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HOW TO FUTURE-PROOF THE GERMAN WIRTSCHAFTSWUNDER

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EXECUTIVE SUMMARY

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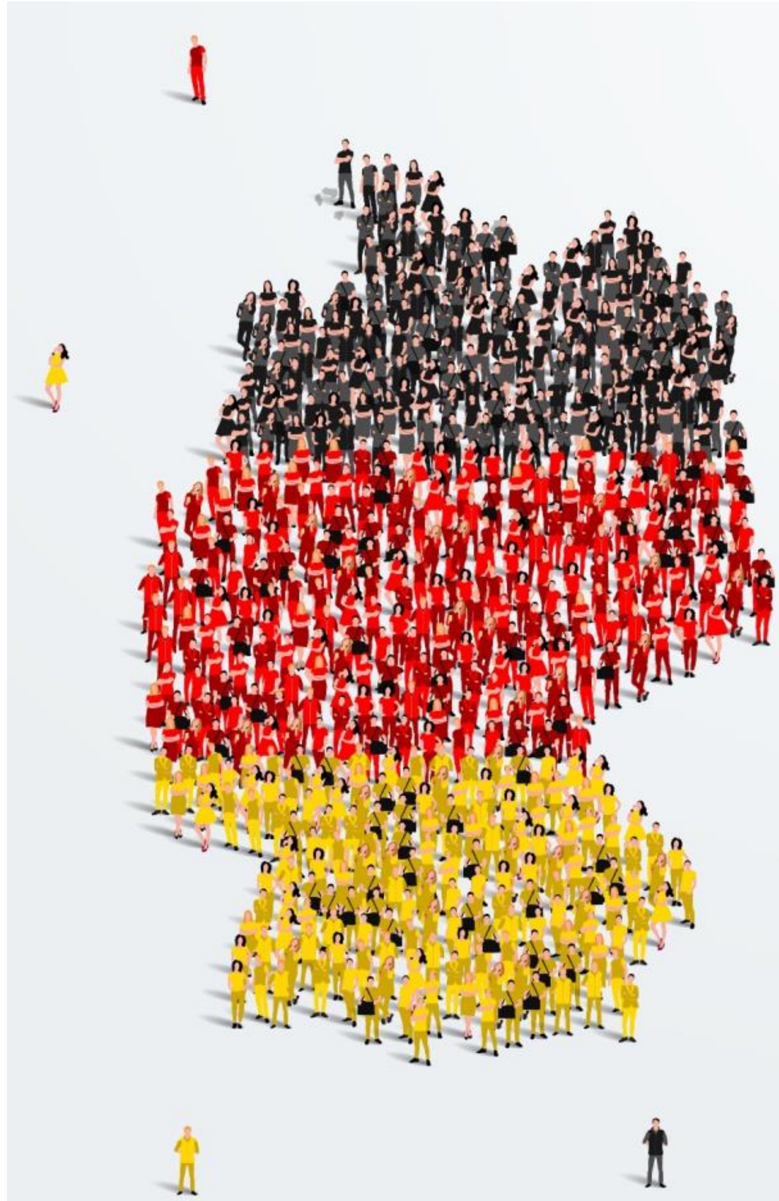
Political change is upon Germany, but no major policy overhaul is in the cards. After the elections on 26 September 2021, Chancellor Angela Merkel will be replaced after 16 years in power. The transition takes place in a highly fragmented political context, which will likely see the first three-party coalition emerge at the federal level and complicate the government-formation process. The significant dilution of agendas required for an agreement among potentially uneasy political partners suggests that German politics will see more policy evolution than revolution over the next four years.

Yet, Germany needs an economic Neustart. Unfortunately, "business as usual" with at best small, piecemeal reforms are not going to cut it anymore. Germany urgently needs a major update to ensure that it can master successfully the digital, green and demographic transitions and in turn safeguard its prosperity.

- **Making the economy fit for the 21st century.** Most parties seem to lack comprehensive and concrete plans, though it is high time to finally tackle the well-known reform „biggies". These include future-proofing Germany's institutional backbone (reform and modernization of its federal structure and public administration), cutting red tape, providing critical (digital) infrastructure, reforming its education system and fueling the entrepreneurial spirit. Taken together, these are the pre-requisites for a faster pace of digitization, which in turn is crucial not only for an effective fight against Covid-19, but also for achieving climate targets and maintaining an internationally competitive economy.
- **Meeting the magic number to limit climate change.** The policy targets in almost all of the election manifestos are insufficient to limit global warming to 1.5°C. Carbon prices need to rise and additional policies are required to establish new technologies and new markets, and to adapt to the already material damages resulting from climate change. This will affect heating, transport and food prices and thus particularly burden financially vulnerable households and businesses, which calls for revenues from carbon-pricing policies to be used for providing adequate support in the form of transfers and stable electricity prices.
- **Adapting to demographic change.** Most parties shy away from pointing out the need to adapt Germany's pension system, promising further increases of benefit levels and freezing the retirement age at 67 instead. However, these promises will come at the cost of a markedly higher tax-financed state subsidy of the pension system or a contribution rate of 30% in the long run, which would mean either curtailing the financial scope for investments in infrastructure, education and new technologies or undermining Germany's competitiveness, not least in the (global) war for talent.



Neustart

Making the economy fit for the 21st century

FEDERAL ELECTION PREVIEW: WHAT GERMANY WILL GET...

Political change is upon Germany, but probably not immediately on 26 September and not as far-reaching as needed for it to master the transformational challenges ahead. The federal election on 26 September is bound to bring along significant changes to Germany's political set-up. For one, the vote will mark the end of Angela Merkel's 16-year chancellorship. Three candidates stand ready to fill Merkel's shoes: Olaf Scholz for the SPD, Armin Laschet for the CDU/CSU and Annalena Baerbock for the Green Party. However, polls have been very volatile, with campaigns marred by sideshow scandals that have seen more emphasis on personality rather than policy substance. As a result, even a few days before the elections, the race still remains wide open.

In addition, Germany's political landscape is becoming increasingly fragmented, which is bound to complicate coalition-building. After all, six parties are set to enter the Bundestag, of which none is likely to receive more than 25% of votes. Moreover, two of the parties are widely viewed as not acceptable coalition partners, namely the right-wing AfD and the Left Party, which together command around 17% of all votes. As a result, for the first time in German post-war history, a three-way party coalition is the most likely election outcome, with a wide array of feasible options on the table (cf. Box, opposite).

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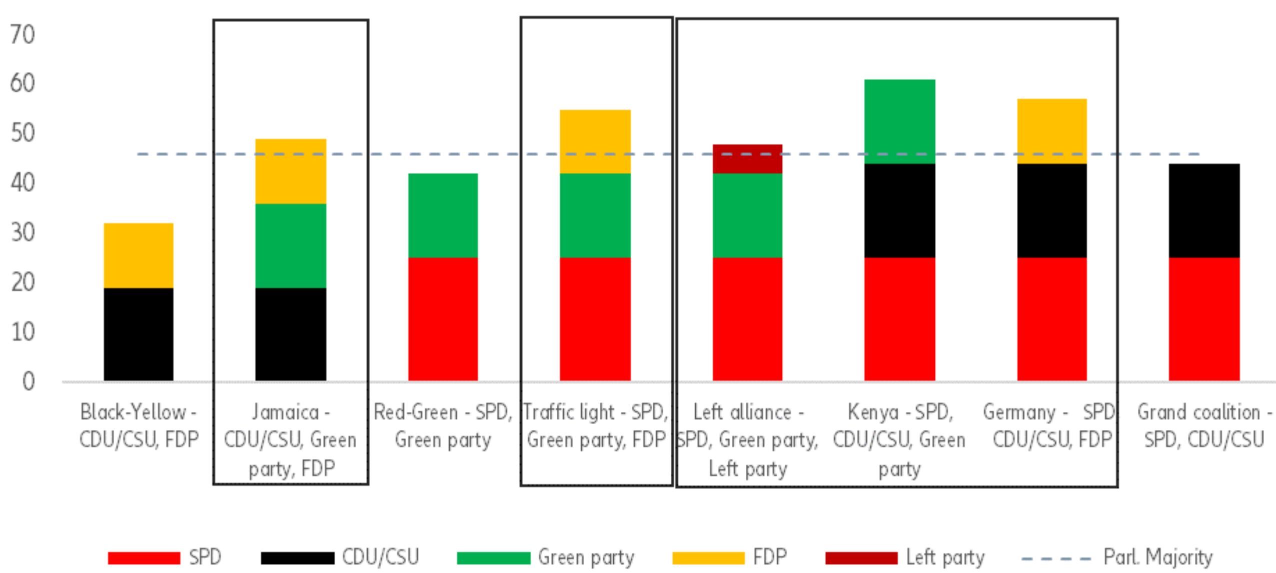
Box: Coalition scenarios

In recent weeks, polls have notably shifted to the left. With the SPD now likely to emerge as the strongest party, it may dominate the next government coalition. However, the party with the most votes does not necessarily get to decide who takes the top job, or join the government at all, as seen in the 1976 election, when the CDU under Helmut Kohl won 48.6% of all votes but lost out against a SPD/FDP coalition. After all, both the CDU/CSU as well as the SPD are unlikely to achieve a parliamentary majority in their favorite coalition constellation – "Black-Yellow" and "Red-Green" respectively Therefore, with CDU/CSU, SPD and the Green party all polling at around 20-25%, the focus will be on who can assemble a workable coalition government (see Figure 1).

Both the "Jamaica" (CDU/CSU, Greens & FDP) as well as the "Traffic light" (SPD, Greens & FDP) coalitions – while only second-best options – are likely to command a majority in parliament. We think the first option is more likely to materialize since the FDP in its role as the ultimate kingmaker on both wings of the political spectrum could well demand a high price in return, such as the finance ministry. In our view, it would prove very difficult to square the "fiscal circle" with the call for a swift return to pre-crisis government debt levels and no tax hikes on the FDP side and higher investment spending, tax hikes for the top income bracket and the introduction of a wealth tax on the SPD/Green side.

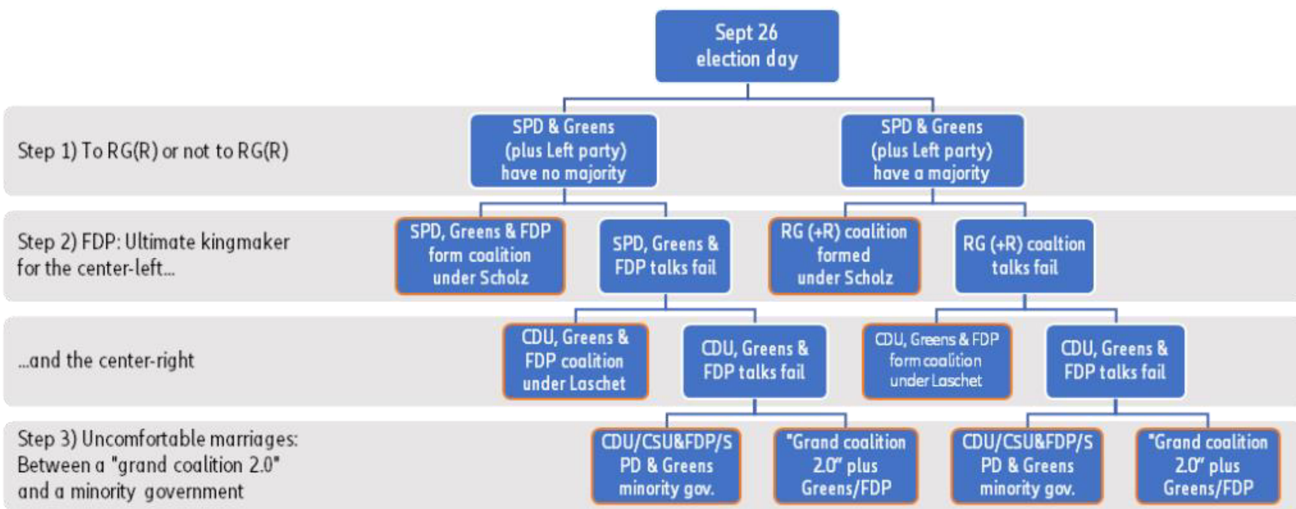
At this point, even more uncomfortable political pairings such as a Left Alliance (despite differing views on fundamental foreign policy issues) as well as a "Grand coalition 2.0" (i.e. "Kenya" (SPD, CDU/CSU & Greens) or "Germany" (SPD, CDU/CSU & FDP)) should not be ruled out. Yet, the SPD and CDU/CSU are likely to try all alternative combinations before forming another government coalition together. Even the possibility of a center-left (SPD & Greens) or center-right (CDU/CSU & FDP) minority government cannot be excluded at this point, though Germany's only experience in that regard has been at the Länder level and shelf lives have proved very short.

Figure 1: Coalition combinations—projected seat shares based on opinion polls since end-August (%)



Sources: Various election polls since end-August 2021, Euler Hermes, Allianz Research.

Figure 2: Coalition games cheat sheet

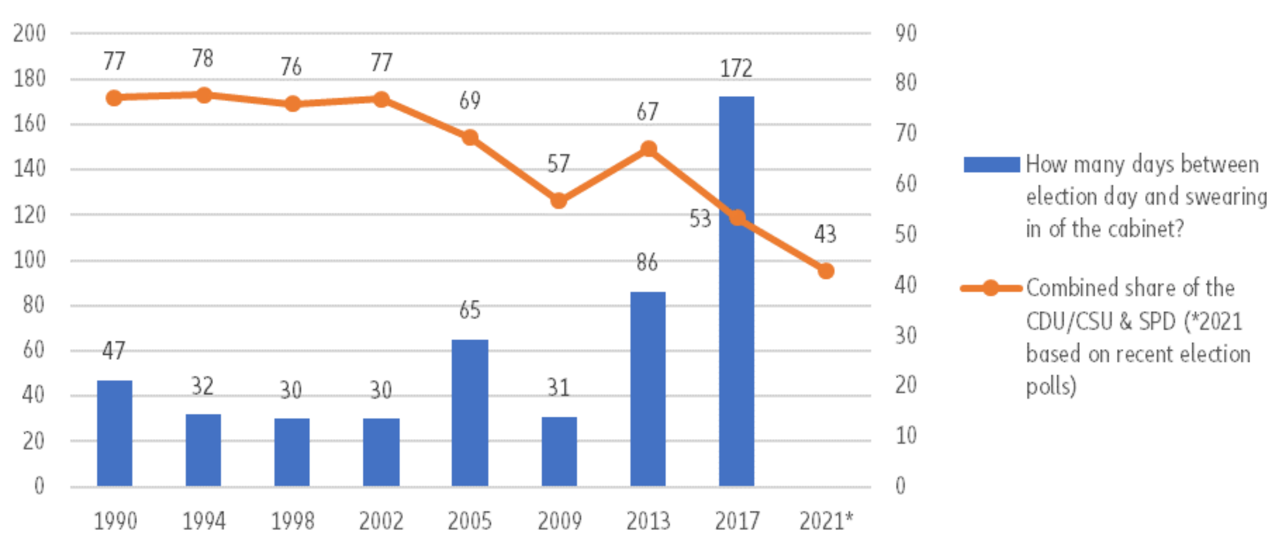


Source: Euler Hermes, Allianz Research

To put it mildly, coalition-building looks set to be complicated. Given the more complex task of striking a compromise coalition treaty among three parties, and in light of notable ideological differences (see Figure 4, opposite), the government formation process could well take until early 2022 and even smash the current record of 172 days that was set in 2017.

In any case, the significant dilution of agendas required for a three-party coalition agreement to emerge among uneasy political partners likely means that German politics will see more policy evolution than revolution over the next four years.

Figure 3: Government formation process



Sources: Various election polls since end-August 2021, Euler Hermes, Allianz Research.

Figure 4: Overview of key election promises by party

	CDU/CSU	Green Party	SPD	FDP	Left Party
Taxes	Reduce corporate taxes from 30% to 25%, no income tax increases – tax reductions in line with fiscal leeway.	Introduce minimum corporate tax rate of 25% at EU level, tax hikes for top income earners, introduction of a wealth tax.	Tax hikes for top 5% of incomes & lower taxes for low and middle incomes, introduction of a wealth tax.	Reduce corporate taxes to 25%, no income tax increases, raise top income bracket to EUR90k.	Increase in corporate tax rate from 15% to 25%, tax hikes for high income households & tax cuts for low-income earners, one-off wealth levy (10-20%) introduction of a wealth tax, boost public investment.
Public finances	Keep debt brake, swift return to "black" zero and 60% debt ratio	Soften debt brake by excluding investment, EUR50bn of public investment per year over next decade.	Keep debt brake but take advantage of "constitutional leeway".	Keep debt brake, limit on social expenditures, swift return to 60% debt ratio.	Get rid of debt brake.
Public administration & federal structure	Modernization decade for the state: digitizing public services, simpler and more efficient public administration, reform of the federal structure.	Anchor digitization in public administration, boost infrastructure-planning capacities, make public administration more innovative, creative and inclusive.	Organize ambitious political projects in "platforms" that include stakeholders from across political levels & departments.	Overhaul of the federal structure, modernize and digitize public administration.	Digitize public services, ensure sufficient competent personnel to maintain/ explain digital systems.
Europe	No debt union (joint borrowing is a one-off), no watering down of SGP but reform focus on stronger enforcement, Banking union (no common deposit scheme) and Capital Market Union.	Goal Is a federal European republic with a European constitution, reform SGP (more space for investment, reduce austerity pressure), permanent EU recovery fund, common European fiscal policy financed by own resources (digital & carbon border tax), ESM becomes EMF, European banking union & financial transaction tax.	Reform SGP into sustainability pact, develop EU into fiscal, social and economic union, permanent EU recovery fund, European unemployment reinsurance scheme, common EU investing, European banking union, financial transaction tax.	Return to strict SGP rules as soon as possible with reform focused on tougher sanctions, ensure joint borrowing is a one -off, no common deposit scheme, no common EU taxes.	Reform SGP, extended EU budget financed by common debt issuance, ECB to directly finance public spending, financial transaction tax, ESM becomes EMF, sovereign debt restructuring mechanism.
Labor market	Keep HartzIV, no minimum basic income, maintain social security contributions at 40%.	EUR12 minimum wage, reduction in weekly working hours, abolishing sanctions in unemployment benefit scheme.	EUR12 minimum wage, abolishing sanctions in unemployment benefit scheme.	More flexibility re weekly working hours.	EUR13 minimum wage, get rid of sanctions in unemployment benefit scheme, boost benefits to EUR1200.
Climate change	65% reduction in CO2 emissions until 2035, climate neutrality by 2045, use CO2 revenues to stabilize electricity prices, promote carbon capture & storage, CO2 product labels.	70% reduction in CO2 emissions until 2030, national CO2 price at EUR60 by 2023, CO2 revenue rebate for households, higher contributions to inter-national climate finance, shifting additional heating costs from CO2 emissions to landlords, 2% of land for renewable energy, coal exit by 2030, 130km/h on the autobahn, 30km/h in municipalities.	Boost investment into renewables, mobilize private capital for green projects, shift additional heating costs to landlords, 130km/h on the autobahn, mandatory rooftop solar on public and commercial buildings.	Extend emission trading system to all sectors, CO2 revenue rebate for households, expand emission trading and harmonize emission pricing.	80% reduction in CO2 emissions until 2030, climate neutrality by 2040, higher contributions to international climate finance, free local public transport, nationalize railways, coal exit by 2030, ban underground carbon capture and storage, shift additional heating costs from CO2 emissions to landlords, 120km/h on the autobahn, 80Km/h outside municipalities, 30km/h in municipalities, ban short distance flights.
Pension system	"Generationenrente" (publicly financed contribution to pension fund from birth), state-subsidized standard pension product for mandatory private provision (opt-out), improvement of cross-border portability of occupational pensions.	No further increase in retirement age beyond 67 years, stabilization of current pension benefit level, publicly administered pension funds instead of Riester Rente, introduction of an employer-financed minimum contribution, guarantee pension of EUR1000 for people insured for at least 30 years.	No further increase in retirement age beyond 67 years, guaranteed pension benefit level of at least 48%, public pension funds as vehicle of private pension provision (Swedish model).	Flexible retirement age (earliest at the age of 60, if pension entitlements reach at least basic security level), introduction of a capital-funded pillar into the public pension scheme ("Statutory Equity Pension"), broader investment opportunities for pension funds and life insurance companies, strengthening of the demographic factor in the pension formula, tax financing of non-insurance benefits.	Statutory retirement age of 65 years, early retirement at the age of 60 with 40 contribution years, benefit level of 53%, tax-financed minimum pension of EUR1200 per month, higher contribution assessment limit and a cap at pension benefits, major share of occupational pension schemes to be solely financed by employers, abolishment of deferred compensation.

Sources: Various election polls since end-August 2021, Euler Hermes, Allianz Research.

...WHAT THE GERMAN ECONOMY NEEDS

Unfortunately, "business as usual" with at best small, piecemeal reform steps is not going to cut it anymore. Germany needs a major update – a Neustart – to ensure that it can master successfully the digital, green and demographic transitions and, in turn, safeguard its prosperity.

Digitalizing the German Wirtschaftswunder

It is no secret that the German economy is facing strong structural headwinds. Already in late 2019 we raised the question of whether Germany is a "stranded" economy[1], given its struggle to keep up with the 21st century tech revolution. At the time, Europe's largest economy no longer appeared in the top three of the 2019 World Economic Forum Global Competitiveness ranking, falling four places from the year before to seventh. If anything, the 2018 industrial recession should have served as a major warning, but it triggered no noticeable policy reaction. Now, with policymakers largely stuck in Covid-19 crisis mode over the past 18 months, structural topics appear to have completely fallen off the government agenda, despite the pandemic highlighting Germany's struggle to adapt to digital solutions as well as weaknesses in public administration. The European Center for Digital Competitiveness' Digital Riser Index now suggests that the German economy has lost further ground since 2018 (cf. Fig. 5, opposite).

This is a worrying development since updating the German Wirtschaftswunder is all about speeding up digitization, which in turn is key to mastering the central challenges of our time. This is just as true for achieving climate targets as it is for effectively combating Covid-19. Looking at the parties' election program, however, we see none putting forward the needed comprehensive approach including all reform elements required for a Neustart – and this is before election promises are potentially watered down to strike a coalition deal.

Future-proof Germany's institutional backbone!

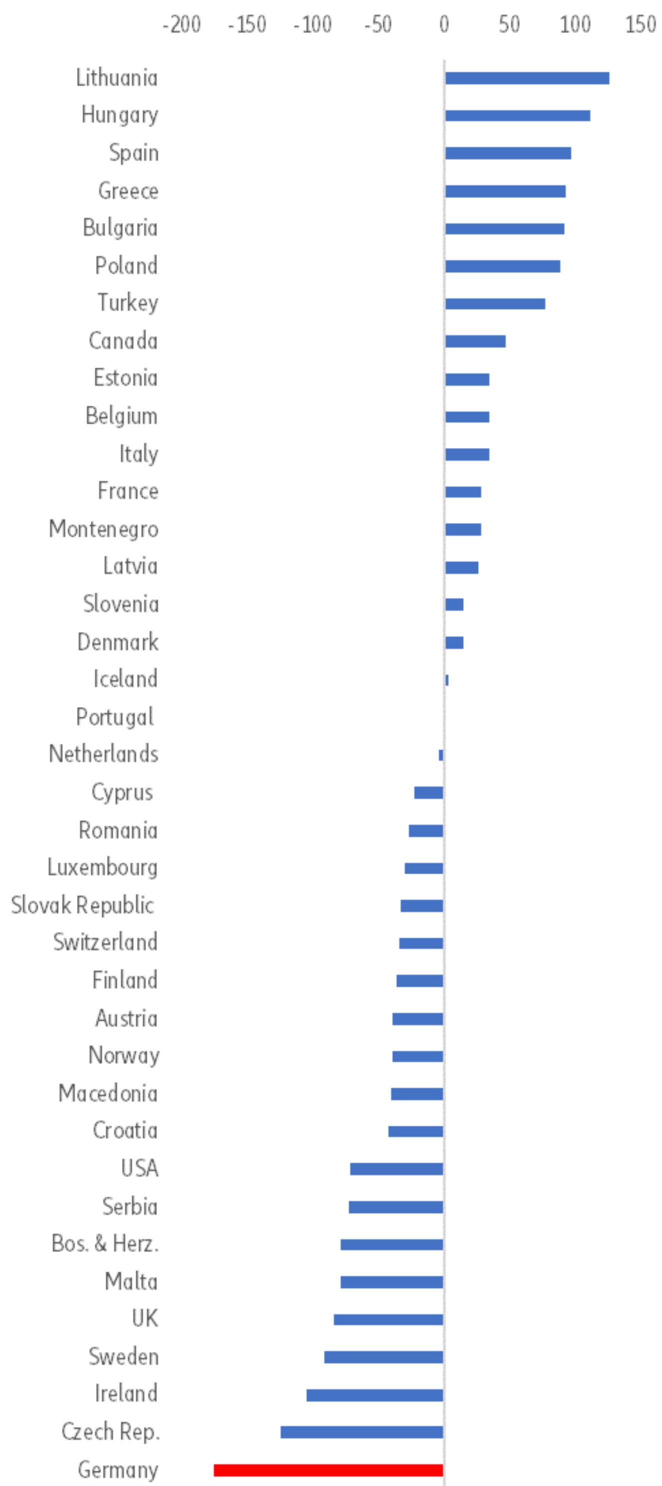
Before we focus on how to upgrade the German economy's hard- and software let's start with the reform biggies few have dared to address. We see two major speedbumps that need to be tackled to make Germany's institutional backbone fit for the 21st century and set the stage for any major transformational process. First, Germany will need to review its federal structure and opt for greater centralization in some core areas. While the federal set-up has many positives, it has proven to be a disadvantage in situations that call for swift and unified decision-making, as highlighted during the pandemic. Despite various attempts to reform the balance of power, to this day a third of all laws still require the approval from the German Länder. However, in areas where developments have nationwide relevance, such as education and public administration, not every German state should continue to cook its own soup.

Second, it is high time for Germany to modernize its public administration. The overhaul needs to be comprehensive, from simplifying structures and procedures to assigning clear responsibilities over moving from paper-based to digital public services. On the latter Germany is a laggard among EU countries, taking the 21st place in the EU Commission's 2020 Digital Economy and Society Index (cf. Fig. 6, opposite).

So what do Germany's political parties promise on this front? FDP and CDU underline the importance of updating Germany's institutional backbone, but for the moment their proposals remain vague at times. Meanwhile Green Party, SPD and Left Party largely focus on digitizing public services but pay little or no attention to modernizing the public administration and reforming the federal structure.

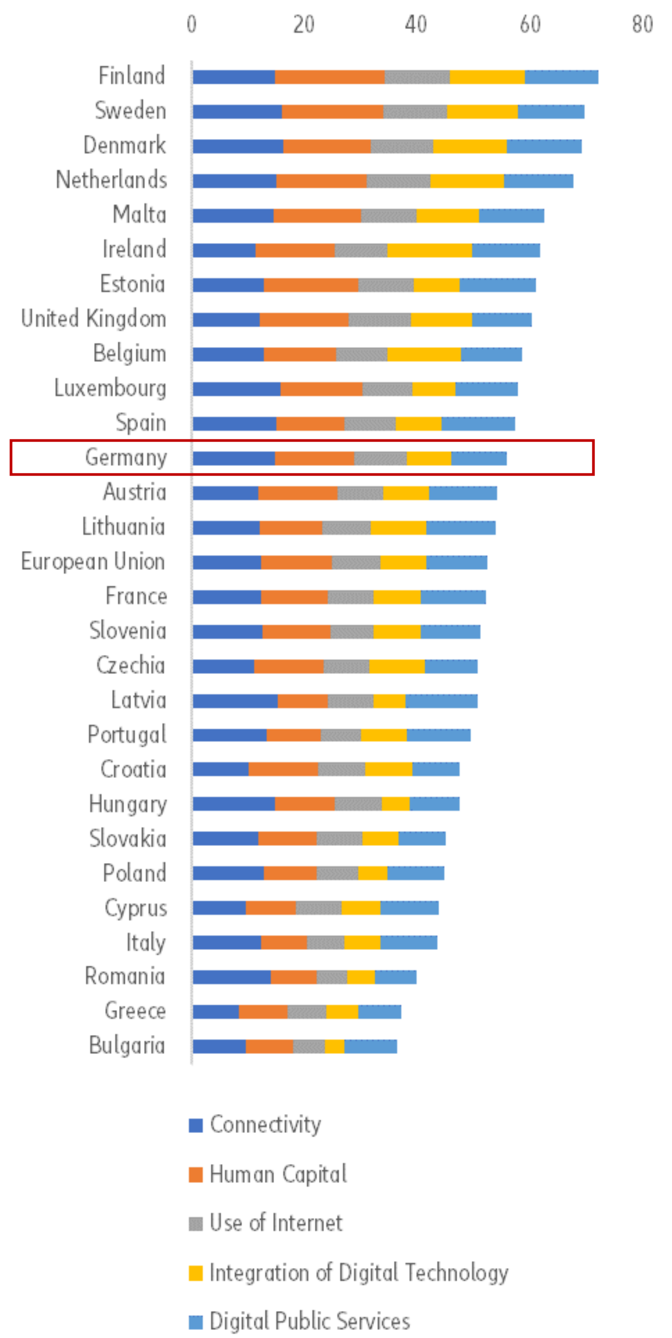
1 See our report Is Germany a "stranded" economy?

Figure 5: Digitization progress between 2018-2020



Sources: Digital Riser Index, European Center for Digital Competitiveness.

Figure 6: The Digital Economy and Society Index, 2020 Ranking



Source: European Commission.

Chop down the regulation jungle!

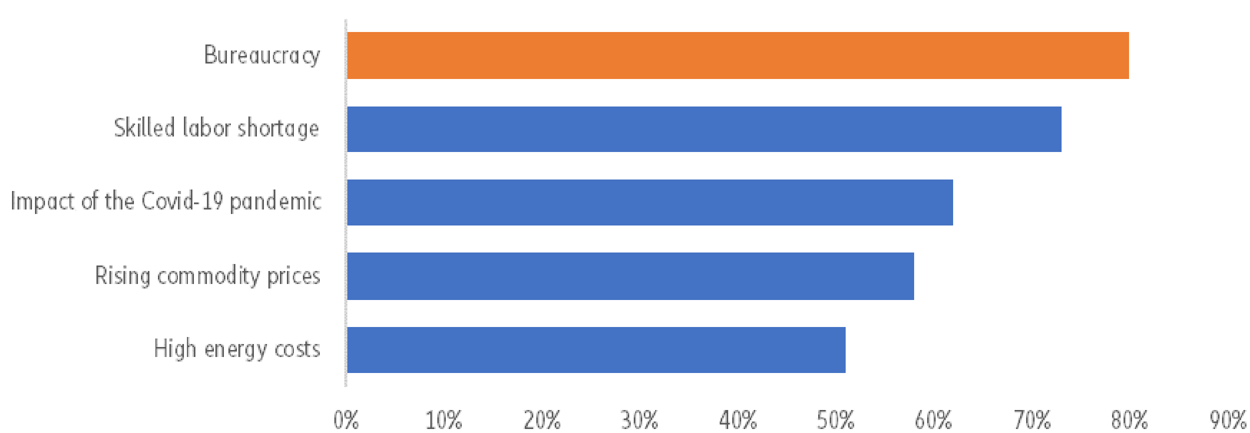
Taken together, these two reform initiatives should already help speed up the German economy's digitization drive. However, to add further "Wumms" to the resulting "simplification shock" calls for a meaningful reduction in the bureaucratic, regulatory and legal burdens that are usually cited as the biggest obstacles to doing business in Germany, in particular for Small and Medium Enterprises (see Figure 7).

Both the CDU and FDP propose some good ideas to tackle the issue, while SPD and Greens appear to pay lip service to the cause and the Left Party devotes no airtime at all to the cause in its election program. To put the regulation jungle into perspective: In 2015, Germany's Ministry for Economic Affairs and Energy estimated the annual costs to firms from bureaucracy at EUR45 billion – about half the total amount invested in R&D. Up until now, initiatives to reduce the regulatory burden have proven too timid to leave a notable mark. For instance, the introduction of the one-in-one-out rule came - if a ministry imposes a new rule on German businesses, it has to abolish an old one - with too many exceptions, notably with EU regulation not covered. A more ambitious approach is needed. One idea could be for each regulation to receive a shelf date, after which it expires unless the case can be made for its extension. In terms of priorities, a particular focus should also be put on the relaxation of reporting requirements, as well as simplified approval procedures for SMEs – in particular in the area of starting a business, where Germany ranks 125th out of 190 countries, according to the World Bank's Ease of Doing Business Survey. Moreover, tweaks to Germany's data protection law will be necessary to ensure that it does not stand in the way of innovation and the adoption of new technologies. Furthermore, a notable reduction in red tape should also help tackle Germany's implementation deficit when it comes to realizing major infrastructure investment projects. According to the 2016 Infrastructure Governance Report by the Hertie School of Governance and the OECD[2], Germany does not do particularly well in the planning and implementation of major infrastructure projects (rank 18 out of 36). Excessive bureaucratic procedures and demanding legal regulations are named as the greatest weaknesses. This does not come as a surprise as the number of building regulations has quadrupled from 5,000 to 20,000 since 1990. Given the urgency to make progress on critical (digital) infrastructure projects, such as an upgrade of telecommunication infrastructure, special regulatory treatment should be given, including fast-track permits.

Invest in digital hardware...

Even on the basic requirements for a successful digital transformation, Germany is missing the boat. The goal of nationwide coverage with gigabit-capable internet connections is still some way off. Too much copper remains where fiber-optic should be, particularly in rural areas.

Figure 7: Where Germany's medium-sized firms see risks (share of respondents, in %)



Sources: DZ Bank..

2 Hertie School & OECD, 2016 Governance Report.

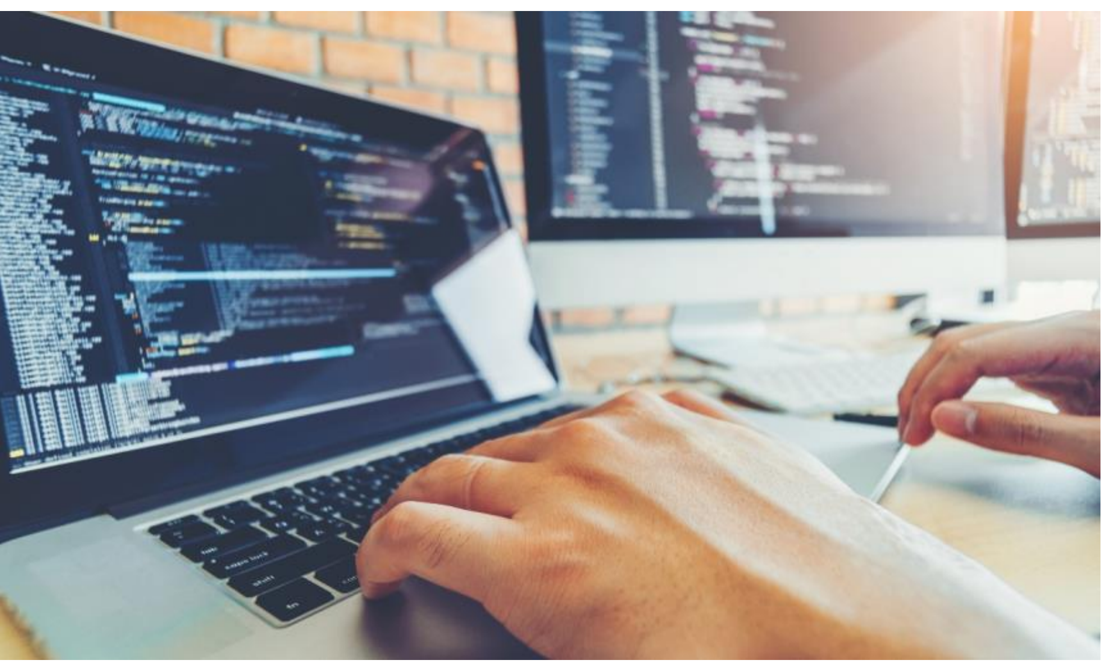
The results of the World Economic Forum's Global Competitiveness Ranking help provide an international context: With an overall ranking of 72 for fiber-optic internet connections and 58 for mobile broadband connections when it comes to information technology use, Germany has fallen behind Russia, China, all the Baltic and Nordic countries and several Gulf countries as well. This is a problem not simply for households that are unable to stream movies at home: It also holds back small- and medium-sized businesses in certain regions because companies with weak internet connections work less effectively. Moreover, fiber is also key for the deployment of 5G, which, in turn, is essential for the implementation of major new use cases, such as the Internet of Things. All parties in favor of more public investment with the Greens even proposing to spend EUR500bn over the next decade. Yet, without a meaningful "simplification shock" that aims at speeding up complex planning and implementation processes progress is likely to be limited.

...and modernize digital software!

The German economy's digital skill set is in urgent need of an upgrade. Surveys show that the largest factor holding back digital competency in Germany is a serious lack of adequate equipment in schools. For instance, according to the IEA's International Computer and Information Literacy Study[3] only a quarter of German schools has wifi, compared to the international average of 64%. In Denmark the respective share is 100%. Moreover, in Germany, only 3% of schools equip all teachers with their own laptops or tablets, compared to 24% for the international average and 91% in Denmark. It does not come as a surprise that German schools struggled to adapt to online teaching during the pandemic when schools were closed. Even more worryingly, Germany placed last in the Centre for European Policy Studies' EU index of readiness for digital lifelong learning.[4] The survey concludes that Germany's education system is unable to prepare students with the necessary digital skills and competencies.

Furthermore, the proportion of bachelor's degrees in mathematics, science and engineering is still as high as it was around 25 years ago, behind that of the UK and other countries. A trend towards engineering is not foreseeable. Of course, reforming the German education system is a mammoth task and solely investing in education will not solve the issue. To make Germany's education system competitive, a complete rethink of what is taught and how it is taught is needed. While the reform process needs to take on board local and regional best practices,it should be coordinated at the federal level and rolled out nationwide. No political party is ambitious enough in its program to set the stage for a true overhaul of the education system

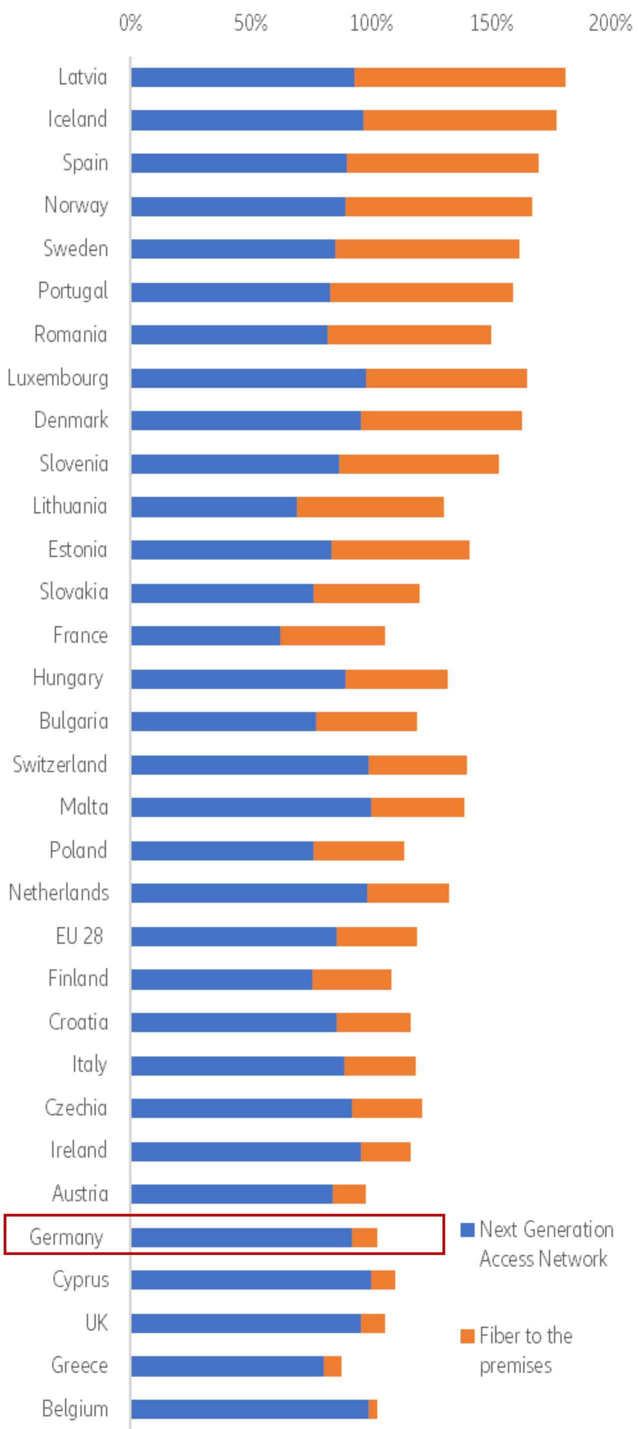
Moreover, to ensure that German firms will have adequate access to skilled workers, Germany needs to focus much more on providing incentives for lifelong learning while attracting international skilled workers at the same time.



3 IEA ICILS, International Computer and Information Literacy Study (2018).

4 CEPS, Index of Readiness for Digital Lifelong Learning (2019) .

Figure 8: Broadband take-up (% households)



Source: European Commission DESI 2020.

Awake the entrepreneurial spirit!

There is arguably a lack of entrepreneurial spirit in Germany. In 2018, according to a survey by the German development bank KfW[5], only a quarter of the German working population would have liked to be their own boss - a record low. As recently as 2000, the comparable figure was 45%. If anything, the Covid-19 economic shock has probably further reduced that figure. After all, the support measures implemented during the crisis did a good job at getting established companies through, but startups - the potential future stars of the German economy - were clearly neglected (see Figure 9). Interestingly, while startup activity rose in the US in 2020, in Germany the number of startups fell by -12% to 201,000 - another record-low. It is high time to go on the offensive to awaken the German entrepreneurial spirit. Again, a comprehensive approach is essential: from founder scholarships, government support for university-affiliated startup factories and "innovation clusters" to more attractive modalities around employee participation in startups and taxes, as well bureaucratic relief in the first years of life. While start-up founders will find many good reform ideas in the party programs of CDU and FDP, they don't feature in the pamphlets of SPD and Left party at all. Meanwhile the Greens mention them once but offer no comprehensive strategy aimed at grass-roots start-ups.

Figure 9: Founders' views on Germany as a start-up location

	2018	2019	2020
Free market access	2.4	2.2	2.3
Advisory services*	2.8	2.7	2.6
Business founder image	2.5	2.4	3.1
Protection of IP	2.8	2.7	3.1
Quality of public infrastructure	2.6	2.7	3.2
Financing with promotional loans	3.4	3.1	3.3
Financing with bank loans	3.7	3.7	3.7
Financing with venture capital	3.3	3.1	4.0
Legal regulations*	3.1	3.0	4.3
Tax burden*	3.6	3.5	4.4
Policymakers' commitment**	3.8	3.4	4.5
Educational system**	3.9	3.9	4.5
Bureaucracy (information & reporting duties)	3.6	3.3	4.6

Source: KfW Entrepreneurship Monitor

*Note: * Pertaining to concerns of business founders, self-employed persons and entrepreneurs,*

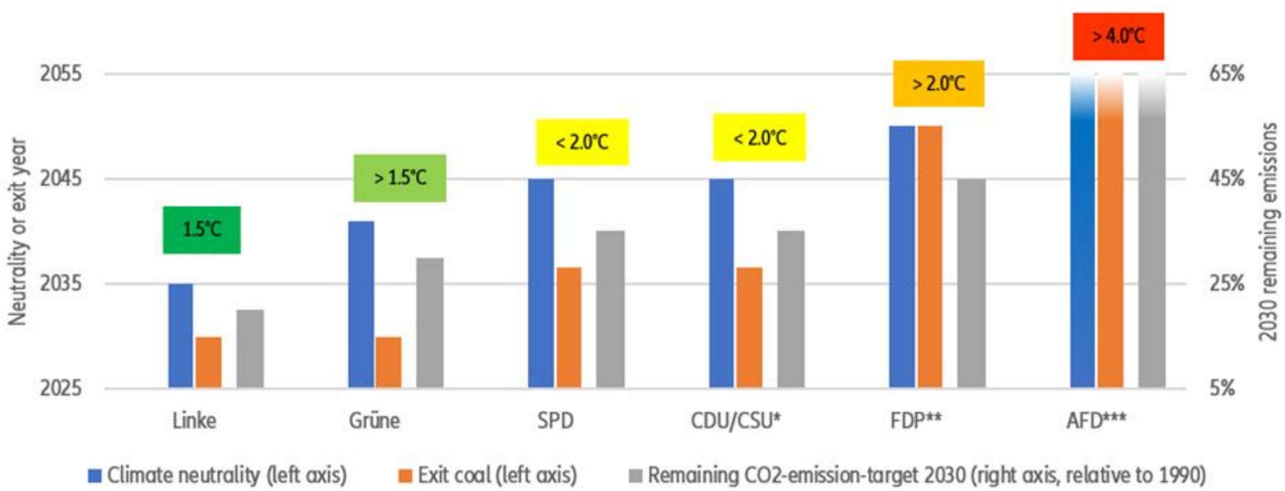
***With respect to the teaching of business knowledge and skills*

5 *KfW Gründermonitor (2020).*

Green transition: Rise to the challenge!

Mastering the green transition is the make-or-break challenge for the German economy. And although there is broad consensus on the overwhelming importance of the topic, party programs differ markedly in the ways to address it – with only one party fully up to the challenge. This is shown in by Figure 10, which illustrates the range of ambition using the aspired date of climate neutrality and the coal exit as well as the 2030 emission target. The uncomfortable truth is that the next German government will most likely pursue climate targets that are still not in line with limiting global warming to 1.5°C, the proclaimed aim of the Paris Agreement and the temperature rise at which the damages from climate change are expected to exceed the economic benefits of fossil fuel usage. It is only weak consolation that the same must be said for the supposedly ambitious EU Green Deal measures proposed in the "Fit for 55" package, which would likely result in a long-term temperature increase of more than 2.0°C. The aspired 55% emission reduction until 2030 sounds good but being on a 1.5°C path would rather require reductions of around 65%. The next German government will therefore face the rare task of being more radical in its policymaking than its programming and will have to rise to the challenge. But what exactly needs to be done so that Germany – and the EU – can pivot to the 1.5°C path?

Figure 10: Climate target comparison



*Source: Euler Hermes, Allianz Research and Helmholtz-Klima. Temperature alignment is derived by comparing the targets with complementary analysis and pathways from Climate Action Tracker, CAN Europe and OXFAM[6]. * Wants to include CO2-reductions outside of the EU to national reductions. ** Wants to update targets according to new scientific findings and to refrain from national targets in favor of EU compliance with EU targets. Also wants to include CO2-reductions outside of the EU to national reductions. *** Wants to abolish neutrality, exit or emission targets. Bars extend further up than shown.*

6 https://www.oxfam.org/en/press-releases/fit-55-package-not-fit-tackle-climate-emergency-says-oxfam
https://www.helmholtz-klima.de/aktuelles/klimapolitik-wahlprogramme-bundestagswahl2021
https://climateactiontracker.org/climate-target-update-tracker/eu/
https://caneurope.org/press-release-fit-for-55-climate-energy-eu-commission-package/
https://climateactiontracker.org/publications/germanys-proposed-2030-national-target-not-yet-15c-compatible/
https://climateactiontracker.org/countries/eu/ .

Without a carbon price, all is nothing! The policy framework needs to provide financial incentives for a quicker decarbonization while limiting economic costs for current and future generations. The most effective tool in speeding up the transition is to raise carbon prices and apply them to a broader base of emission sources. Research suggests that to reach climate goals carbon prices in the national German emission trading system will need to rise to at least EUR100 in the next five years, thus notably higher than the currently aspired EUR55-65 by 2026. Although carbon prices are the most powerful and effective way to advance the green transition there are some cases – for example path dependen-cies resulting from long investment cycles or the establishment of markets for new technologies – where additional instruments might be required, namely so-called carbon contracts for differences (CCfD). When infrastructure projects require a carbon price beyond the implemented levels to be competitive versus their fossil fuel-based alternatives, carbon contracts for difference provide an additional financial benefit that compensates for the difference and makes the project attractive for investors.

Another instrument is a credit-enhancement arrangement between a public player, say, a development bank, and a private investor. The new government must explore and use these public-private partnerships to the greatest extent because crowding in private capital is key to the green transition, not least with regard to speed: The secret to opening up markets to new technologies is the quick scaling-up to drive costs down. For that, a combination of the risk capacity of the public sector and the knowhow and capital of the private sector is inevitable. AGORA Energiewende specifies the additional investment demand for the energy transition at about EUR30bn per year, which will hardly be met without private-public partnerships for the investment needs.

Still, the estimated EUR30bn does not cover another important aspect: As climate change is already imminent and damages from floods and droughts are accumulating, policymakers will also have to address adaptation. Among other measures, this needs to include a discussion on how to ensure the insurability against weather extremes. This discussion is not only about the introduction of different forms of mandatory insurances but should also aim at the provision of protection infrastructure and warning systems.

7 In principle, carbon prices should reflect the damage caused by greenhouse gas emissions, the so-called social cost of carbon. Scientific estimates of these damages vary considerable with a median of USD85 (EUR72) in 2020 which is expected to rise to USD145 (EUR123) by 2030 https://www.unepfi.org/publications/discussion-paper-on-governmental-carbon-pricing/.

8 E.g. https://static.agora-energiewende.de/fileadmin/Projekte/2021/2021_06_DE_100Tage_LP20/A-EW_229_Klimaschutz-Sofortprogramm_WEB.pdf.

Save the climate – and the people! The efficiency of energy use by households has to dramatically increase. But a further tightening of energy standards for new buildings can only contribute a little to the climate goals. What is required is rather a tripling of the energy renovation of existing buildings. Suggested measures like mandatory insulation and rooftop photovoltaics installation are cost-intensive and will lead to further rent increases. On the other hand, shifting the costs to landlords reduces the incentives to invest in the needed additional housing space, which will also fuel a further rise in rents. Either way, increasing rents are done deal. Moreover, a reduction in energy consumption needs to be incentivized by raising the price for heating and gasoline. All this can be more than challenging for low-income households. Considering the average emissions of a German citizen of around 9 tons of CO2 per year, and a cost pass -through of EUR50 per ton of CO2, this could sum up to EUR1800 per year in a four-person household. It is therefore essential to use the revenues from carbon-pricing policies to compensate for financial hardships, securing a just transition. This is the double dividend of carbon prices, mitigating harmful greenhouse gas emissions by increasing emission costs and also generating revenues that can be used to financially compensate particularly burdened households. The latter should be done in two forms: direct lump-sum transfers like the so-called "*Klimaprämie*" (climate bonus) and a stabilization of electricity prices, which would also particularly benefit lower income households.

A new harvest – CO2! Agriculture is the often-overlooked piece in the climate policy puzzle, but its role is decisive and manifold: It is supposed to capture massive amounts of CO2 and permanently store it in the ground, to provide large amounts of renewable energy, promote biodiversity and, last but not least, limit food price increases. This will require a rethinking of agricultural zoning with respect to the co-use of land for agriculture, energy production and carbon storage. But the essential step would be to create and promote carbon markets that provide sound revenues to incentivize investments in the co-use activities. Goals for co-use include agri-photovoltaics (the combined use of agricultural land for photovoltaic energy production, e.g. by installing solar panels on stilts above meadows) as well as agri-forestry (e.g. planting energy wood stripes within fields). In addition, the agricultural sector is supposed to reduce its emissions from livestock and fertilizers, which from a global emission perspective will only benefit the climate if consumer preferences also shift towards eating less meat and more sustainable and probably more expensive food.

Spark the electrification! Decarbonizing industry means first and fore most the electrification of processes, which has to be leapfrogged. Besides the portfolio of support measures, including subsidies, loans and preferential tax write-offs, electricity prices will play a key role. Investments in electrification require electricity prices to increase much slower than the costs for emission-intense alternatives. This includes the expectations for electricity price developments. Thus, a credible regulatory framework is needed that decouples electricity price increases from carbon price increases.

The decarbonization of the transport sector hinges upon the right infrastructure in place. The new government should not waste time and should speed up the roll-out of the necessary infrastructure not only for electric vehicle charging and hydrogen refueling, but also for the complementary smart IT solutions, including data exchange via 5G networks. As mentioned in the context of the general non-climate-related challenges, the progress in the energy transition depends on the progress in digitization and the availability of skilled personnel. The roll-out of smart meters and prosumer or community electricity models requires adequate regulatory frameworks for data protection, building law and zoning regulations; a reduction of bureaucracy and the acceleration of approval processes.

The emission reduction in hard-to-abate sectors such as steel or the chemical industry depends on a sufficient supply of green hydrogen. This is a complex task demanding tight coordination between European countries and regulations in which carbon contracts for difference will have a central role. Ramping up the necessary infrastructure will also require close cooperation with regions outside of the EU as the necessary capacity won't be available within the EU. This provides an opportunity to support economic growth and political stability, for instance in African countries that have particularly beneficial conditions for the expansion of renewable capacities.

A happy couple – production and storage! Electricity is at the core of the energy transition. Electricity production from renewables is no longer an issue: Wind and solar energy are cheaper today than their dirty equivalents from coal, gas or oil. Availability and utilization are the next challenges. The solution is the so-called sector coupling, which promotes the integration of electricity production and storage capacities from, say, home storage or electric vehicle batteries and thus technically enables the electrification of most of the economy. As already mentioned, to keep the necessary investments economically sensible, carbon price revenues should be used to stabilize electricity prices. To pivot to the 1.5°C path, the German coal exit needs to be brought forward from 2038 to 2030. As coal profitability and CO2 prices in the EU ETS are directly linked, the best solution would be to reach emission prices in the EU ETS that drive coal power plants completely out of the EU market and thus also prevent carbon emission leakage to other EU countries. The second-best option is to strictly coordinate the coal exit in the EU to prevent emission leakage to other, potentially more polluting, coal power plants.

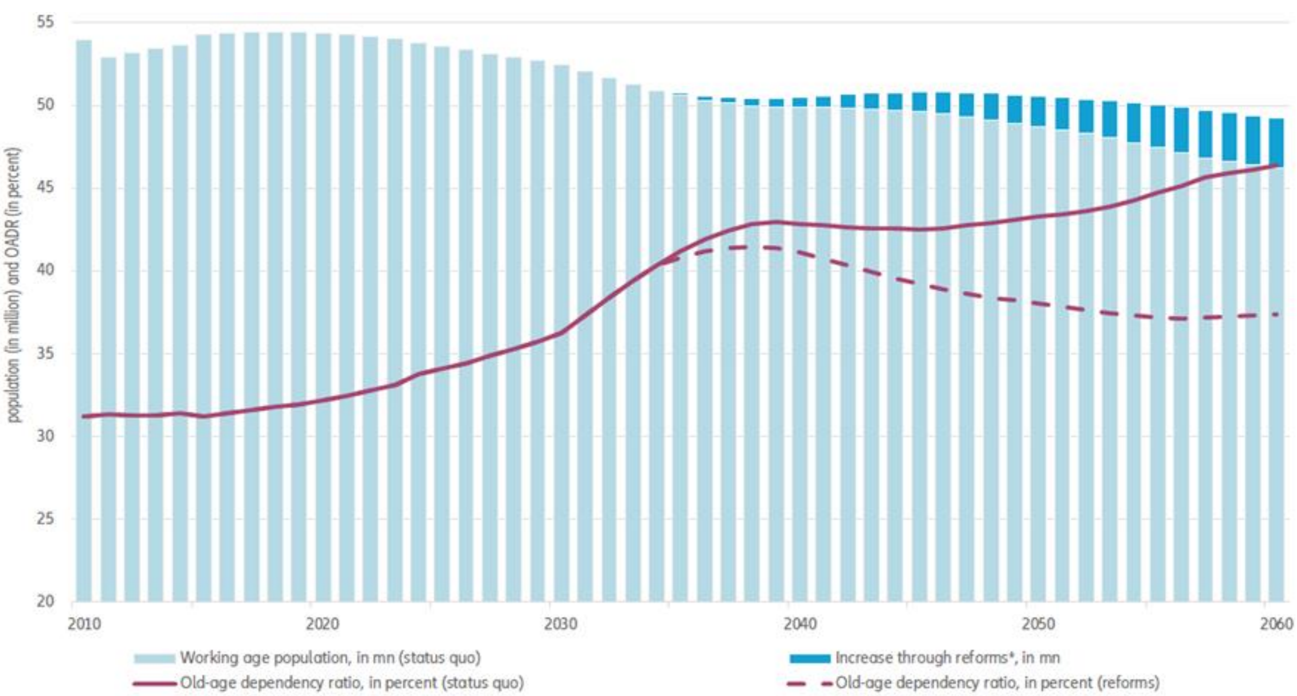
Another challenge is to meet the expected energy demand: the development of photovoltaics and wind as well as of transmission and storage infrastructure has to dramatically speed up. This includes tripling the installed photovoltaics until 2030 as well as tripling the tenders for onshore wind development. This requires the allocation of sufficient areas, which will cause land-use conflicts. The potential solutions to these conflicts, such as rooftop- photovoltaics or the above mentioned agri-photovoltaics, come with additional costs. In general, the expansion of renewables is exposed to acceptance issues, "not in my backyard" mentalities and lengthy approval processes. In particular, biodiversity and climate protection are often conflicting issues. For a better balance, biodiversity and climate change need to be viewed and assessed as a joint concept that is not focused on a local assessment but accounts for the larger national and international picture. Decision processes have to speed up, and the participation of local citizens and communities in the financial benefits can increase acceptance.

Demographic transition: Make aging a boon, not a bane!

An ostrich policy will not prevent demographic change and its consequences for the German pension system. With respect to pensions, most parties' election programs are rather generous, promising that the retirement age will not increase above 67 years and the benefit ratio will remain at 48%, obviously ignoring the reality of demographic change. Despite the already agreed upon gradual increase of the pension age to 67 years, Germany's working age population is expected to shrink within the next four decades by 15%, from 54mn today to 46mn in 2060. At the same time, the population in retirement age is set to increase by 22%, from 18mn to more than 21mn. That means that even if 100% of the population in working age contributes to the pay-as-you-go financed pension system, there are going to be 46 persons in retirement age per 100 persons in working age. Today this ratio is at 32%. In other words, two people in working age will be needed to finance the pension of one retiree.

Like every pay-as-you-go financed pension system, the German one is not immune to the effects of demographic change. Further reforms are urgently needed to adapt the pension system but with baby boomers starting to retire, the window of opportunity is getting smaller. One possible measure would be a gradual increase of the retirement age to 70 years from 2035 onwards. It would not only dampen the increase of the old-age dependency ratio and stabilize it in the long run on a level of around 37%, but it would also add an additional 3mn persons to the labor force in 2060 (see Figure 11).

Figure 11: Development of working-age population and OADR 2010-2060



Sources: German statistical office, Euler Hermes, Allianz Research.

9 Here from the age of 15 to retirement age.
See Bundesamt für Statistik (2019), 14. Koordinierte Bevölkerungsvorausberechnung, Variante 2.

The momentarily favored ostrich policy comes at a price. Keeping the retirement age and the benefit ratio constant would imply in the long run either a federal subsidy to the pension system of close to 100% of the contributions, which amounted to EUR247.9bn[10] in 2019, or a contribution rate of around 30% to finance the pension benefits. Both are inconceivable. Higher subsidies from the general budget undermine the state's capability to manage the green transition, adding insult to injury to the young generation. And higher contributions dent the productivity of German companies – with the same result for the young generation.

However, raising the retirement age is not the silver bullet to markedly reduce the financial burden on future generations. In our model, the federal subsidy – paid out of taxpayers' money – would have to increase above 80% in around 2040 or the contribution rate would reach 26%. It only works in combination with measures to enable a higher labor market participation of women and older workers and employees: for example, the provision of nursing care facilities for children and elderly family members who require care, which is today in most cases provided by family members. Furthermore, it needs training offers for a smooth transition into the new work environment that will be more and more characterized by digitization and automation, and especially labor market reforms that allow people to work longer. Otherwise, any increase of the retirement age would be nothing but a hidden cut of the benefit ratio.

To hope for immigration to be the remedy for any demographic challenge might prove to be in vain. The main sending countries (Romania, Bulgaria and Poland), like most other EU countries and many major economies around the globe (such as Japan or South Korea) all face the same challenge: their labor forces are shrinking and aging while the number of retirees increases. While in Germany a 10% decrease of the population in working age is expected, this age group is set to shrink by 31% in Bulgaria, 27% in Spain and 25% in Poland and Romania, for example. Therefore, there will be a competition for high-qualified specialists in the future and a need for an attractive labor market environment. Against this background, to avoid overburdening future generations, there is an urgent need to be honest about the necessity of further pension reforms. These will imply a combination of a higher contribution rate, a further decrease in the benefit ratio and an adjustment of the retirement age to the development of the further life expectancy at retirement age, which is expected to increase by more than three years for 65-year-olds until 2060.

10. See Deutsche Rentenversicherung.

11. See UN Population Division, World Population Prospects 2019 Revision.

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