



Germany 20|20

Future perspectives for the German economy

Summary of findings

McKinsey & Company



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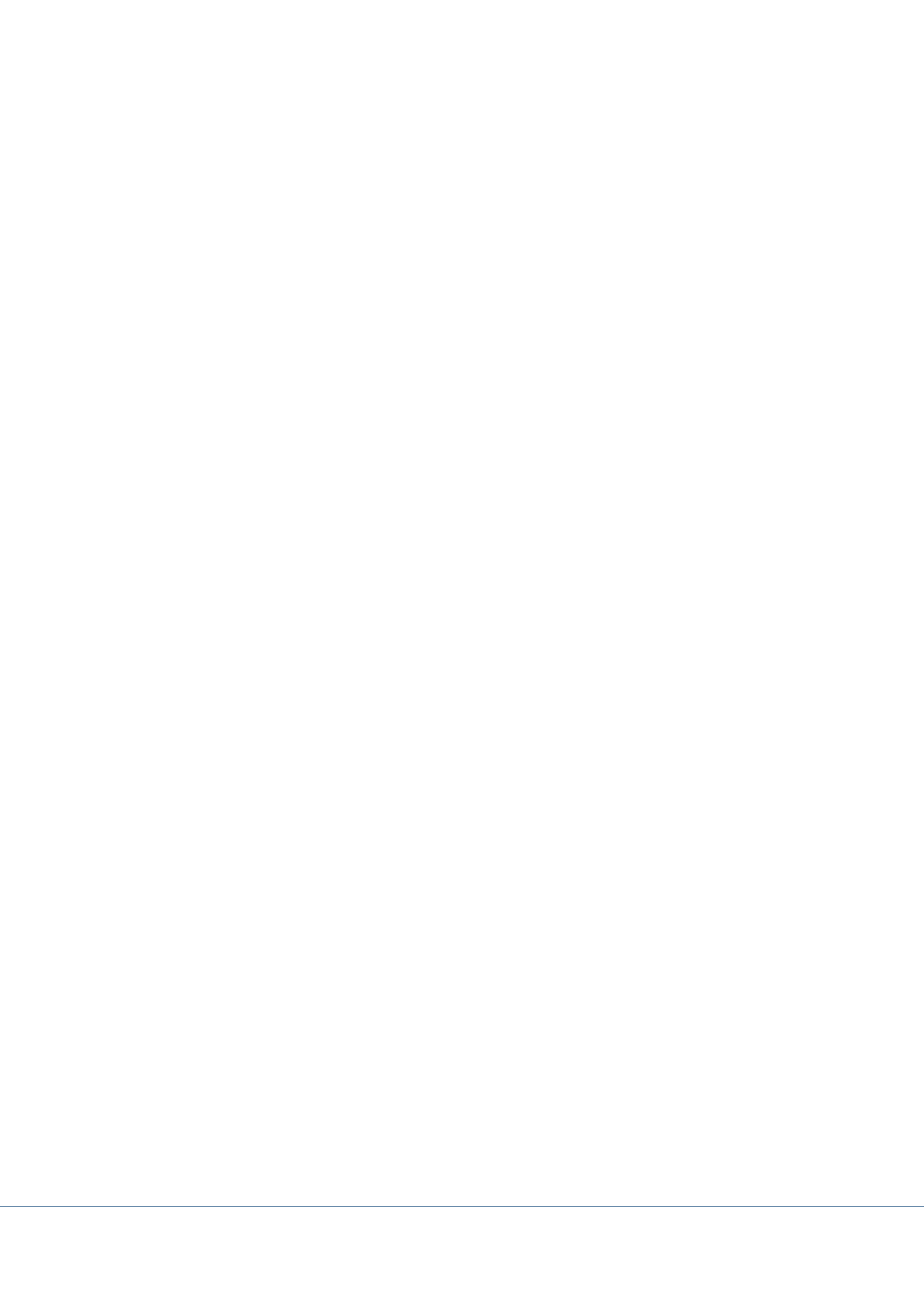
Preface

What will Germany look like in 2020: a country with a modern economy and secure prosperity for a large share of the population or a country stuck in European mediocrity?

Slow economic growth would leave many of Germany's pressing economic and societal problems unresolved. Germany's decline from the position of Europe's economic powerhouse to midfield would not be reversed. We believe that another scenario is possible – with a growth path of up to 3% p.a. In this summary of our study entitled "Germany 2020. Future perspectives for the German economy" we outline how this can work, why it is feasible, and above all what it will take.

From our daily consulting work for clients throughout the world, we know which factors create value in different industries. Furthermore, for almost two decades, the McKinsey Global Institute (MGI) has been providing analyses of global economic trends and macroeconomic developments. Against this background, Germany 2020 is meant as an economic perspective, not a political agenda.

Our goal is to contribute to the discussion of the future of the German economy and thus ultimately the future of German society.



Germany 2020. Future perspectives for the German economy

Germany has enjoyed two years of relatively strong economic growth. Many companies have markedly improved their international competitiveness. Nevertheless, the mood in the spring of 2008 is not unreservedly positive. Large segments of the population feel that the economic upswing is passing them by. Signs that worldwide growth is beginning to cool off, compounded by the crisis in the financial markets, have fueled anxiety about the threat of economic decline. This, in turn, dampens people's willingness to take risks and pursue the structural reforms necessary to foster innovation.

But it is now more important than ever to continue on the path to reform. In recent years, Germany's growth model has relied almost exclusively on productivity gains. This model is now reaching its limits. **Achieving sustainable economic growth requires a new approach: away from investments in existing structures and towards growth through innovation.** This is the only way to ensure that income and prosperity reach the largest possible number of people. If Germany's annual gross domestic product (GDP) growth continues at a rate of 1.7% p.a., then Germany will

- continue to decline relative to other European economies,
- find itself unable to finance its social security systems at the accustomed level,
- lose attractiveness as a global business location.

Finally, the middle class will continue to lose economic ground. With below-average income growth rates of slightly above 1%, p.a., it remains detached from overall economic growth, and the portion of the population with median income will continue to shrink. Germany's average per capita GDP growth rate of 1.4% p.a. (1995 to 2006) puts it behind European countries such as Denmark, Ireland, The Netherlands, Austria, and Sweden by an average of 13%. The gap to the United States is even larger at 26%.

It is only by accelerating economic dynamics and shifting to a GDP growth rate of 3% p.a. that Germany can achieve real income growth for a large share of the population, meet the demographic challenges, and ultimately resume its role as Europe's growth engine.

A growth path of 3% could markedly improve the economic situation of large parts of the German population: median income could increase in real terms by more than 40% over 2006 – from EUR 25,000 per capita to around EUR 36,000. Assuming this is the case, the situation on the labor market will improve significantly. Full employment will be a practical reality for skilled workers – the

lack of highly skilled employees will replace unemployment as the predominant labor market issue. Strong economic growth and the impact of demographic change will necessitate **the mobilization of up to 6 million additional employees**. Mobilization on this scale will require a substantial rise in the participation rates of older people and women, a shortening of the average length of education, and efforts to attract high-skilled foreign workers and retain German labor. Despite significant demand on the labor market, there will still be substantial unemployment for some 700,000 people with low skills. However, people without vocational training will find new employment opportunities in the much-expanded sector of household-related services and in retail.

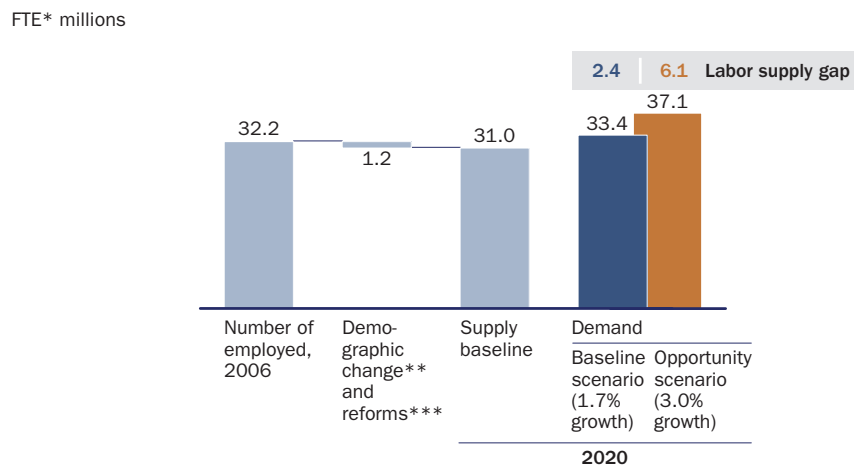
With lower unemployment as a consequence of more vigorous economic growth, the financing of Germany’s social security systems will cease to burden the public budgets, the more so as funded **individual provisions and individual responsibility** will gain in importance and supplement transfer-financed social security.

Despite accelerated economic growth, the realization of ambitious climate objectives will be possible. By 2020, Germany can cut **greenhouse gas emissions by 25% as compared to the 1990 level**. Gains in the efficiency of new industrial plants and private and public buildings will contribute to offsetting rising emissions caused by strong growth in the transportation sector and rising energy demand.

Making the economy more dynamic will take three kinds of action:

1. seizing opportunities created by worldwide economic trends,
2. at a company level, combining productivity gains with more innovation, and
3. implementing comprehensive policy initiatives that expand the space for dynamic economic growth.

Derivation of labor supply gap in 2020



* Full-time equivalent
 ** Population forecast version 2 – W1 (incl. net immigration of 100,000 individuals p.a.); assuming 2006 participation rates
 *** Raising qualifying age for public pension insurance; lower unemployment rate (2007 level)
 Source: Eurostat (employment figures), Prognos, German Federal Statistical Office (labor market structure from microcensus, total number calculated from national accounts, population projection), McKinsey

Figure 1

Key findings from the Germany 2020 project

- Supported by demographic change, Germany again has realistic prospects of reaching **full employment**. In 2020, unemployment will be a problem of insufficient qualifications and education, not a lack of jobs:
 - By 2020, there will be a **gap of up to 1.2 million university graduates** in Germany, posing a serious obstacle to growth.
 - **Up to 6.1 million additional people** (women, older people, young people, and the unemployed) **will have to be mobilized by 2020** in order to satisfy the demand for labor and offset effects of demographic change (*Figure 1*).
 - Massive investments in education are necessary in order to secure a higher overall standard and equal opportunity (“**no teenager without school degree**”). University matriculation figures and overall effectiveness must increase significantly.
- Germany is a beneficiary of globalization:
 - 60% of Germany’s export growth will continue to come from **European integration and from Eastern Europe**.
 - The German economy will profit more than any other industrialized country from the growth of the BRIC economies (Brazil, Russia, India, and China).
 - **Manufacturing and processing industries will remain the foundation of Germany’s economic strength** and will continue to account for more than 25% of GDP – a larger share than in any other major industrialized country.
- While **labor input in Germany** in the 1950s and 1960s exceeded the US level by as much as 40%, it is currently **around 25% lower than in the United States**. This is not because people in full-time employment work too few hours, but due to a low labor force participation rate and the rising share of part-time work.
- More so than in other countries, **productivity growth** in Germany has come **at the cost of employment**. Because of favorable global trends (globalization, climate, demographics, technological megatopics), there are good prospects of reversing this trend. Germany’s ability to achieve leadership in fast-growing, innovative fields has the potential to drive employment and growth.
- In the recent low-growth period, the middle class experienced a significant loss of income. It will take a growth rate of 3% p.a. to create realistic prospects of boosting median income significantly.
- Germany’s **infrastructure is among the best in the world**. This edge is in jeopardy unless investments of at least EUR 220 billion are made to address bottlenecks in telecommunications, transportation, and energy infrastructure – around EUR 60 billion more than currently budgeted. Legal certainty and a new regulatory framework are preconditions for infrastructure investments of this size.

1. Opportunities in global trends

According to estimates by leading economic forecasting institutes, the world economy will grow at an average of 3.5% p.a. in real terms up to 2020. Four overarching trends influence the world economy and offer opportunities for the German economy as well:

- **Globalization and international division of labor.** Globalization will continue until 2020 without letup: while the world economy has grown at an average nominal rate of 5.9% p.a. since 1980, world trade flows have expanded at a rate of 6.8% p.a. and capital flows at 8.1% p.a.; global

trade volume has increased nearly sixfold. Exports as a share of German GDP rose from 26 to 45% between 1991 and 2006 – Germany is a clear beneficiary of globalization. Globalization shapes the German economy's growth potential not only in the industries that have always been globally contested, but also increasingly in services and infrastructure industries. The engine of this development is ongoing European integration, which allows Germany to exploit the advantage of its central position on the continent. Some 60% of Germany's export growth will originate in Europe. In addition, German companies will continue to profit from the economic rise of the BRIC countries (Brazil, Russia, India, and China). Their demand, particularly for investment goods, but also increasingly for consumer goods, will continue to offer German companies strong growth opportunities, provided they maintain their technological lead.

- **Environmental sustainability and climate change.** Energy-efficient production, CO₂-reduced power generation, emissions-optimized buildings and vehicles – “clean tech” is at the center of public discussion, and not only in industrialized countries. Worldwide, investment in clean energy alone more than doubled between 2004 and 2006 to more than EUR 40 billion. Financing for clean tech accounted for 14% of the total investments by venture capital funds in 2006 – two years prior, the figure was only 1%. Germany is at the forefront of environmental protection and emissions reduction; German companies have established a leading global position in environmental technology. For example, there are more wind power stations installed in Germany today than in any other country. Three of the ten largest manufacturers are located in Germany. While in other countries it is primarily young companies that develop environmental technologies and drive innovation, Germany lacks start-up companies and often fails to seize growth opportunities globally. Given that Germany is still a pioneer in this field, it can capitalize on its technology leadership to successfully commercialize environmental technologies and set standards.
- **Demographics and the development of society.** Because of longer life expectancies and lower birth rates, populations are aging, and not only in Germany. In countries such as Italy and Japan as well, the death rate already exceeds the birth rate. With its aging society, Germany faces dramatic societal effects caused by demographic change. The number of people of employable age is decreasing, while the number of economic dependents is rising steadily. Today, people aged 50 and over already account for 40% of the population in Germany and hold more than half of the total disposable income. By 2020, this age group will have grown to over 50% of the population and control around 60% of the total disposable income. Changing age structures will trigger adjustments to products and services – and open up opportunities for new value propositions, for example, in healthcare, personal care and wellness, investments, and tourism. German companies can make use of these new business models and market their products on a global scale.
- **Technological transformation.** More than 2 billion people use mobile phones; 9 trillion e-mails are sent each year; every day, 1 billion searches are started on Google. Process know-how and integrated solutions will be at the forefront of the next technological revolution in information and communications technologies (ICT) – and Germany can play a leading role. Germany's existing expertise and technological know-how can serve as a basis for a leading global role in embedded software, instrumentation and control devices, and the controlling of complex processes as well as in the technological transformation of healthcare, public administration, domestic security and defense, and transportation and logistics systems. The magnitude of these applications surpasses the capabilities of individual companies and calls for an industrial policy framework that will unlock international marketing potential. Germany should learn the lessons offered by past projects (e.g., Toll Collect) and explore new forms of cooperation between the private and public sectors.

2. Industry growth

On the basis of our consulting experience, we analyzed the potential growth opportunities that major industries in Germany can tap by 2020. The choice of industries was based on their importance for the German economy. In pursuing this line of investigation, the Germany 2020 study is taking a new approach: combining the macroeconomic perspective, which requires an annual growth rate of 3% until 2020, with analyses of individual industries. The results show that an accelerated growth rate of 3% p.a. can be achieved as the sum of the individual growth opportunities of the individual industries (Figure 2).

For our analysis, we classified industries by their function within the economy into three sector categories.

Category 1: Manufacturing and IT services. Growth in the automotive, machinery and machine tools, chemicals, and high-tech industries is rooted in strong demand for German engineering products, in particular in Eastern Europe, Asia, the Middle East, Africa, and Latin America. The future of the manufacturing industries is based on innovation segments with high growth potential. New, innovative industries such as clean tech, segments of the biotechnology industry, and new ICT solutions, above all in the public sector, in telematics and logistics systems, and in system software, are fields in which Germany can capitalize on its technological leadership and gain from high margins for innovative products in the world market.

- Automotive industry:** Germany's automobile makers are a stronghold of Germany's economic power. The automotive industry secures employment and is an engine for innovation. As a globally active player, the German automotive industry has to adapt to changing international trends. The industry currently holds a strong position: German automotive companies are among the world market leaders, especially in the premium car segment. Industry forecasts indicate that worldwide demand for German-branded cars will rise by 1.8 million to a total of 11.6 million units (passenger cars and light commercial vehicles) by 2020 compared to 2007. Although regional shifts in global demand for cars and continuous cost pressure will drive the relocation of production capacities to new markets, 0.7 million of these additional vehicles will be produced in Germany. To maintain and strengthen the macroeconomic importance of the automotive industry up to and beyond 2020, significant changes are necessary. The negative employment effect of the industry's productivity gains needs to be offset by increased innovation. If changes in technologies such as fuel-efficient consumption and low emissions

Industry overview

Percent CAGR (compound annual growth rate), 2006 - 20

Industry	Share of total employment, 2006	Baseline scenario			Opportunity scenario		
		Value-added growth*	Employment growth	Productivity growth*	Value-added growth*	Employment growth	Productivity growth*
Manufacturing/IT							
Automotive	4.4	0.3	-0.5	0.8	1.3	0	1.3
Machinery	2.5	1.7	-0.8	2.5	2.9	0.3	2.6
Chemicals	1.2	3.0	-0.3	3.3	4.6	1.5	3.1
High tech	4.7	3.2	1.4	1.6	4.8	1.9	2.9
Services							
Banking	2.4	1.7	-1.0	2.7	3.3	0	3.3
Insurance, AM	0.9	1.0	-0.9	1.9	3.7	0.9	2.8
Consumer goods, retail	10.7	1.5	-0.8	2.3	3.2	1.5	1.7
Health	10.4	2.2	1.4	0.8	3.3	1.9	1.4
Public administration	7.0	0.7	-0.8	1.5	0.7	-0.8	1.5
Infrastructure							
Transport, logistics	5.2	3.6	0.9	2.7	4.2	1.5	2.7
Telecommunications	0.6	-3.7	-5.0	1.3	2.8	1.0	1.8
Other industries	49.9	1.2	0.4	0.8	2.6	1.0	1.6
Economy as a whole		1.7**	2.4 million*** employed		3.0**	6.1 million*** employed	

* Real values

** GDP growth per capita, incl. all industries not discussed, based on Prognosis forecast, adjustments to value added with input-output tables, German Federal Statistical Office (Destatis); adjustment to employment growth proportional to GDP growth

*** Also includes replacement demand for employees as a result of demographic change (1.2 million fewer employees taking into account foreseeable effects of labor market reform)

Source: Prognosis forecast, German Federal Statistical Office (Destatis), McKinsey

Figure 2

could be translated into a 0.33% higher profit per unit sold, the industry's value added could be increased by 1.3% p.a. In absolute terms, this gain would amount to EUR 23 billion in 2020, creating additional employment opportunities and room to maneuver in terms of wage calculations.

- Machinery and machine tools industry:** As the world's single largest machine tools and machinery exporter, the sector faces global trends from a position of strength. The sector owes its solid performance over the last decade to strong growth abroad. Demand for machine tools – in particular from developing economies – has been rising steadily in recent years. Domestic sales have been comparatively sluggish. As a result, production capacities have been relocated to emerging markets. Combined with strong productivity growth and process optimization, these relocations have led to a slow but steady decline in employment in the sector. In the opportunity scenario, the machinery and machine tools industry can increase its value creation by 2.9% p.a. to EUR 104 billion in 2020 – accompanied by modest employment growth of 0.3% p.a. Strong growth depends on demand from China, India, and Russia continuing to grow at roughly the same rate as between 2000 and 2006 (20% p.a., still coming from a rather low base). Alternatively, German companies can strengthen their competitive position vis-à-vis the United States, Japan, France, and Italy to capture a greater share of the world market. A combination of both strategies requires German companies to secure and expand their positions in growth sectors such as alternative energy generation or environmental technologies. A critical prerequisite for success is the sufficient supply of qualified labor. Failure to obtain high-skilled employees would result in the accelerated relocation of production capacities abroad.
- Chemicals industry:** German chemicals companies continue to post record sales and profits. However, their value creation stems largely from international business, predominantly exports to growth regions such as Asia and from efficiency gains. To sustain its strong position in the future, it is critical for the chemicals industry in Germany to expand into new growth sectors. Highly innovative product segments centered on ecological efficiency – a theme also well accepted by society – could be the engine of future growth. Light-weight construction materials, coating technologies, and intelligent materials for low-energy houses as well as technologies relating to CO₂ abatement are only some of the areas of opportunity. Through closer collaboration with the automotive, machinery, and energy industries, the chemicals industry has the potential to defend its leading position globally. Growth of over 4% p.a. will then be possible – combined with the creation of around 100,000 new jobs.
- High-tech sector:** Covering a broad range of industry segments from semiconductors to aviation, the high-tech sector has traditionally been one of Germany's major growth drivers. Since 1990, however, it has grown at a rate of 3.5% p.a. and thus below the global industry average. In the future, the high-tech sector in Germany can regain importance – by aggressively expanding into growth segments driven by global growth trends such as environmental protection, urbanization, networks, and the professionalization of public administrations. At a rate of 4.8% p.a. in the opportunity scenario, growth in the German high-tech sector can outpace world market growth. A promising field is “clean tech made in Germany,” but the window of opportunity is closing quickly as regions such as California are rapidly expanding their industrial base in environmentally friendly solutions. To turn the opportunity scenario into reality, the German high-tech sector must master three central challenges: successfully marketing innovations on a global scale, creating favorable policy conditions for technology-oriented start-ups, and reaching critical mass in a limited number of high-tech clusters.

Category 2: Services. In this group, we analyzed banks, insurance companies, retailers and consumer goods, healthcare, and public administration in detail. As additional service industry segments, we also considered business-related services, skilled trades, and household-related services. Here, too, overarching growth strategies are apparent: services must seize the opportunities presented

by Germany's fully developed economy, resurgent domestic demand, and increasing demand for higher-quality services by offering new formats and differentiated value propositions.

- Banking:** Growth in the German banking sector has been sluggish over the past decade. As a result, German banks have lost ground relative to their European competitors. The German banking sector is now at a crossroads. Without fundamental reform, the decline in profitability along with diminishing stature in international competition will continue. If, however, the banking sector succeeds in completing four fundamental reforms, it can nearly double its growth rate by 2020, moving from 1.7% p.a. in the baseline scenario to more than 3% p.a. in the opportunity scenario. The positive consequences would be felt far beyond the sector itself, benefiting customers and the German economy as a whole. The four decisive cornerstones in the Banking 2020 scenario are: first, consolidation in all pillars of the German banking industry, thus creating institutions with higher market shares and consequently greater financial strength, better risk diversification, higher efficiency, and better quality of services. Second, broadening of banking business models across borders will give the sector more stability in the medium term. Systematic expansion of business activities in other countries will allow German banks to resume playing an important role internationally. Third, better advising in combination with rising investment sophistication on the part of investors will permanently lift the profitability of private investments. Shifting assets to risk-return optimized investments can increase household wealth by up to EUR 11,000 until 2020. Fourth, innovative financial products will help banks fulfill their role as a strong partner of Germany's internationally successful industry. In the medium term, financing volumes will increase by more than EUR 300 billion, helping German companies to achieve a better equity position. If these four reforms succeed, the banking sector will earn additional profits of EUR 20 to 30 billion compared to today. For employees, strong growth will translate into income growth of approximately 2% p.a. in real terms. Labor productivity will increase by more than 50% to a value added of approximately EUR 135,000 per employee in 2020.
- Insurance and asset management:** This industry has exhibited significant profit growth in recent years. It owes its success to numerous initiatives to boost earnings, strong capital markets, and a favorable phase in the property and casualty price cycle. Going forward, the industry must again turn its attention to accelerating volume growth in premiums and assets under management, which has been satisfactory at best. Over the coming decade, insurers and asset managers confront a significant need for adjustment to the effects of demographic change. The industry can respond to these trends by actively taking advantage of new opportunities in pension provisions, both for young private customers and for institutional customers (the pension reserves issue). For the generation aged 50 and above, flexible investment and deaccumulation products, among others, offer significant growth potential. For corporate customers, insurance against rising liability risks, IT risks, and, in view of climate change, against natural catastrophes and extreme climate conditions will become increasingly relevant. To capitalize on these opportunities, the German insurance industry must focus its reforms on three key areas: strengthening customer orientation in product design and distribution, optimizing investment performance, and increasing the "industrialization" of processes. The policy framework should ensure that the pension gap is transparent, guarantee the continuity of tax privileges, simplify product approval procedures, and allow more flexible guarantee design. If the sector systematically taps all growth opportunities, the insurance industry's value creation can increase by 3.7% p.a., and employment by 0.9% p.a. up to 2020.
- Retail and consumer goods:** Encompassing retail and manufacturing companies, this sector is the largest employer and the fourth-largest contributor to value creation in Germany. Without significant changes to the current business models, the German retail sector will grow at a rate of 1.8% p.a. until 2020; consumer goods manufacturing by approximately 1.0% p.a. But more growth is possible. Integrating various sales channels can facilitate the development of more

individualized offers and stronger customer service. Shopping as an “experience” fostered by appealing and unusual store designs and events will increasingly drive value creation. This also applies to add-on services, such as repairs and cleaning or cooking lessons and style consulting. If such opportunities are exploited in combination with a macroeconomic growth rate of 3%, retail can increase its value creation by 3.1% p.a. up to 2020, while consumer goods manufacturing can reach 3.5% p.a. These growth rates will enable the industry to create almost 800,000 new jobs by 2020.

- Healthcare:** Growth potential for the healthcare sector exists not only in the public sector healthcare segment, but also in the pharmaceutical industry, in medical devices, and in the many other segments making up the German healthcare industry. Demographic change will drive overall demand for health-related products and services. For this potential to be fully tapped by the sector, a number of obstacles have to be removed. Healthcare financing must be put on a sturdy basis with three sources of financing: an income-dependent contribution to statutory health insurance, a deductible for minor or elective health expenses, and optional private insurance for additional services. This type of financing regime combines the principle of solidarity with incentives for resource-conscious choices by individuals. In addition, the deregulation of the sector is necessary in order to create growth incentives and favorable conditions for attracting new business, conducting research, and expanding geographically. With a favorable regulatory environment and expansion into new segments, the healthcare sector can become one of the primary growth drivers of the German economy in 2020. Growth rates of 3.3% p.a. in value creation and 1.9% p.a. in employment are realistic.
- Public sector:** Unlike other service sectors, the public sector should not target an increase in its direct contribution to the economy’s gross value added for 2020 – and thus an increase in government spending as a share of GDP. Nevertheless, the public sector serves as a facilitator for growth in other industries – for example, as a buyer of goods and services. With an order volume of EUR 260 billion p.a., the public sector is a key customer for private enterprise. In the opportunity scenario, the public sector develops modern forms of organization that contribute to economic growth in two main ways: first, by reducing private and public spending through one-stop interfaces for citizens and businesses and through efficient and bundled procurement processes; and, second, by creating new markets and stimulating innovations in sectors with strong growth potential, such as e-government, security, and transportation technology. The private sector’s expenses for interaction with the public administration alone can be reduced by EUR 10 to 20 billion p.a. At the same time, the public sector can outsource some of its functions to the private sector through more public private partnerships (PPPs) and thus generate a market volume of up to EUR 10 billion p.a.

Category 3: Infrastructure industries. This sector can profit from globalization, European integration, and far-reaching technological transformation. The possible positive development of network-linked logistics and infrastructure industries takes place against the background of increasingly severe bottlenecks that may become a drag on growth for the economy as a whole. Today, Germany has first-rate infrastructure. The prerequisites to preserve this advantage in the 21st century are sufficient investment funding, rapid approval procedures, and regulations that promote investment.

- Transportation and logistics:** This industry profits from the regional and international division of labor, growth in Eastern Europe, and the increase in value-added services. At the same time, it lays the foundations for strong growth in other industries. In the baseline scenario, the industry will grow by 3.6% p.a., its employment by 0.9% p.a. In the opportunity scenario, growth of 4.2% p.a. and employment increases of 1.5% p.a. are possible. Even the baseline scenario requires additional, as yet uninitiated investments to remove infrastructure bottlenecks and meet ambitious climate targets. Key steps to take are to revise the national plan for targeted infrastructure investments, to devise an intelligent traffic management system, and to trans-

form truck fleets to low-carbon vehicles. Given long lead times for planning, bold decisions have to be made now. The failure to create an optimal investment environment would result in Germany experiencing severe gridlock in 2020 – with unforeseeable consequences for the economy as a whole.

- **Telecommunications:** A growth story since the 1960s, the telecommunications industry has been stagnating since 2006. Mobile phones and broadband Internet have reached high penetration rates, operators' prices and revenues are falling, employment is declining. The industry outlook in the baseline scenario is gloomy. With little innovation, value creation will shrink by as much 3.7% p.a. and thus by more than a third by 2020 – with corresponding disadvantages for jobs and productivity in the industry itself, and lower growth prospects for related industries. Alternatively, the German telecommunications industry could return to its traditional strengths. Supported by suitable regulatory conditions, growth of up to 2.8% p.a. appears attainable. For this to happen, three preconditions need to be met: first, investments in new infrastructure are required – above all, in a modern fiberglass network; second, an ICT industry that is competitive on a global scale must be built and constantly developed in order to expand into key growth segments; and, third, Germany needs an IT and software industry that develops attractive, high-performance services for end users and thus sets global standards.

This initial overview of the opportunities and the obstacles in individual industry sectors makes it clear that a large measure of dynamic change and renewal is necessary across the German economy to attain annual growth rates of 3%. At the same time, this analysis confirms that no dramatic shifts will occur in value creation patterns between the various sectors of the economy.

3. Overarching initiatives

More dynamic economic growth and the renewal of the German economy will have to come primarily from the sum of activities in each individual industry sector. To unleash growth and allow the economy to flourish, policymakers must also develop favorable conditions and a suitable regulatory environment. So far, dynamic economic change has passed Germany by. Despite tailwinds from the world economy and good prerequisites as a location for business, Germany is underperforming in terms of economic growth and job creation.

In recent years, the debate has focused on the causes of high unemployment and low growth. **High wages and non-wage labor costs have led to rationalization investments** and, increasingly, to the relocation of production capacities. As a consequence, Germany has experienced high unemployment and the beginning of a downward spiral. A declining number of employed must finance transfer payments for a rising number of unemployed individuals who find too few job offers. In addition, the poorly qualified have little or no incentives to accept work in the low-wage sector. The most important economic policy reform in recent years, the "Agenda 2010," announced in 2003, addresses this issue exclusively.

Far less attention has been paid to the second causal complex: **Why has Germany failed to develop dynamic economic growth that combines productivity gains and job creation?** Relatively strong growth in 2006 and 2007 must not distract from the fact that the German economy is suffering from a fundamental lack of dynamism. Germany owes its strong growth performance almost exclusively to traditional industry sectors, which in recent years have enjoyed brisk global demand. What has been missing so far is the broadening of Germany's growth platform. Since the 1980s, Germany has not managed to enter and successfully expand into new growth industries. New products and services generate too little surplus value and employment. An effective reform program must aim to increase the dynamism of the German economy.

Broadening Germany's growth platform and accelerating economic dynamics are the goals of our five recommendations for action in the critical areas of entrepreneurship, the capital market, universities, education and employment, and infrastructure.

Entrepreneurship

The renewal of the German business landscape depends on a new, more dynamic company landscape shaped by a strong influx of new, ambitious start-ups. It equally requires dismantling and restructuring existing companies or parts of companies with no long-term prospects for growth. A Global Entrepreneurship Monitor comparative report on entrepreneurial activity in more than 40 countries confirms that start-up intensity in Germany, at 4.2 nascent and young entrepreneurs per 100 individuals in the labor force, is significantly lower than in the United States (with around 10 founders and new companies) and other European countries such as Spain, the UK, and Denmark.¹ Germany should strive to increase the number of technology-based start-ups substantially. Doubling the current figure to a total of 30,000 start-ups per year would make Germany the world's number one technology business builder. By 2020, a total of 3.5 to 7.0 million jobs could be generated by these technology-oriented firms.

A key obstacle preventing a larger volume of start-ups is a lack of financing from "business angels." Business angels are investors who provide external equity financing coupled with active assistance to young entrepreneurs in the form of advice, access to networks, and entrepreneurial experience. While in Germany only 5% of the technology-oriented start-ups are financed by business angels, this form of financing has proved to be highly successful in the United States and the UK.

Capital market

The German capital market today does not sufficiently fulfill its role as a catalyst and engine of growth. Three predominant causes stand out. First, the oversupply of inexpensive debt capital with low and relatively undifferentiated risk premiums. This financing structure is sustained in part by the investment behavior of private households and by a heavily fragmented, not very international banking sector. Second, the German market has fewer active owners. Third, important segments of the capital market lack market depth and innovative formats for financing to match the different stages in the company life cycle. For these reasons, the growth and employment signals that the capital market sends to companies are weaker than in other countries.

German companies' unusually high share of debt capital increases pressure on German companies during economic downturns and thus endangers jobs. Consistent with this diagnosis, a renewal of the German capital market should address three key aspects:

- Private households should move their assets from savings to investments. By changing their investment behavior, they will contribute indirectly to healthier company financing. Discussion of the state pension system and the declining importance of the pay-as-you-go retirement system have made private households increasingly aware of the need for private retirement plans. Around 10 million state-subsidized "Riester" pension product contracts are testimony to this awareness. Even clearer evidence comes from the much more numerous contracts for unsubsidized pension products. In view of the challenges for the pension system and the higher demand for financing generated by a faster-growing economy, Germany's policy framework should give stronger support to funded pension plans. Multiple suitable products should be marketed, and the investment behavior of German households realigned – primarily by making fees and costs more transparent and by providing more financial education.
- The German capital market should offer differentiated financing vehicles, tailored to companies' various financing requirements (venture capital, business angels, private equity). It is primarily

1. Equals the total of two differently defined groups:
- "Nascent entrepreneurs" (18-to-64-year-olds who take part actively in setting up a new company (company has not had a payroll in the past three months) and expect to own or co-own it)
- "Young entrepreneurs" (18-to-64-year-olds who are the owner/manager of a company and have not received pay, profits, or payment in kind from the company for more than 3.5 years)

institutional investors with a long-term perspective, such as pension funds, mutual funds, and insurance companies, that create market depth in all capital market segments. In 2006, the investment assets of all US pension funds amounted to USD 14 trillion – or 105% of US GDP. German pension funds could similarly contribute to invigorating the stock market and encouraging venture capital investments. With the move towards more funded pension provisions, Germany will have the opportunity to expand its pension funds and give the capital market new impetus.

- Alongside more private investment and renewal of the equity markets, the German economy needs to accelerate the institutional evolution of its banking sector. Appropriate reforms have the potential to reinvigorate the capital market as a source of stimulation and an accelerator of growth. The essential levers are rapid consolidation and a resolute internationalization of the business models.

Universities

Universities serve as centers of scientific research and innovation and thus play a key role in supplying the German economy with fresh ideas. Apart from a few exceptions, German universities only partially fulfill this critical macroeconomic function. The German university landscape is fragmented, elite universities are lacking, and the international competitiveness and attractiveness of German universities are comparatively low.

The university reforms now under way have resulted in initial improvements. Further reforms are, however, necessary to increase autonomy; expand responsibility for management, organization, staffing, and finance; and boost competition for faculty, students, and research funds and projects. Consolidation of the German university landscape is essential in order to bundle forces and create units with critical mass. Given sweeping reforms, some large universities with comprehensive programs have a realistic chance of attaining peer status with the US “Ivy League” in research and teaching. Smaller regional universities will need to concentrate on a limited spectrum of academic disciplines and focus on excellence in teaching these subjects.

Furthermore, it is high time to end the conspicuous underfunding of German universities. With total spending on higher education accounting for 1.1% of the gross domestic product, Germany ranks behind most other European countries and far behind the United States (2.9%). Adequate financing of Germany’s universities requires abandoning the “sprinkler can” approach and finding additional sources of financing alongside (limited) tuition fees – for example, third-party funding, foundation endowments, and alumni donations.

Education and employment

The situation on the labor market is beginning to change for the better. For the past two years, employment has started to rise, and unemployment is falling. The recovery of the labor market will not remain a short-term phenomenon in line with a temporary upswing of the business cycle. Instead, demographic change will significantly reduce the labor supply, which, without corrective action, would be an obstacle to long-term growth. While the size of the German labor force, at 66% of the total population, is at a level comparable with the EU-15 or the United States, the actual participation rate of the labor force is only 75% and thus around 5% below the figures for, e.g., Denmark and Sweden. By 2020, demographic change will have reduced the labor force to 64% of the total population. In parallel, the total population will have decreased by 1.8 million, and the number of people of employment age will have fallen by 3.1 million. Taking into account the increase in the employment rate that has already occurred and the effects expected from raising the age of retirement, the labor supply is projected to shrink by 1.2 million full-time equivalent employees (FTEs).

On the demand side of the labor market, even moderate GDP growth rates of only 1.7% p.a. will create an extra demand for 1.2 million FTEs as compared to the 2006 level, and a total gap of 2.4 million FTEs. At the targeted growth rate of 3% p.a., demand for labor will be even higher, at 4.9 million full-time employees above the 2006 level, resulting in a total gap of 6.1 million FTEs.

The gap can be closed with a combination of initiatives. Most importantly, Germany needs to raise its labor force participation and employment rates. If Germany can lift the participation rates among women and older and younger people to the highest level in Europe (women: +1.7 million FTEs, older people: +1.4 million FTEs, young people: +1.4 million FTEs), an additional 4.5 million full-time employees would become available for the workforce.

Even more important than the labor supply gap is the foreseeable qualifications gap, particularly among engineers and in technical professions. Depending on growth levels, Germany could face an unmet demand for university graduates of up to 1.2 million FTEs in 2020. At the mid-range qualification levels, conditions must be established to ensure that more people get training and qualifications that match labor market demand. People with limited qualifications should receive the opportunity to find employment and earn an income that covers the basic costs of living. Prerequisite for this is the introduction of a two-part wage, the "Kombilohn." The employer pays the employee in line with productivity, so that low-skilled or unskilled people have better chances of finding a job. Transfer payments to top up the wage ensure a minimum standard of living and provide an incentive to seek and stay in employment.

Better employment opportunities depend on improvements to the education system. The overall quality level must rise, for example, through effective training and more performance incentives for teachers. More autonomy and responsibility on the part of the schools in combination with rigorous quality management should be governing principles for the school system. A stronger focus on equal opportunity through targeted support and development of individual pupils and students is necessary to ensure that every individual develops to his or her full potential. Along these lines, a later decision about which "track" a student should follow, and more upward mobility in the school system are critical reforms.

Infrastructure

Germany's telecommunications, traffic, and energy infrastructures remain among the most modern and sophisticated worldwide. In view of the rapid developments in all three infrastructure sectors, Germany needs to step up investments above the level currently planned to secure its leading position.

In telecommunications, the installation and expansion of a fiber-optic network will create sufficient bandwidths to offer attractive services to end users and attract a high-performance ICT industry. The creation of such a network requires investments of approximately EUR 40 billion – around EUR 25 billion more than currently expected.

The traffic infrastructure will have to cope with an increase in total freight traffic by 3.5% to 4.0% p.a. and an increase in freight traffic in transit through Germany by even 4 to 5% p.a. Handling this requires additional infrastructure investments of approximately EUR 38 billion on top of the EUR 60 billion already earmarked to remove resulting capacity bottlenecks in rail, road, and air transportation.

Investment requirements in the energy infrastructure total approximately EUR 80 to 90 billion until 2020, a sum that the energy companies have already budgeted. Between EUR 40 and 50 billion are required to overhaul power generation capacity and about EUR 40 billion to renew and expand the transmission network and to ensure the security of supply.

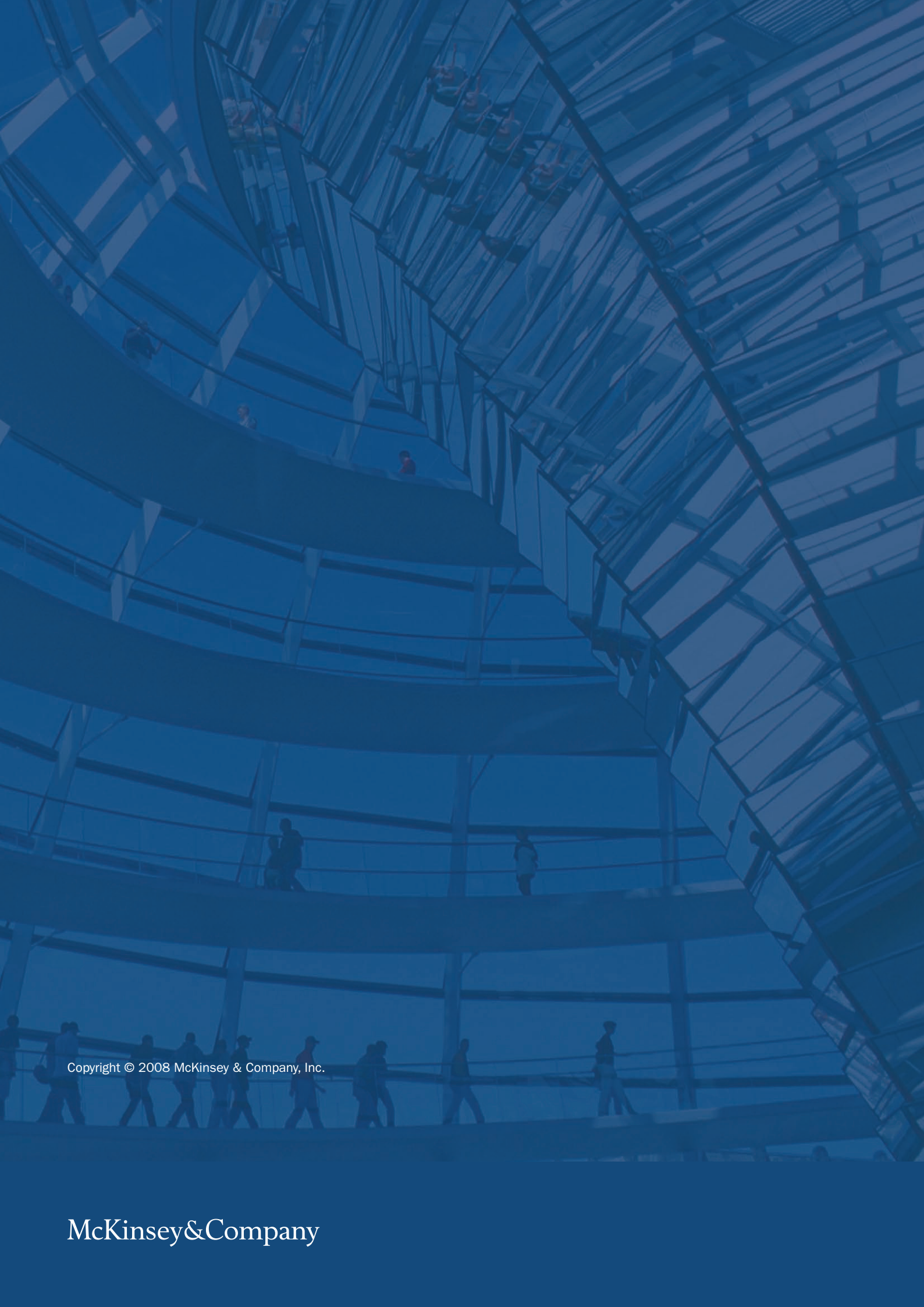
Until 2020, the energy, transportation, and telecommunications sectors will require investments totaling EUR 220 billion. To date, approximately EUR 160 billion have been budgeted. From today's vantage point, realization of the additional EUR 60 billion seems uncertain. Incentives for new investments are lacking, and investments already planned are delayed by insufficient investment security and lengthy approval processes. Germany needs an unambiguous and transparent legal framework that makes the business risk manageable. New regulatory policies, including targeted incentives, must be put into place to ensure that the extra investments are made and Germany's infrastructure continues to be the basis for economic growth.

Invitation to further discussion

Germany's future is being decided today. Its path is lined with challenges and opportunities alike. A dynamic economy with highly competitive companies that operate internationally can be the guarantor for long-term prosperity and a socially inclusive society. The risk of economic decline is, however, a real and present threat to German prosperity, should German businesses and society at large lack the strength, the courage, and the resoluteness to create the prerequisites for more dynamic growth.

We are convinced that success requires strategic discussion and a basic consensus to govern the necessary transformation. With this study, we hope to contribute to this process. "Germany 2020" is designed as a starting point and cornerstone for discussion with clients in all industries. During the course of our work, interim findings have been presented to a number of companies. The feedback from senior executives has deepened our understanding of the problems and helped us refine our solutions. Our discussions have assured us that corporate decision makers are eager to contribute to a fundamental change.

We invite you to participate in this discussion. Please send us your suggestions and ideas at D2020@mckinsey.com. We will compile all contributions and include them in our ongoing work.



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