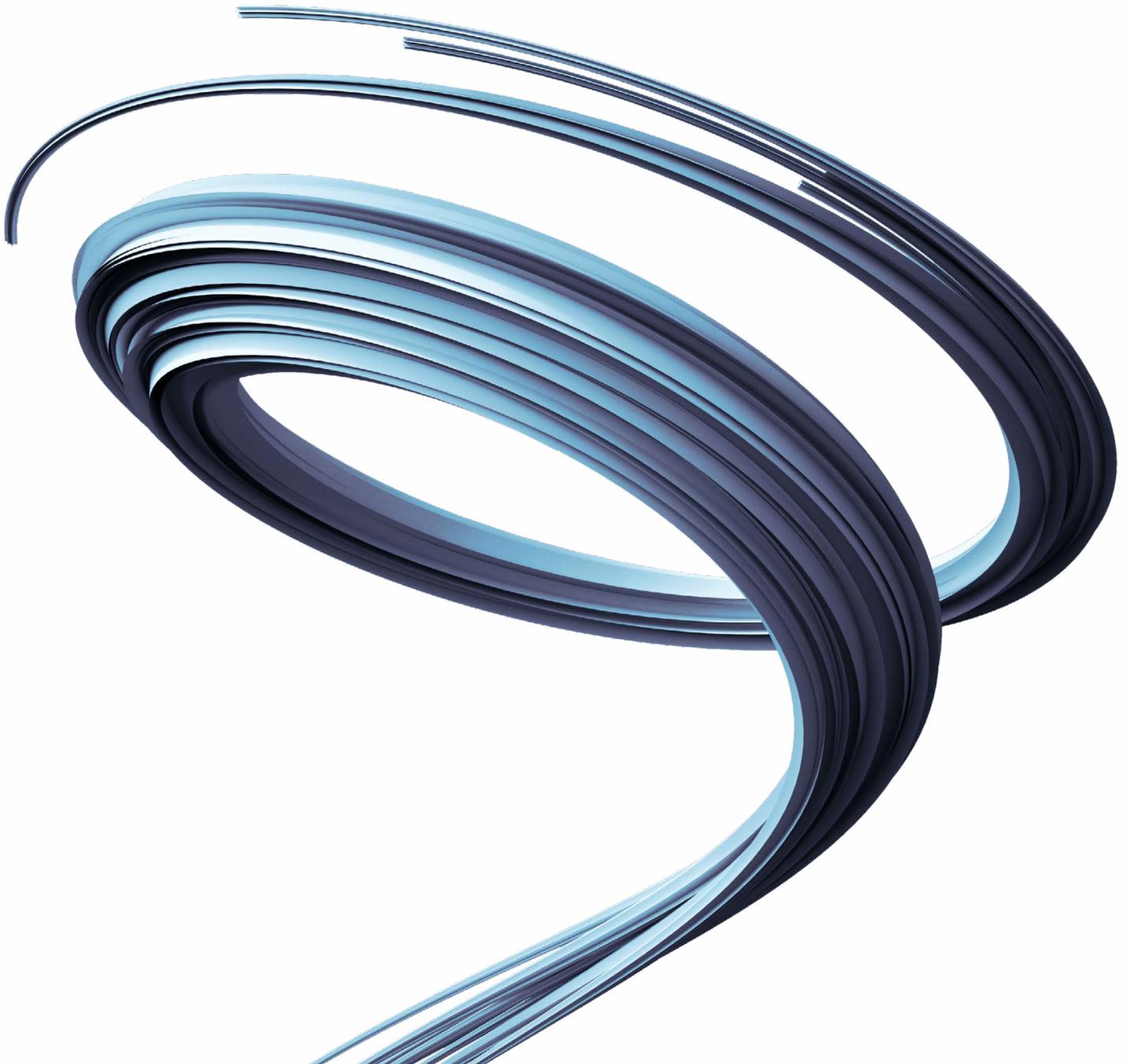


McKinsey
& Company

Germany 2030

Creative Renewal



Currently, our society is facing a number of high demands: prosperity at least at today's levels, the participation of everyone in progress and opportunities, and the management of climate change. Germany's model of the social market economy, which has guaranteed prosperity, stability, and social security for decades, is clearly a strength. But the factors that have particularly promoted our success in the past are visibly losing steam. Germany must identify a sustainable response to the upheavals in technology, demographics, and the global economic fabric as well as to new social requirements – particularly emissions and sustainability targets – and the juxtaposition of man and machine. Why this comprehensive “creative renewal” is indispensable, what it promises, and what should happen to make it a reality is explained in this publication.

The following core themes summarize our analyses and recommendations.

Germany's economy – a global success story. The model of the social market economy has made Germany a winner in globalization: with an average per capita growth of 1.1 percent in the years 2000 to 2019, it is at the level of the United States (1.2 percent). In addition, Germany is in the leadership group in terms of sustainability, as measured by the Sustainable Development Goals (SDGs) of the United Nations. Compared to the US, the income distribution in Germany is more balanced (Gini coefficient¹ 29.7 versus 41.4), CO₂ emissions per capita are 45 percent lower, and social progress is higher (rank of 11 versus 28 in the Social Progress Index of 163 countries).

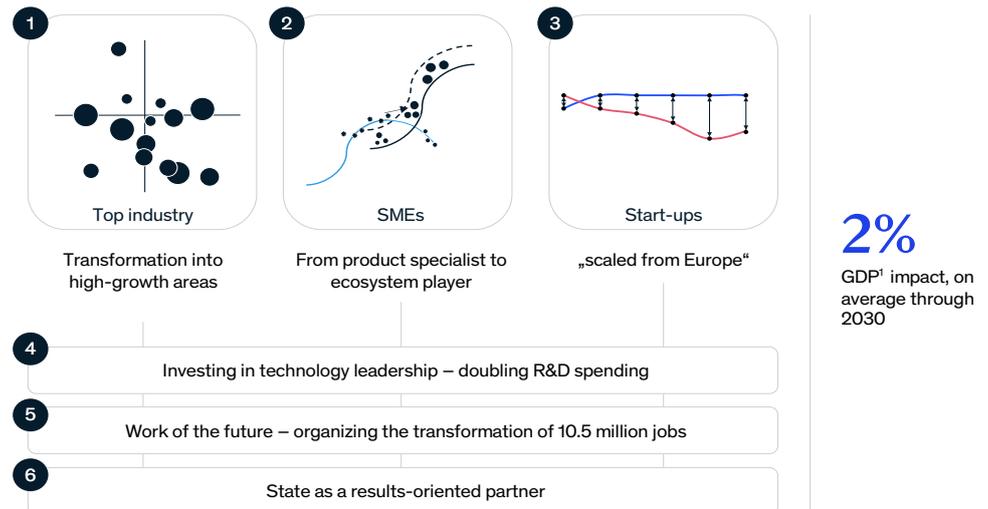
Shift with three striking disruptions. The speed of exponential developments in technologies such as artificial intelligence (AI) is now high enough to enable leap innovations in biotechnology and automation, for example. The creative renewal of the economic actors creates a growth model that will continue to be effective in the next epoch and will make it possible to meet our overall demands for a sustainable society. The number of potentially employed people has, to a large extent, passed its historic highs in Europe and will continue to fall. Efforts to limit climate change to 1.5 degrees above pre-industrial levels are a new social priority and are leading to a fundamental reassessment and transformation of economic activities. In addition, further uncertainties arise from the tensions in global trade relations regarding the German model, which is characterized by export success. The vast majority of Germans expect a profound change and at the same time, want to maintain at least the high status quo.

The solution: creative renewal. The disruptions of the epochal turn require and reward disruptive, radically new solutions. Leap innovations pay off – continuous incremental improvements of high-end products (Germany's primary recipe for success over many decades) are no longer enough. It is not preservation of the status quo, but rather the new departure and new opportunities associated with it that will enable everyone to participate in progress and opportunities in the sense of the social market economy in the future. The creative renewal of society enables an economic growth model that will remain efficient also in the next shift and makes it possible to meet our overall demands for a sustainable society. For the transition to an economic model based on the principle of creative renewal, six fields of action must be addressed: on one hand, the transformation in all segments of the economy (fields of action 1 to 3) and on the other hand, the further development of critical framework conditions – the “operating system” – for creative renewal (fields of action 4 to 6).

¹ As a statistical measure of the inequality of a distribution, the Gini coefficient uses values between 0 and 100. A Gini coefficient of 0 means an equal distribution (all people have the same income) and at a value of 100, one person holds the entire income.

Thus, creative renewal can accelerate the average and high-value GDP growth to 2 percent by 2030: this doubles from the 1.1 percent per capita growth average of the last 20 years. Since the efforts described below in the six fields of action have a particularly medium-term effect, even higher-growth dynamics will be possible at the end of the decade.

Creative renewal of our successful model: 6 fields of action



¹ GDP per capita; underlying growth development through 2030 based on McKinsey's COVID-19 scenario A2 in cooperation with Oxford Economics

Realizing creative renewal of the industry – transformation in all segments

Field of action 1: Top companies – transformation into high-growth areas. The importance of top global companies – with their above-average share for research and development (R&D) and as anchors for entire industrial clusters – has continued to grow in recent decades. In 2017, some 87 percent of R&D expenditures in Germany were made by larger companies (> 500 employees). But only one in four DAX and MDAX companies comes from a sector with high-growth momentum. Top German companies can lead the transformation to more growth momentum: in traditional core sectors such as automotive, mechanical engineering, and chemicals with successful renewals of business models, in product offerings and manufacturing processes, and in sectors with high momentum due to more top companies in business areas such as information and data, software, and pharmaceuticals. In a more dynamic portfolio focused on Germany's strengths, annual GDP growth in 2030 can be increased by 0.2 to 0.3 percentage points as a result of this increased "momentum."

Field of action 2: SMEs – from product specialist to ecosystem player. German SMEs are world champions in the manufacture of highly specialized hardware products. More than 90 percent of the leading medium-sized companies come from hardware production. Now, the existing pure hardware producers must additionally develop software and integrate the new products into the Internet of Things in order to continue playing an essential role in the future overall system. In Germany, 0.4 percentage points of additional growth are possible by 2030 solely through the extensive use of AI and automation. In the broad SME sector, digitization is the most pressing issue: during the pandemic, most smaller companies saw their digital investments decline, while the top companies accelerated. Resuming digitization now and making it a success over the coming years is a priority.

Field of action 3: Start-ups “scaled from Europe” – strengthen commercialization and scaling.

The number of company founders has been on the rise in Germany for a decade – venture capital funding increased tenfold between 2010 and 2020, and there are currently 18 “unicorns” in the country, i.e., young innovative companies with a market valuation of more than USD 1 billion before going public or an exit. More than half of the 20- to 40-year-olds surveyed by McKinsey in Germany would be willing to become entrepreneurs and one in 10 would even like to start their own business. The main obstacle cited is a lack of equity capital and too much bureaucracy. As a basis for successful business start-ups, an even better link is needed between researchers and entrepreneurship, the promotion of a comprehensive start-up culture (e.g., recognizing failure as a learning step), and even more knowledge about access to capital.

Creating critical framework conditions for creative renewal

Field of action 4: Investing in technology leadership – doubling R&D spending. The number of active world-class patents has increased sevenfold globally in the last 20 years. Those who fall off in technology leadership will sooner or later also fall off in terms of value creation. McKinsey has categorized more than 40 technologies and prioritized them according to technical maturity, industry impact, and dynamics. The result shows Germany’s relative strengths in research on automation, sustainable energy, materials 2.0, and the bio-revolution, but also critical weaknesses in areas such as applied AI and next-generation computing. For example, the number of German world-class patents in applied AI and next-generation computing is clearly below the fair share, which quantifies the share of the total number of world-class patents, taking into account the economic size ratio to the front-runner, the US. And this is critically taken into account the role of these future technologies for growth. In addition, scientific breakthroughs in these areas too rarely achieve commercialization or scaling; the translation of ideas into products and services often falls behind. A doubling of private and public investment in R&D and a targeted, strong expansion of (digital) infrastructure are estimated to increase GDP growth by 0.5 percentage points by 2030. In addition to investments in R&D, there is also a need for more knowledge and transparency regarding technology for users. Less than half of 20- to 40-year-olds surveyed by McKinsey in Germany believe that technological progress has a positive effect on the economy and society. More than half are not open to innovations. This skepticism must be met openly.

Field of action 5: Transforming the future of work – organizing the transformation of 10.5 million jobs. By 2030, around 4 million employees will have to switch to other occupational fields – just under 10 percent of the workforce. In addition, more than 6.5 million will have to develop new skills to a considerable extent – just to implement the advancing digitization. A new (continuing) education system geared towards lifelong learning will qualify the workforce for the working worlds of the future, which will continue to develop dynamically. Germany can use proven systems such as dual training, universities of applied sciences, and universities. Newly developed curricula will define the required technological and social competencies of tomorrow’s workforce.

Field of action 6: The state as a results-oriented partner. As described in the 4th field of action, the state, with its ability to assume long-term, high risks, plays an important role in investing in critical infrastructure and enabling technologies. In addition, the state plays a crucial role in setting the framework for accelerating the dynamism of the economy. Two priorities are in the forefront. The first is to ensure planning security for the energy transition. We got a head start in the 1990s, but the turnaround is faltering, in part because private investors have no clarity about long-term regulation. The second priority is more results-oriented regulation and administration. Most major digitization programs are moving forward. In addition, the administration needs a cultural change from process-oriented to results-oriented leadership. In regulation as well, the principle of results orientation could support the acceleration of activities.

Start creative renewal now. The COVID-19 pandemic has shown what changes companies, the state, and society are capable of making in the shortest possible time. For instance, we saw a 20 to 25-fold higher digitization speed achieved in companies as well as the development and approval of new vaccines within months. This dynamic must be maintained if a Herculean task such as limiting anthropogenic climate change while maintaining prosperity can be successfully addressed. The pandemic has also shown how big changes increase the risk of splits between “winners” and “losers” (in 6 out of 7 indicators of productivity growth, fewer companies are developing than before during the pandemic; e.g., prior to the pandemic, 73 percent of companies in Europe increased their R&D investments, while currently, this number is only 41 percent).²

The successful tackling of the challenges in the six fields of action creates the conditions for a sustainable model in which the existing options are used. Standing still, on the other hand, would not only amount to renouncing these new opportunities, but would rather endanger our prosperity in the medium term.

² “Will productivity and growth return after the COVID-19 crisis?”, McKinsey Global Institute, March 2021

Germany survey conducted in March 2021

The representative survey involved around 5,000 people aged 20 to 65

Survey shows awareness of impending upheavals

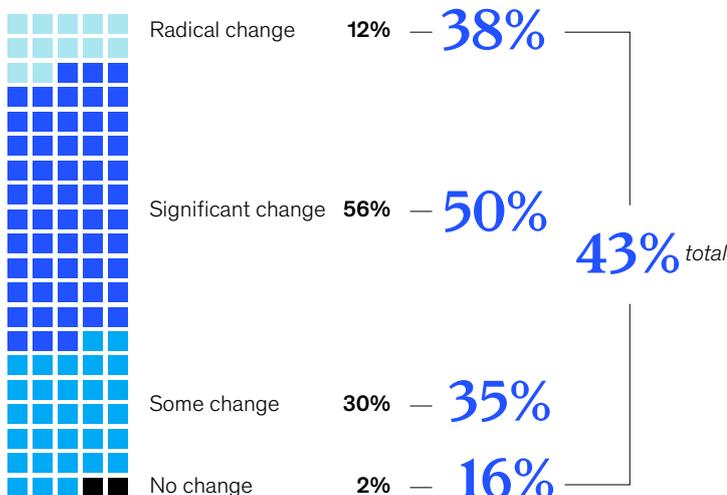
Significant change is perceived as positive – but too radical of change seen negative as only

Younger people are more hopeful than older people and see a stronger mood of optimism in Germany

Change facing Germany by 2030,
Proportion of respondents

Divided according to the assessment of the upcoming change,
Proportion of positive reviews

Situation of society and economy: 2030 vs. current
share of positive reviews



49% vs. **37%**
20-29 yrs. old vs. 40-65 yrs. old

There is a mood of optimism in Germany,
Proportion of positive reviews

48% vs. **34%**
20-29 yrs. old vs. 40-65 yrs. old

Younger people want to become particularly active

Willingness to become an entrepreneur
Proportion of positive reviews

62% vs. **42%**
20-29 yrs. old vs. 40-65 yrs. old

Less than half of respondents see technology positively

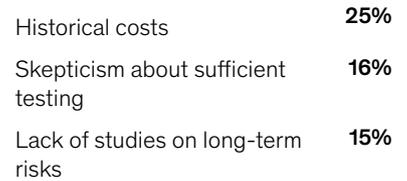
Impact of technological progress on the German economy and society,
Proportion of respondents



Openness to the use of technologies along 7 use cases¹,
Proportion of respondents



Obstacles reported to the use of technologies in private life,
Top 3 obstacles reported

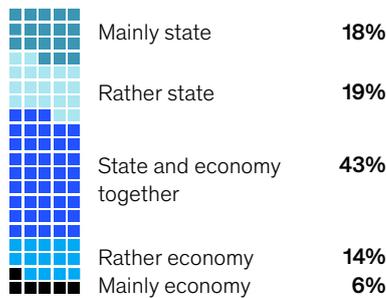


Cooperation between state and economy desired by 43% – but only 39% believe that this works well
Proportion of respondents

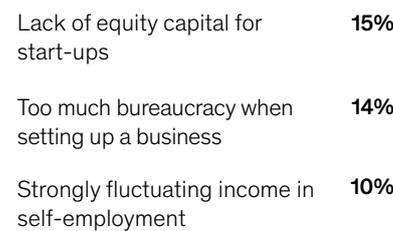
52% of respondents are basically willing to become an entrepreneur – hurdles are equity, bureaucracy, and uncertain income

73% of respondents believe that the education system does not sufficiently teach future skills

Desired division of labor between the state and the economy (average over 7 subject areas²)



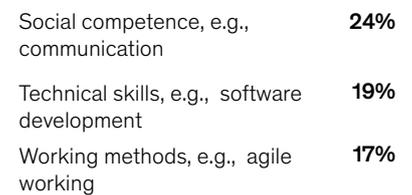
In your opinion, what are the biggest hurdles to establish a business?
Top 3 hurdles reported



How well does primary and secondary education teach future skills



What future skills does primary and secondary education need to better teach?



How well does the collaboration between the state and the economy work?



1. 7 use cases of technology in (potentially) daily use (from self-driving cars to genetically engineered drugs)

2. 7 topics for potential cooperation between the state and the economy (from basic research to the expansion of digital infrastructure)

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Academic Advisor

Prof. Hans-Helmut Kotz, Resident Fellow at the Center for European Studies, Harvard University, Cambridge, MA, and Senior Fellow at SAFE, Leibniz Institute for Financial Research, Frankfurt, Germany

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