healthcare analytics market to exceed \$10bn by 2017,” ZDNet, 31 March 2013, www.zdnet.com/healthcare-analytics-market-to-exceed-10b-by-2017-7000013322, accessed 12 January 2015.

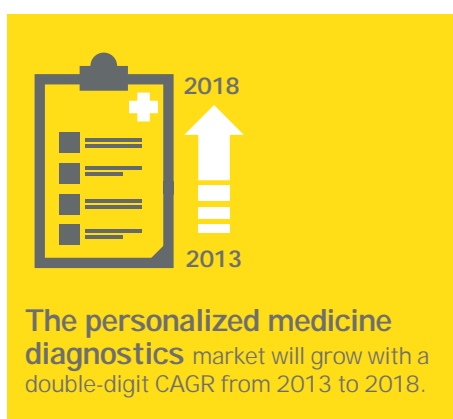
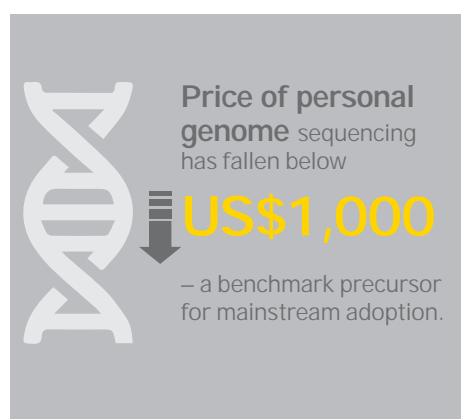
5. Genetic and genomic information is transforming drug development

The availability of genetic and genomic information (pharmacogenetics and pharmacogenomics) is helping to bring in sweeping changes in the development of new therapies. Genes and gene products (such as proteins) thought to be involved in specific disease mechanisms represent new

targets for intervention, driving promising new drug discovery programs. Gene expression profiling will help gain novel insights into drug-disease interactions, showing how the cells react to a particular treatments. Combined, these techniques will make major improvements in the

identification of new drug candidates. Pharmacogenetics will also reduce the number of new molecules that fail in clinical trials, thus reducing drug development costs.

6. Personalized medicine will come of age



Source: "Personalized Medicine Diagnostics Market and Forecast," RnRMarketResearch.com, July 2014.

At the clinical level, the long-awaited personalized medicine revolution is finally arriving. With the price of personal genome sequencing falling significantly, manufacturers are increasingly focused on personalized medicine approaches.

The high price of targeted therapeutics is poised to exacerbate the pressure on payers, while the anticipated increase in genomic data will create new opportunities, and challenges, for companies looking to gain access to, and make sense of, this information. The personalized medicine diagnostics market, for example, is expected to grow with a double-digit CAGR for the period of 2013 to 2018.³

7. Health care companies will increasingly compete with entrants from nontraditional fields

Companies from sectors once far removed from health care are entering the health business. Telecommunications firms are developing approaches to empower patients in managing their health. Information

technology companies are entering the fray to tackle the challenge of data analytics. Retailers and food manufacturers are experimenting with healthier foods and could play a role in guiding healthy

behaviors. These approaches create new opportunities for cross-sector partnering – but also raise the specter of disruption for mature health care incumbents.

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