The 2023 Climate Action Programme of the German Federal Government

1. Preface

Human-induced climate change is one of the greatest challenges of our time. The heatwaves, droughts and forest fires of recent summers have shown once again that the effects of the climate crisis are being felt in Germany and around the world. The Federal Government therefore has a responsibility to tackle this crisis with the utmost determination, not least in order to protect the freedom of future generations. The transition to climate neutrality offers many opportunities for a good future. It is a question of making the German economy fit for the future, of securing existing jobs and creating new ones, and of securing a life of prosperity for all people in this country. It is about making mobility and the supply of electricity and heat not only more climate-friendly, but also better and more affordable, and about finally becoming independent of fossil energy imports.

The starting point could hardly be more challenging: almost all sectors, i.e. energy, transport, industry, buildings, waste management, agriculture, land use and forestry, are facing an urgent need for action in view of the inadequate emission reductions in the past and consequently the foreseeable failure to meet the German and European climate targets in the coming years. The pace of emission reductions must be more than doubled and then almost tripled by 2030 to meet the 2030 climate target and the 2045 target year for climate neutrality set out in the Federal Climate Change Act (Bundes-Klimaschutzgesetz, KSG).

For the transition to climate neutrality to succeed, it must be socially just and economically viable and also take cultural aspects into account. Given the enormous challenges and the urgency of the situation, climate change mitigation, economic policy and social equilibrium need to be considered in a more integrated way than in the past. This is reflected, for example, in the promotion of future technologies and the decarbonisation of industry, as well as in ensuring competitiveness. All of these elements are key components of a forward-looking climate policy.

Consistent climate action is also an integral part of the Federal Government's response to the recent energy crisis. Germany must overcome its dependence on fossil fuels as quickly as possible by expanding renewable energies and increasing energy efficiency. Germany's rural regions, in particular, play a central role in advancing the necessary expansion of renewable energies. Through its climate action policy, the Federal Government is initiating the necessary investments in climate-neutral buildings, energy and industrial facilities, infrastructures and mobility systems as the core of a climate-neutral economy. This will not only strengthen the security of supply and, in the long term, the affordability of energy and the sustainability of the urban and rural economy, but also Germany's geopolitical sovereignty.

The Federal Government is pursuing this strategy of consistent and reliable climate action together with its European and international partners. With the “Fit for 55” package, the most comprehensive European climate action package to date has already been adopted. The reform of the European Emissions Trading Scheme, the associated gradual decarbonisation of electricity generation across Europe, and the decision to phase out new cars with fossil-fuelled internal combustion engines by 2035 have also created a binding regulatory framework at European level for a consistent orientation of the economy towards climate neutrality. The Federal Government has successfully argued at European level to ensure that vehicles that run exclusively on e-fuels can continue to be registered in the European Union after 2035. As part of the “Fit for 55” package, the Climate Social Fund (CSF) will cushion the consequences of the

European CO_2 pricing policy in the heating and transport sectors for financially weaker and disadvantaged households, micro-enterprises and road users.

With the 2023 Climate Action Programme, the Federal Government is contributing to the joint efforts to combat climate change and implement the Paris Agreement.

The Federal Government has already adopted a considerable portion of the necessary measures. It has significantly accelerated the expansion of renewable energies with the package of immediate energy measures consisting of the revised Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, EEG), the Onshore Wind Energy Act (Windenergie-an-Land-Gesetz, WaLG), the Offshore Wind Energy Act (Windenergie-auf-See-Gesetz, Wind-SeeG), the revised Energy Industry Act (Energiewirtschaftsgesetz, EnWG) and the revised Federal Nature Conservation Act (Bundesnaturschutzgesetz, BNatSchG). In addition, the Federal Government has initiated the revision of the Buildings Energy Act (Gebäudeenergiegesetz, GEG), the Heat Planning Act (Wäremplanungsgesetz, WPG), and a reform of the "federal funding for efficient buildings" (Bundesförderung für effiziente Gebäude, BEG), thus systematically advancing the heat transition away from fossil fuels. Via carbon contracts for difference and the development of the Carbon Management Strategy, the Federal Government is putting industry on the path to climate neutrality, increasing the attractiveness of public transport with the *Deutschlandticket*, and linking the protection of natural sinks and the protection of biodiversity with the Action Programme for Natural Climate Action (Aktionsprogramm Natürlicher Klimaschutz, ANK).

At the same time, the Climate Change Act (KSG) is being further developed and the climate targets are being reviewed on the basis of cross-sectoral and multi-annual accounts in order to provide the right framework for a forward-looking and efficient path towards climate neutrality. In this way, climate action is to become a genuine cross-sectoral task of the Federal Government with the focus on a transformation that is effective in the long term, economically sensible and socially just.

This Programme brings together these and other measures needed to achieve our climate targets in all sectors. In less than two years, we have decided to decarbonise all major sectors of our economy and set the course for doing so.

In the transport sector, the annual emissions in 2021 and 2022 were 2 million and 9 million tonnes respectively above the targets set out in the Federal Climate Change Act (KSG). The Federal Ministry for Digital and Transport (Bundesministerium für Digitales und Verkehr, BMDV) has submitted proposals for additional climate action measures in the transport sector (including in July 2022 and during the deliberations of the Coalition Committee at the end of March 2023), which were taken into account in the development of the present package of measures.

In the buildings sector, the annual emission volume specified in the Federal Climate Change Act (KSG) was exceeded by 5 and 4 million tonnes in 2021 and 2022 respectively. In July 2022 the Federal Ministry of Economic Affairs and Climate Action (Bundesministerium für Wirtschaft und Klimaschutz, BMWK) and the Federal Ministry for Housing, Urban Development and Building (Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen, BMWSB), which are responsible for the buildings sector, submitted a proposal for an emergency programme to close the climate action gap in the buildings sector. The measures contained therein are being updated and revised in the chapter on measures in the buildings sector.

All measures are subject to funding availability and the Federal Government's competence/responsibility under financial constitutional law. Any additional personnel and material costs that may arise for the Federal Government must be counter-financed within the framework of the current budget and financial planning within the relevant section or special fund.

2. Starting Point and Impact of the Climate Action Programme

With the amendment to the Climate Change Act (KSK), the Federal Government has decided to take a more cross-sectoral and multi-year approach to climate action. Climate action is thus to become a genuine cross-cutting task of the Federal Government, with all sectors making their contribution: energy, industry, transport, buildings, agriculture, LULUCF, waste management and others. On the way to achieving greenhouse gas neutrality by 2045, the Federal Climate Change Act (KSG) provides for a reduction of total greenhouse gas emissions in Germany by at least 65% by 2030 compared with 1990 levels.

Overall assessment

Taking into account the remaining uncertainties (including energy price developments), the impact assessment of the measures contained in this Climate Action Programme shows a very significant contribution to emission reductions. While at the beginning of this legislative period, the Federal Government still had to assume a total cumulative gap of more than 1,100 million tonnes of CO_2 equivalents for the period of 2022 - 2030 (Projection Report for 2021 and Opening Account Balance on Climate Action of BMWK), it can now assume that this gap will be reduced by about 900 million tonnes if the measures contained in this Climate Action Programme are consistently implemented.

Evaluation of the sectors

All sectors contribute to the reduction of the overall gap, albeit to varying degrees:

The Projection Report for 2021 showed that the cumulative annual emissions of all sectors up to 2030 (except agriculture, due to methodological adjustments in the greenhouse gas inventory) were significantly exceeded. The energy sector accounted for the largest share (500 Mt), followed by transport (271 Mt), industry (178 Mt) and buildings (152 Mt).

On the basis of the proposed measures the impact assessment shows that these exceedances will be almost completely eliminated in the energy, industry and buildings sectors. The exceedance in the transport sector will also be significantly reduced by between 96 and 153 million tonnes. However, it will not be completely eliminated.

Conclusion

The Climate Action Programme (KSP) makes an important contribution to the achievement of the climate targets, with a very significant reduction of the climate action gap by 2030. However, the emissions savings required to meet the climate targets remain ambitious and, from today's perspective, further efforts will most likely be needed. Following the logic of the planned amendment to the Climate Change Act (KSG), this responsibility lies with the Federal Govern-

ment as a whole. The planned amendment will review compliance with the climate targets in a forward-looking, multi-year and cross-sectoral approach. The Federal Government will decide on the sectors and measures required to achieve compliance with the total annual emission targets by 2030.

All Federal Ministries responsible for the sectors, in particular those responsible for the sectors that have caused the target to be missed, must contribute to the mitigation measures.

3. Measures of the Climate Action Programme

The following sections outline the measures taken by the Federal Government in the various sectors. Many of the measures taken by the Federal Government and at European level also have a cross-sectoral effect.

National measures to cut emissions are supported by the European Union's reform plans to significantly expand the European Emissions Trading Scheme. The Federal Government welcomes the agreement at EU level on the introduction of a European Emissions Trading Scheme for the building and transport sectors (ETS II). ETS II, which also includes a CO_2 pricing scheme for the heating and transport sectors, is expected to apply from 2027. Until now, the only other EU country with a similar instrument in these sectors besides Austria was Germany. The introduction of ETS II will create a uniform European structure for the pricing of CO_2 emissions. The Federal Government supports this progress. In future, around three quarters of European CO_2 emissions will be covered by a trading system. In view of the agreements made in the Coalition Agreement and the new European climate change architecture, the framework for the national climate action policy will be adapted in the near future.

3.1. Energy sector

The Federal Government will massively expand renewable energies as a key strategy to decarbonise the energy sector and ultimately other sectors such as buildings, transport and industry. Their share of gross electricity consumption was around 46% in 2022. The aim is to increase this share to at least 80% by 2030. By 2035, electricity generation is planned to be completely or largely decarbonised. The regulatory framework will be aligned with these new targets and the goal of greenhouse gas neutrality by 2045. With the package of immediate measures in the energy sector in July 2022, the Federal Government has already set the course for strengthening the energy transition as a whole.

Measures in the energy sector

- **Revision of the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, EEG 2023)** with amendments to the Combined Heat and Power Act (Kraft-Wärme-Kopplungs-Gesetz, KWKG): The deployment targets will be increased to at least 80% of renewable energies in gross electricity consumption by 2030. The principle that the expansion of renewable energies is in the overriding public interest and serves public safety/security is now enshrined in law, with an H_2 readiness standard being included in the KWKG.

- **Revision of the Offshore Wind Energy Act (Windenergie-auf-See-Gesetz, WindSeeG):** The deployment targets have been increased to at least 30 GW by 2030, at least 40 GW

by 2035 and at least 70 GW by 2045; approval procedures have been accelerated and calls for tenders have been extended to areas which have not been centrally pre-surveyed.

- **Revision of the Energy Industry Act** (Energiewirtschaftsgesetz, EnWG) with amendments to the **Federal Requirements Planning Act (Bundesbedarfsplangesetz, BBPlG)** and **Grid Expansion Acceleration Act (Netzausbaubeschleunigungsgesetz, NABEG)**: The goal of greenhouse gas neutrality was laid down in the EnWG, and grid planning was also geared towards climate neutrality by 2045. The Federal Requirements Plan was updated on the basis of the 2021 Grid Development Plan. The planning, approval, implementation and operation of grids have been simplified. A definition for storage facilities was laid down in the EnWG with effect from July 2023.

- **Wind Energy Area Requirements Act (Windenergieflächenbedarfsgesetz, WindBG)** and associated amendments to the **Federal Building Code (Baugesetzbuch, BauGB), the Federal Nature Conservation Act (Bundesnaturschutzgesetz, BNatSchG) and the Spatial Planning Act (Raumordnungsgesetz, ROG)**: A land-use target of 2% for onshore wind energy by 2032 including specific land use targets for the *Länder* was enshrined in law. The clause allowing minimum distance regulation by the *Länder* was abolished, and measures to speed up planning, e.g. for the environmentally compatible expansion of wind energy, were implemented.

- **"Solar package":** The "solar package" adopted by the Federal Cabinet on 16 August 2023 is an important legislative package that contains a plethora of measures to accelerate the expansion of photovoltaics and reduce bureaucracy (including the expansion of areas for ground-mounted PV and the right of way for connecting lines).

The legislative procedures associated with these measures **were completed** as early as in summer 2022.

In addition, the phase-out of lignite in the Rhenish mining area by 2030 was enshrined in law in December 2022 through an amendment to the **Act on the Phase-Out of Coal-Fired Power Generation (Kohleverstromungsbeendigungsgesetz, KVBG)**.

The cornerstones of the **geothermal campaign** have been developed with the aim of achieving a geothermal potential of 10 TWh heat supply in the next few years.

Currently, the available geothermal data in areas with suitable infrastructure and appropriate heating networks are being systematically processed. The aim is to create a uniform nationwide database within the next two years that will provide plausible, accessible and processed information on the local geothermal potential. Sites that are expected to have good geothermal potential and usable infrastructure will be qualified for development through a competitive process in an exploration campaign for medium and deep geothermal energy. In addition, measures will be developed to speed up the planning approval process for geothermal energy, and risk minimising instruments will be investigated.

The **Energy Research Programme** will also be updated with a focus on climate action and security of supply. The goal is a "climate-neutral and resilient energy system by 2045". To avoid technology gaps, the aim is to speed up the scale-up of innovative technologies.

3.2. Buildings

The medium- and long-term climate targets in the buildings sector can only be achieved if the heat supply is decarbonised. By 2030, 50% of heat is planned to be produced in a climate-neutral way. On the other hand, a rapid and significant increase in the renovation impetus must be achieved at the same time, that includes an increase in both the rate and depth of renovation. Reducing heat demand not only reduces energy costs for consumers, but also contributes significantly to greater comfort, resilience and security of supply, and facilitates the efficient and therefore economic use of heat pumps and low-temperature heating networks. Both technologies play a key role in decarbonisation.

Emissions trading for heating and transport also plays an important role in the mix of instruments for the buildings sector. Last year, the CO_2 Cost Sharing Act (CO_2-Kostenaufteilungsgesetz) ensured that incentives are created where they can be effective.

When designing climate action measures in the buildings sector, the Federal Government will ensure that housing remains affordable for owner-occupiers and tenants.

A significant proportion of the measures in the buildings sector have a cross-sectoral effect: Some instruments also achieve emission reductions in the industrial and energy sectors.

Measures in the buildings sector

- **Revision of the Buildings Energy Act (Gebäudeenergiegesetz, GEG)**: The new Buildings Energy Act is a milestone for energy sovereignty and climate change mitigation. The new rules will initiate the transition away from fossil fuel heating and provide planning certainty for property owners, the housing industry, industry and trade.

  The rollout of the Efficiency House 55 (EH 55) as the new standard for primary energy requirements on 1 January 2023 was an important first step for the construction of new buildings. A revision of the system of requirements and the standard for new buildings is also being discussed in the current negotiations on the reform of the Energy Performance of Buildings Directive (EPBD). Given the current difficult conditions in the construction and housing industry due to high interest rates and construction costs, it is no longer necessary to set EH 40 as a binding legal standard for new buildings in this legislative period and is therefore suspended.

  We need ambitious and reliable climate change mitigation measures in all sectors across Europe. As soon as it is possible to do so with a minimum of bureaucracy, we also want to introduce climate change mitigation in materials and their production, so that the greenhouse gas emissions caused by a building over its entire life cycle are taken into account, without lowering the current requirements for thermal insulation.

- **“Federal funding for efficient buildings” (Bundesförderung für effiziente Gebäude, BEG)**: With the aim of providing additional targeted support for all parties involved in making the necessary investments for the future, the Federal Government is accompanying the statutory rules on heating using renewable energies as laid down in the Buildings Energy Act (GEG) with adapted funding as part of the “federal funding for efficient buildings” (BEG). As early as in summer 2022, the focus of the funding was on improving the energy performance of existing buildings, as this is where the greatest CO_2 savings can be made. In this context, a bonus was introduced for the renovation of the worst per-

forming buildings to the Efficiency House standard. On 8 September 2023, the Bundestag adopted the cornerstones for funding the replacement of heating systems together with the amendment to the Buildings Energy Act (GEG). On this basis, the funding guideline for the "federal funding for efficient buildings" (BEG) - individual measures - will be revised. Households must not be overburdened with the necessary new investments. For this reason, the Federal Government will continue to provide targeted funding financed by the Climate and Transformation Fund, and initial considerations will be made in the preparation of the Government's draft GEG. The existing funding for energy renovations up to the Efficiency House standard and for efficiency measures will be continued. On 25 September 2023, the Federal Government agreed to improve the funding as part of a package of measures. The **funding for the construction of new buildings** has been reorganised. As part of the "Climate-friendly new Buildings" programme ("Klimafreundlicher Neubau") launched on 1 March 2023, the Quality Label for Sustainable Buildings (Qualitätssiegel Nachhaltiges Gebäude, QNG) has been upgraded, and the greenhouse gas emissions in the life cycle of buildings have been given even greater prominence. In this context, the Federal Government is currently considering the introduction of a building resource passport.

- **Timber Construction Initiative:** Timber construction has great potential for climate change mitigation through the substitution of high-emitting, conventional building materials and the long-term storage of carbon in wood. The focus of the Timber Construction Initiative is to strengthen climate-friendly construction with wood from sustainable forestry and other renewable raw materials, i.e. to remove, above all, existing barriers to renewable building materials. The initiative also aims to promote resource-efficient and circular construction with wood, including research and development, knowledge transfer and training. Last but not least, it will support the creation of affordable and climate-friendly housing through serial and modular construction with shorter production and construction times. The Timber Construction Initiative is geared towards a time horizon until 2030.

- **Serial renovation:** The "federal funding programme for serial renovation" (Förderprogramm Bundesförderung Serielle Sanierung), which was launched in May 2021, will be continued subject to an internal evaluation. The aim of the programme is to increase the renovation impetus. Manufacturers of components for serial renovation are funded. As of 2023, the Federal Government's Efficient Buildings funding programme (BEG) will provide a bonus of 15% for serially renovated residential units to encourage the rollout of serial renovation. The Federal Government supports the removal of existing barriers, for example in the Model Building Code (Musterbauordnung, MBO). The Federal Government also believes that properties owned by the Institute for Federal Real Estate (Bundesanstalt für Immobilienaufgaben, BImA) can serve as a role model for serial renovation.

- **Public Buildings Initiative:** The aim of this initiative is to increase the renovation rate of public buildings and to implement the provisions of Art. 6 of the EU Energy Efficiency Directive (EED). The "Energy efficiency specifications for climate-neutral new buildings/extensions and the renovation of buildings of the Federal Government" (Energieeffizienzfestlegungen für klimaneutrale Neu-/Erweiterungsbauten und Gebäudesanierungen des Bundes, EEFB) will serve as a benchmark for the level of ambition. The Federal Government is consulting with the *Länder* on the implementation of the initiative in order to comply with EU requirements. The dialogue with the *Länder* and municipalities will be continued and expanded.

- **Renovation of municipal sports, youth and cultural facilities:** The federal programme for the renovation of municipal sports, youth and cultural facilities (Bundesprogramm "Sanierung kommunaler Einrichtungen in den Bereichen Sport, Jugend und Kultur") aims to support municipalities in the ambitious improvement of the energy performance of their social infrastructure facilities.

- **Model project "building for the future" (Zukunft Bau) to promote innovation in the buildings sector:** The aim of this funding programme is to establish new and previously non-market solutions for climate-neutral, climate-adapted, energy-efficient, resource-saving and affordable construction in general planning and construction practice.

- **Energy-efficient urban redevelopment:** Further development of the funding programme for energy-efficient urban redevelopment. The programme promotes integrated energy-efficient approaches and redevelopment management in urban districts. Going forward, redevelopment management can be applied for to implement the programme, which supports municipalities in climate change mitigation and heat transition and contributes to CO_2 savings.

- **Heat Planning Act (Wärmeplanungsgesetz, WPG)**: The Federal Government supports a nationwide heat planning scheme and the expansion of heating networks. To this end, it passed the Heat Planning and Decarbonisation of Heating networks Act (Gesetz für die Wärmeplanung und die Dekarbonisierung der Wärmenetze - Wärmeplanungsgesetz, WPG) in the Federal Cabinet on 16 August 2023. The heat planning scheme shows the development towards a greenhouse gas-neutral heat supply by 2045 and identifies the types of heat supply systems that are particularly suitable in the planned areas and sub-areas. As an important planning instrument, it improves investment security for citizens, trade and industry and enables an efficient, cost-optimised conversion of heat supply to climate-friendly energies.

- **Climate-neutral district heating:** District heating is a key technology for decarbonising the heat supply, especially in urban areas. The aim is to make district heating increasingly climate-neutral by increasing the use of renewable energy and unavoidable waste heat. Every connection to district heating reduces the need to decarbonise a large number of individual heating systems. This is directly linked to the requirements for heating networks set out in the **Heat Planning Act** (see above). Since September 2022, the expansion and conversion to climate-neutral heating networks has also been sped up by the **"federal funding for efficient heating networks"** (Bundesförderung für effiziente Wärmenetze, BEW). Around €3 billion will be made available up to 2026 for renewable heat generation, for example from geothermal and solar thermal energy and the use of large-scale heat pumps, as well as for other heating network infrastructure. The BEW promotes the conversion of existing heating networks towards greenhouse gas neutrality by 2045 and the construction of new heating networks in which at least 75% of the heat is supplied from renewable energies and waste heat. The BEW has a mitigating effect both in the energy sector (decarbonisation of district heating networks) and in the buildings sector (conversion of a building's fossil heat supply to a district heating connection). In order to further increase the decarbonisation of district heating and the number of connections, a district heating summit was held in June 2023, followed by workshops with all relevant stakeholders in 2023.

- **Heat pump initiative:** A broad alliance of business, industry, trades, trade unions and academia has been formed to accelerate the rollout of heat pumps so that at least 500,000 new heat pumps can be installed each year from 2024. The Federal Government is committed to facilitating the installation and operation of heat pumps. This includes, for example, competitive prices for heating electricity; accordingly, heat pumps have been considered separately in the electricity price cap. The Federal Government supports the removal of existing regulatory barriers, for example in the Model Building Code or in mining law. It also supports the "Clean Tech Europe" platform for the European production of transformation technologies such as heat pumps. The “federal funding programme for the development of heat pumps” (Bundesförderung Aufbauprogramm Wärmepumpe) was launched on 1 April 2023 with the aim of creating incentives for trades, planning offices and energy consultants to plan and install heat pumps. The programme promotes the training of specialised staff in the field of heat pumps in existing buildings. In addition, together with the social partners, consideration will be given to whether and to what extent training content/qualifications are missing from the training regulations and the regulations for the master craftspeople’s examination, and to what extent the provision of such skills can be integrated into formal education and training.

- **Optimising existing heating systems**: In order to achieve a more efficient heat supply in existing buildings, it is necessary to optimise existing heating systems in the short term to such an extent that significant savings potentials in fossil energies can be realised even in the short term. Hydraulic balancing, for example, optimises the heat distribution system. Significant energy savings can thus be achieved at low cost and with manageable effort. Savings can also be achieved through other non-investment measures and optimised settings. The Ordinance on the Security of Energy Supply by Means of Measures Effective in the Medium Term (Verordnung zur Sicherung der Energieversorgung über mittelfristig wirksame Maßnahmen, EnSimiMaV), which was adopted by the Federal Cabinet on 24 August 2022, requires owners of gas-fired buildings in a temporary ordinance to carry out a one-off heating system check and simple optimisation measures. In addition, hydraulic balancing must be carried out in large buildings with gas central heating (both residential and non-residential buildings). The regulations will be consolidated in an adapted form with the current amendment to the Buildings Energy Act (GEG). The new section 60b (heating system inspection) and section 60c (hydraulic balancing) of the Buildings Energy Act will come into force on 1 October 2024 and will replace the EnSimiMaV.

- **EU Energy Performance of Buildings Directive (EPBD) and Minimum Energy Performance Standards (MEPS)**: The Minimum Energy Performance Standards are an important tool for achieving the climate targets. The Buildings Energy Act (GEG) already provides for minimum performance standards for certain trigger points such as the renovation or replacement of a heating system. They improve plannability on the way to a climate-neutral building stock, while their further development is to be based on the requirements of the EU Buildings Directive (EPBD), which is still under negotiation. In these negotiations, we are advocating ambitious renovation rates for the entire building stock, while excluding mandatory renovations of individual residential buildings. We are systematically expanding the conditional requirements already laid down in the Buildings Energy Act (GEG). The exact form of the EPDB is not yet clear due to the ongoing negotiations. Once the EPBD has been adopted, its provisions are to be transposed into German law as quickly as possible. At the same time, care must be taken to ensure that technical feasibility and social acceptability are given due consideration. In addition, future minimum energy efficiency

standards for buildings must be geared towards achieving greenhouse gas neutrality by 2045.

3.3. Industry

Energy-intensive industries in particular will face major challenges in the coming years. Steel, chemicals and cement are the industries that cause the highest greenhouse gas emissions, while at the same time providing essential primary materials for Germany as an industrial hub and for the value chains. It is therefore crucial that the upcoming reinvestment windows will be used for a climate-friendly transformation and the application of innovative, climate-neutral technologies of the future, so that the existing jobs and value chains can be protected and new ones can be created. For Germany to become a climate-neutral industrial hub, a fundamental transformation of industrial production processes is required that is based on technical and digital solutions for decarbonisation, electrification, the use of hydrogen, flexibilisation, as well as energy, material and resource efficiency, circular economy, lightweight construction and the replacement of fossil-based raw materials with bio-based ones. To achieve this transformation, an appropriate regulatory framework and incentives are needed. At the same time, targeted support measures must be taken for the industries and regions affected by the structural change. Even in the age of climate neutrality, industry remains the engine and guarantor of innovation, prosperity and jobs in Germany as an industrial hub.

The ambitious design of the European Emissions Trading Scheme (EU ETS) as part of the “Fit for 55” programme will create incentives for significant greenhouse gas savings in the industrial sector and increase the effectiveness of funding measures. The EU Innovation Fund (thanks to additional funding from the Carbon Border Adjustment Mechanism (CBAM) and higher revenues from the EU ETS) will provide additional impetus for climate-neutral production processes, and the CBAM will help minimise the risk of carbon leakage.

Measures in industry

- **Package of industrial decarbonisation measures**
    - **Funding programme for decarbonisation in industry (investment funding):** For energy-intensive industries that produce process-related emissions which are particularly hard to abate, especially in the steel, cement, lime, chemicals and glass sectors, funding will be provided for research and development, testing of results in experimental or pilot plants and investment in industrial-scale decarbonisation facilities.
    - **Carbon contracts for difference (CCfDs):** CCfDs aim to encourage companies to switch to innovative climate-friendly technologies and production methods at an early stage by mitigating risks and reimbursing additional costs based on a non-bureaucratic auctioning process, thus kick-starting the much-needed market transformation: carbon contracts for difference provide an incentive to develop and build the necessary technologies and infrastructure in Germany already now. Indirectly, this will lead e.g. to the establishment of hydrogen production facilities and pipelines, expertise in the financing, construction and operation of climate-friendly facilities and markets for climate-friendly end products (green lead markets). Carbon contracts for difference are therefore not only a key instrument for climate change mitigation, but also for Germany’s position as a hub

for industry and innovation. The funding programme will initially focus on processes in primary industries with high process-related emissions such as the steel, cement, paper and glass industries. In principle, the programme is open to all technologies within the defined targets. Projects can also include facilities for the capture, use and storage of unavoidable process-related CO_2. Funding is provided for the cost difference between climate-friendly and conventional production processes for industrial goods. The carbon contracts for difference are designed in such a way that the company can expect to make surplus payments to the state in the course of the funding. The first preparatory procedure ended on 7 August 2023. The subsequent bidding process will take place before the end of 2023, so that the first carbon contracts for difference can be concluded soon. Companies receiving funding under a carbon contract for difference are generally required to submit a human resources development plan to ensure that the interests of employees are taken into account in the technological transformation.

- **Carbon Management Strategy (CMS):** The CMS aims to clarify the extent to which Carbon Capture and Storage (CCS) and Carbon Capture and Utilisation (CCU) can be embedded in a portfolio of other measures to achieve the Federal Government's binding climate targets (taking into account that reducing and avoiding CO_2 emissions as well as increasing efficiency remain the top priority) and can thus contribute to the decarbonisation of industry and waste management. The first step is to identify sources of CO_2 capture, potential uses of CO_2 in a circular carbon economy, requirements and capacities for CO_2 storage, possible applications for CCS and CCU, and the legal and economic framework (including CO_2 transport infrastructure) for a successful launch in Germany. The CMS is currently being prepared and will be available in the second half of 2023. If necessary, the Federal Government will adapt the regulatory framework accordingly.

- **Important Project of Common European Interest (IPCEI) on Hydrogen**: Integrated projects along the entire hydrogen value chain will be identified as strategically relevant and funding will be provided for green hydrogen production, infrastructure, industrial use and mobility, among others.

- **EU Innovation Fund:** Innovative projects in the fields of renewable energies, hydrogen and decarbonisation will be funded on the basis of the principle of excellence. The Federal Ministry of Economic Affairs and Climate Action (BMWK) supports German applicants through the National Contact Point (NCP).

- **Lead markets for climate-friendly products:** A concept for the labelling of climate-friendly primary materials and the creation of lead markets for climate-friendly primary materials such as steel and cement is being developed. To this end, we are creating incentives for lead markets and evaluating different instruments such as labelling, preference for these products in public and private procurement, and standards and quotas. The approach will build on the results of the ongoing cross-sectoral stakeholder process with industry [producers and purchasers], academia and civil society. We rule out overcompensation through the simultaneous use of carbon contracts for difference and privileges within the green lead markets such as in green procurement.

- **Development of electrolysers**: The aim is to incentivise the development of electrolysis capacity in Germany, provide a significant boost to companies and thus help achieve the

target of 10 GW of electrolysis capacity by 2030 set out in the Coalition Agreement and the National Hydrogen Strategy Update (NHS).

- **Investment premium:** The Growth Opportunities Act (Wachstumschancengesetz) introduces an investment premium for climate change mitigation to support enterprises in the transformation process and facilitate climate-friendly business practices. In addition, the reintroduction of declining balance depreciation for movable assets will provide important investment incentives for a more climate-friendly capital stock.

- **Technology transfer programme for lightweight construction (Technologietransfer-Programm Leichtbau):** This R&D programme provides funding for material-efficient manufacturing processes, the development of new materials and the substitution of greenhouse gas-intensive materials in the field of lightweight construction. An amendment planned for the fourth quarter of 2023 will focus the funding programme even more on material efficiency and circular economy.

- **"Federal funding for energy and resource efficiency in the economy" (Bundesförderung Energie- und Ressourceneffizienz in der Wirtschaft, EEW)**: The EEW programme was expanded in May 2023 to include funding for the use of deep geothermal energy to replace fossil process heat in industrial companies.

- **Strengthening market surveillance in ecodesign and energy labelling:** The conformity of products with the requirements of the Ecodesign Directive will be improved, e.g. by further developing the Act on Ecodesign Requirements for Energy-Using Products (Energieverbrauchsrelevante-Produkte-Gesetz, EVPG). The planned amendments include adjustments to the administrative procedure and the provisions on fines, among others, and, if necessary, the extension of the access rights for the market surveillance authorities.

- **Extension of the Ecodesign for Sustainable Products Regulation (ESPR):** The ESPR will replace the current Ecodesign Directive (probably from 2024). Its scope will then cover all physical products except for food, animal feed, medicinal products for human and veterinary use, live plants and animals. The draft Regulation itself does not contain any ecodesign requirements but sets the general framework for the adoption of future ecodesign requirements by identifying the product aspects (e.g. durability, repairability, resource use or efficiency) that can be improved by such requirements.

- **Accelerated development of digital and data-based ecosystems for a climate-neutral industry:** A coordinated approach to create an interoperable and sovereign data ecosystem is essential in this context – in particular to ensure the participation of and transfer for SMEs. The funding measure for the digitalisation of vehicle manufacturers and supply industry and of industrial supply chains (Fördermaßnahme "Digitalisierung der Fahrzeughersteller und Zulieferindustrie und industrieller Lieferketten") combines the two elements of application-oriented research and development (R&D) and transfer. The aim is to stimulate the development, establishment and initial scaling of an industry-wide growth of data-based ecosystems along the value chains.

- **Funding programme for an industrial bioeconomy (Förderprogramm Industrielle Bioökonomie):** This measure supports companies in scaling up and transferring their bio-

based products and processes to the market, with the aim of harnessing the innovation and value creation potential of the bioeconomy in industrial applications and industrial supply.

- **Extension of IPCEIs for battery cell production:** The IPCEIs for battery cell production will be extended with a focus on sustainable production of fourth-generation battery cells, highly efficient production processes (Industry 4.0 in battery production) as well as sustainable raw material extraction and large-scale battery recycling.

- **Funding programme for transformation technologies**: In pursuit of Europe's strategic, technological and energy policy sovereignty, targeted temporary funding will be provided for areas that are strategically relevant for the development of production sites in Europe. In the short term, this applies in particular to the production of solar panels and related key components along the value chain within the scope of the options provided by the EU Temporary Crisis Framework for State Aid Measures (TCTF) for Transformation Technologies.

- **Hedging instruments:** There is a temporary need for extended instruments (financing, securities, guarantees) in order to minimise the specific risks for manufacturers in the context of wind energy development and grid components. Taking into account the EU Temporary Crisis Framework for State Aid Measures and the Federal Budget Framework, new instruments and options for adaptation within the existing federal instruments will be examined.

3.4. Transport

In its deliberations on climate action in the transport sector, the Federal Government will continue to ensure mobility for society, provide for affordable, demand-driven, sustainable, efficient, barrier-free, intelligent, innovative and socially just mobility, guarantee the security of the logistics chains and strengthen Germany's competitiveness in key mobility technologies.

Today's greenhouse gas emissions from the transport sector are to a large extent the result the structures created by decades of using relatively cheap fossil oil. These conditions have changed and need to be adequately addressed. Additional measures must be designed in such a way that they lead to the achievement of climate targets in the transport sector and secure Germany's future as an industrial hub with a high employment level, without losing sight of the current challenges such as the energy crisis and a possible economic downturn. In this context, the Federal Government will ensure that mobility remains affordable, especially for disadvantaged social groups.

An integral part of a climate-friendly transport sector is the conversion to alternative drive technologies in road transport. The conversion to alternative drive technologies will make affordable individual mobility possible also in the future and herald a new era for Germany as an automobile nation. The Federal Government, car manufacturers and trade unions have jointly set themselves the goal of having 15 million battery-electric vehicles (BEVs) on German roads by 2030. The Federal Government will do everything necessary to achieve this goal. In particular, this requires a rapid and comprehensive expansion of the charging infrastructure for BEVs. Charging must be as easy as refuelling. The more charging and fast-charging points there are, the more attractive battery electric driving will become. Achieving this goal will require a significant increase in the number of new BEV registrations over the next years. The Federal Government, together with industry, will closely monitor the developments and decide on further measures, if necessary.

Measures in the transport sector

Rail transport, strengthening urban and regional transport

In the coming years, the Federal Government will make substantial funds available for the modernisation and expansion of the rail network, with a clear focus on increasing the capacity of the core network.

- **Boosting investment in railways:** The Federal Government will speed up the modernisation of the rail network and the necessary expansion of capacities for passenger and freight transport, thus pushing ahead with the implementation of the "Deutschlandtakt" (a nationwide synchronised timetable). Capacities for combined transport will be modernised and expanded. To meet its investment requirements up to 2027, Deutsche Bahn will need around €45 billion, which will be provided, as far as financially possible, not least by using part of the proceeds from the CO_2 surcharge on the HGV tolling scheme, which must be used primarily for investment in railways.

- **Strengthening and digitalising the existing rail network:** The initiative to strengthen and digitalise the existing rail network aims to ensure that the capacity for passenger and freight transport on the railways can be increased and promotes the modal shift of transport to the railways.

- **Strengthening rail freight transport:** The aim is to achieve a 25% market share for rail freight transport by 2030. To this end, the proportionate funding of track access charges for rail freight will be continued, incentives for investments from this sector in the testing and rollout of innovations in the fields of digitalisation, automation and vehicle technology in rail freight will be increased, and the burden on single-wagonload transport will be reduced.

- **Rail digitalisation package:** In addition to the measures already adopted for the digitalisation of the railways, it is intended, firstly, to significantly increase the utilisation of federal capacities and infrastructure by introducing digital capacity management, secondly, to expand the ETCS (European Train Control System) vehicle equipment through the current pilot project at the Stuttgart digital hub (Digitaler Knoten Stuttgart, DKS) of the digital rail Germany starter package (Starterpaket Digitale Schiene Deutschland, DSD) and, thirdly, to introduce the technologies of the digital railway system (Digitales Bahnsystem, DBS).

- **Introduction of the *Deutschlandticket*:** Introduction of a ticket valid throughout Germany for the use of local and regional public transport at the current price of €49 per month from 1 May 2023 with the possibility of a discount from employers as a job ticket. Such an offer makes it easier and cheaper to use public transport and opens up the potential for a shift to climate-friendly modes of transport, also for medium distances in regional transport.

- **Improvements to the BahnCard 100:** The private share of the BahnCard 100 can already be compensated by the employer. The Deutschlandticket will now be integrated in the BahnCard 100 at no extra cost, so that it can also be used for local and regional public transport throughout Germany.

The Federal Government will take the following additional measures to improve local and regional public transport and the integration of different modes of transport:

- **Strengthening terminals for combined transport:** The Federal Government will support the expansion of terminals for combined transport at selected hubs operated by public companies that are not included in the current requirements plan.

- **Expansion of the cycling infrastructure initiative (Ausbauinitiative Radverkehrsinfrastruktur):** The package of measures for an expansion of cycling infrastructure - active mobility initiative will promote and finance the expansion of cycling infrastructure, including the necessary communication and accompanying measures, as well as pedestrian traffic. In particular, the strategic and operational link between active mobility and public transport will be significantly strengthened by the *Deutschlandticket*.
  The “expansion of cycling infrastructure - active mobility initiative" consists of three packages of measures:
  - Implementation of the cycling funding programmes in accordance with the National Cycling Plan 3.0
  - Expansion of the initiative for bicycle parking at stations
  - Promotion and structural support of pedestrian traffic

- **Expansion and quality initiative for local and regional public transport:** By introducing the *Deutschlandticket*, the Federal Government and the *Länder* have set the course for a significant increase in demand for local and regional public transport services. In the coming years, the aim will be to further expand local and regional public transport services especially in suburban and rural areas. The Federal Government is already providing substantial funds for investment and operation in the coming years.

- **Climate-neutral buses:** Existing funding for climate-neutral buses, including charging infrastructure, will be extended until 2028.

- **Additional model projects in public transport:** The third call for the funding programme for "model projects to strengthen local and regional public transport" (Förderprogramm “Modellprojekte zur Stärkung des ÖPNV”) will fund additional projects with the aim of increasing the attractiveness and use of local and regional public transport and encouraging a shift away from private motorised transport.

- **Funding for alternative powertrain technologies for rail vehicles:** Funding will be provided for the procurement of rail vehicles with innovative low-/zero-emission powertrain technologies in local rail passenger and freight transport, as well as for the development of the refuelling or charging infrastructure required for their operation.

<u>Increased use of the potential of synthetic fuels:</u>

- **Approval of pure e-fuels:** Climate-friendly fuels (in particular e-fuels) have an important role to play for achieving climate neutrality in the transport sector, especially in areas where it is difficult to switch directly to the use of renewable electricity. Incentives will therefore be given in the short term to launch the production and use of climate-friendly fuels. To this end, legal and administrative regulations that conflict with the expansion of their use will be removed. It will be possible to sell e-fuels at petrol stations in future. At the same time, an unintentional subsidisation of paraffinic diesel fuels from fossil sources or critical biogenic feedstocks will be excluded.

- **E-fuels dialogue and roadmap for climate-neutral fuels:** The Ministry for Digital and Transport (BMDV) is meeting with the e-fuels industry, feedstock producers, the mineral oil trade, representatives of the aviation and shipping industries, automobile manufacturers and importers for an e-fuels dialogue to identify further restrictions on the approval, distribution and use of e-fuels that should be removed by the Federal Government or the industry as far as possible. On 4 September 2023, the international e-fuels conference in Munich discussed the challenges and options for the rollout of e-fuels with stakeholders and transport ministers from the EU and third countries. A continuation is planned for 2024. A roadmap for the rollout of synthetic and climate-neutral fuels will be presented as part of an e-fuels strategy.

- **New registrations of e-fuel vehicles:** The Federal Government has successfully committed at European level to ensure that vehicles that run exclusively on e-fuels can continue to be registered in the European Union after 2035. The European Commission will define the planned implementation steps as part of the adoption of the revised Regulation on CO_2 Emission Standards for Heavy-Duty Vehicles.

- **Research funding and cooperation for the development of e-fuels:** Funding will be provided for research into the further technical development and mass production of e-fuels. The importance of e-fuels for climate change mitigation and their potential for industrial-scale production from renewable energies is even greater outside Europe, particularly in Africa and South America. For this reason, projects to support the e-fuels infrastructure are being expanded, and cooperation in this sector will be initiated to ensure the fastest possible launch of e-fuels production from additional renewable energies in partner countries both for domestic use and for export to Europe. It must to ensured that conflicts of use and negative spill-over effects on local communities, especially vulnerable groups, are avoided and that local value creation is strengthened.

<u>Conversion to alternative drive technologies for heavy-duty vehicles:</u>

- **CO_2 surcharge on the HGV toll:** On 1 December 2023, a CO_2 differentiated HGV tolling scheme will be introduced in the form of a CO_2 surcharge of €200 per tonne of CO_2. Zero-emission trucks will be exempt from the toll until the end of 2025. After that, zero-emission vehicles will be charged at only 25% of the partial toll rate for infrastructure charges plus the partial toll rates for noise and air pollution.

- **HGV toll for 3.5 tonnes and above:** The mandatory HGV toll limit will be lowered on 1 July 2024, with all commercial vehicles above a technically permissible maximum mass of 3.5 tonnes being included in the toll. The technical implementation will take place as soon as possible. Skilled craft businesses will be exempted.

- **Development of basic infrastructure networks for battery-electric and hydrogen HGVs:** The forward-looking development of an initial network of charging and hydrogen refuelling infrastructure for heavy-duty vehicles by 2025 will be guaranteed (calls for tenders will start in the third quarter of 2023). For battery-electric trucks, a demand-driven basic network will be established along the federal motorways. An initial network of hydrogen refuelling stations will be established along the TEN-V corridors in Germany.

- **Funding for infrastructure at depots and hubs:** To accelerate the rollout of electric heavy-duty vehicles, the development of infrastructure for charging and refuelling HGVs with hydrogen at depots and other hubs in logistics chains will be funded.

- **Adoption of an ambitious EU Alternative Fuel Infrastructure Regulation (AFIR):** The Federal Government supports ambitious targets for the deployment of infrastructure for heavy-duty vehicles at European level and therefore supports the agreement reached at EU level on the proposed Regulation, which, among other things, sets binding targets for the deployment of refuelling and charging infrastructure for heavy-duty vehicles.

- **Revision of the Regulation on CO_2 Emission Performance Standards for Heavy-Duty Vehicles (trucks):** The Federal Government will commit to ambitious reduction targets for 2030 and 2035 as part of the revised CO_2 emission performance standards for heavy-duty vehicles in line with the climate targets and technical and economic feasibility.

- **Expansion of funding for HGVs ("environmental bonus for HGVs"):** The funding for light and heavy commercial vehicles with alternative, climate-friendly drive systems and the associated refuelling and charging infrastructure will be extended until 2028.

- **Net-zero-emission buses and public fleets:** The requirements of the Clean Vehicles Procurement Act (Saubere-Fahrzeuge-Beschaffungsgesetz, SaubFahrzeugBeschG) will be amended so that from 2030, only net-zero-emission vehicles (especially urban buses) can be procured through public tenders. This will not apply to special-purpose vehicles.

- **Funding for special vehicles:** The "special programme for special transport" (Sonderprogramm Sonderverkehre) will accompany the necessary support for the market preparation and launch in the field of special transport and for special vehicles.

- **Funding for efficiency measures for trailers:** The "fleet renewal programme for heavy-commercial vehicles" (Flottenerneuerungsprogramm für schwere Nutzfahrzeuge) will in future be designed as a pure component funding scheme. In particular, the purchase of additional CO_2-reducing equipment for new trailers and semi-trailers will be funded. This can unlock considerable efficiency reserves and reduce energy consumption.

- **Strengthening innovation clusters:** The projects for the cross-technology testing of alternative drive technologies (battery-electric drives with stationary and dynamic charging, hydrogen fuel cells) in the interaction of vehicles and infrastructure on longer corridors will be continued.

<u>Accelerating climate neutrality for passenger cars:</u>

- **Master Plan for Charging Infrastructure:** The "Master Plan for Charging Infrastructure II" (Masterplan Ladeinfrastruktur II) ensures that the deployment of charging infrastructure to meet the climate targets is achieved in cooperation with the ministries, *Länder*, municipalities and the automotive and energy industry. If the development of the charging infrastructure is not progressing fast enough, the Federal Government will make adjustments through the dense monitoring mechanism.

- **Short-term measures to strengthen the deployment of charging points**:
  - **Forward-looking expansion of distribution grids:** Distribution grid operators will be required by law to expand their grids in such a way as to enable the smooth and convenient charging of 15 million battery-electric vehicles (BEVs) by 2030.
  - **Exploiting additional potential for the deployment of charging points:** The Federal Ministry for Economic Affairs and Climate Action (BMWK) and the Federal Ministry for Digital and Transport (BMDV) will examine how additional potential can be exploited in the approval and grid connection procedures for charging points (e.g. calibration law, digital application procedures) and how grid connection fees can be cut.
  - **Fast charging points at fuelling stations:** The Federal Government will impose a statutory obligation requiring fuelling station operators to install at least one fast charging point per fuelling station within five years. There will be special rules for operators of small fuelling stations.
  - **Infrastructure for charging points in buildings:** The Federal Government will amend the Electric Mobility Infrastructure in Buildings Act (Gebäude-Elektromobilitätsinfrastruktur-Gesetz, GEIG) to implement the requirements of the amended EU Energy Performance of Buildings Directive (EPBD), with the aim of making the requirements for the charging point infrastructure in residential and commercial buildings much more ambitious. Car park operators will be allowed to install charging points.
  - **Funding for charging infrastructure and grid connection:** By mid-2024, the Federal Ministry for Digital and Transport (BMDV) will set up funding programmes for publicly accessible charging infrastructure in municipalities, the personal use of electricity for BEVs, commercially used fast-charging infrastructure and charging infrastructure for multi-occupancy buildings.

- **CO_2-neutral vehicles for car-sharing fleets from 2026:** Accelerating the conversion of car-sharing fleets to CO_2-neutral drive technologies can make a further contribution to reducing CO_2 emissions from the transport sector. To this end, the Federal Government will make CO_2 neutrality a criterion for the approval of car sharing fleets from 2026 in section 5 (4) of the Car-Sharing Act (Car-Sharing Gesetz, CsgG). The regulation should provide for an increasing share over time.

- **Funding for municipal and commercial fleets:** The "special programme for fleet electrification" (Sonderprogramm Flottenelektrifizierung) will promote the conversion of municipal and commercial fleets and mobility service providers to CO_2-neutral drive technologies. Municipal fleets and municipal enterprises (public utilities, etc.) can make a visible contribution to CO_2 savings.

- **Clear labelling when buying a car:** The Energy Consumption Label for Passenger Cars ("climate label") will be reformed to provide a much clearer indication of the climate impact over the life cycle of the vehicle through CO_2 pricing and vehicle taxation. This will be accompanied by a campaign launched by the Federal Government to promote the purchase of climate-friendly cars.

- **Adoption of an ambitious EU Alternative Fuels Infrastructure Regulation (AFIR, passenger cars and light-duty vehicles section):** The Federal Government supports the Eu-

ropean Commission's joint proposal to set binding targets for the deployment of infrastructure for passenger cars and light-duty vehicles, among others.

- **Taxation according to the climate impact:** The Coalition agrees that the taxation of fuels should in future take greater account of their environmental and climate impact. Climate-neutral fuels should therefore be subject to tax rates that provide a particular incentive for innovation and investment. The Federal Government therefore supports the European Commission's proposal for a revised Energy Taxation Directive as part of the "Fit for 55" package, which would apply lower minimum tax rates to renewable and advanced biofuels and e-fuels and will develop a corresponding concept for the taxation of climate-neutral drive technologies. Income and vehicle taxes should take account of climate-neutral vehicle operation in the taxation of company cars.

Aviation and shipping:

- **National Action Plan for Climate-Friendly Shipping:** Under the leadership of the Federal Ministry for Digital and Transport (BMDV), an Action Plan for Climate-Friendly Shipping is being developed for national maritime and inland waterway transport serving as a strategic framework in a broad participatory process. It includes a roadmap for the rollout of climate-friendly ship propulsion systems and fuels across all technologies, and bundles and develops funding programmes and applied research. The Action Plan is intended to improve the competitiveness of the German maritime and inland waterway transport sector and to support international activities at CCNR, EU and IMO levels.

- **"Federal funding of shore-side power supply systems":** Funding will be provided for shore-side power supply systems for seagoing and inland waterway vessels, particularly in the major seaports of Hamburg and Bremen, and on the Rhine.

- **Climate-neutral aviation:** The "federal aviation research programme" (Luftfahrtforschungsprogramm, LuFo) aims to develop aviation technologies based on climate-neutral propulsion systems up to 2026. The technologies developed under LuFo Climate will help to significantly reduce the climate impact of aviation as early as 2030 - initially in the regional aircraft class by 2028.

- **Climate-friendly airports:** In order to exploit the potential for greenhouse gas reductions at airports, the availability of infrastructure for the regenerative ground powering of aircraft on apron parking positions will be supported.

- **Maritime research programme and climate-neutral ships:** The maritime research programme, with its basic idea of strengthening the German maritime industry, makes an important contribution to achieving climate-neutral shipping. The revision of the maritime research programme will include a new funding priority for climate-neutral ships.

3.4. Digitalisation

- **Avoiding commuting through digitalisation:** The Covid 19 pandemic has led to greater use of the potential for mobile working and working from home, and their use has been extended where possible. These opportunities should be maintained. To this end, the ex-

pansion of the infrastructural basis must be promoted. In order to achieve the goal of nationwide fibre-optic coverage and state-of-the-art mobile communications standards, the market process will be supported and accompanied by the Federal Government's "gigabit strategy". The Federal Government is examining whether and to what extent the attractiveness of working from home can be increased for companies and employees in the long term by adapting the regulatory framework.

- **Digitalisation of municipal transport systems:** The funding guideline for the "digitalisation of municipal transport systems" (Förderrichtlinie "Digitalisierung kommunaler Verkehrssysteme") will be updated and will support the connectivity of mobility systems, intelligent traffic control systems, multi-provider booking and payment systems, ride-sharing and on-demand mobility services, the Mobility-as-a-Service (MaaS) scheme and the availability and use of environmental and mobility data.

- **Research on the application of AI methods:** The funding of research projects with a focus on the application of AI methods for an innovative digital transformation in mobility, other sectors and cross-sectoral connectivity will continue on the basis of a new research programme.

- **Increasing efficiency through automated and connected driving:** Savings potentials from the increasing equipment of road vehicles with Level 2 to 4 automation functions will result from the rollout of these vehicles (once the legal basis is in place).

Spatial and transport planning, mobility management:

- **Modernisation of the road traffic law**: The Road Traffic Act and the Road Traffic Regulations will be adapted to take account of the objectives of climate change mitigation and environmental protection, health and urban development, as well as traffic flow and safety, in order to give the *Länder* and municipalities room for manoeuvre in their decisions.
- **Support for sustainable urban mobility plans:** Municipalities will be supported through a funding programme to develop and implement sustainable mobility plans.

- **Continuation of the funding for corporate mobility management (Betriebliches Mobilitätsmangement, BMM)**: BMM is a challenging task, for which small and medium-sized enterprises (SMEs) in particular need financial and organisational support. The Federal Ministry for Digital and Transport (BMDV) is therefore continuing the successful funding of the corporate mobility management with a new thematically scaled funding programme (funding guideline published on 2 May 2023).

3.5. Agriculture

Measures in the agricultural sector

- **Climate- and animal-friendly livestock farming and a sustainable food chain:** The Coalition Agreement formulates the Coalition's mission statement on agriculture as follows: "Sustainable agriculture serves the interests of farms, animal welfare and nature alike and is the basis for a healthy diet". This mission statement also applies to the necessary transformation of livestock farming. Livestock development has to be based on the land area and

be in line with the objectives of climate change mitigation, water protection and emission control (ammonia/methane).

- **Improved availability of data on agricultural fertilisation:** An amendment to the Fertiliser Act (Düngegesetz, DüngG) in 2023 and the planned introduction of a monitoring ordinance to review the effectiveness of the Fertiliser Application Ordinance in 2024 aim to create the conditions for a digital origin system for nutrients.

- **Examining the adaptation of quality parameters for the evaluation of baking wheat and establishing them with agricultural product processors in order to reduce nitrogen quality applications in baking wheat production:** In order to reduce nitrogen fertilisation of bread cereals, a discussion process is taking place on how a modified value determination of baking wheat and a review of the effectiveness with regard to nitrogen fertilisation and the baking quality is possible. To this end, discussions have been resumed under the leadership of the Federal Ministry of Food and Agriculture, BMEL, with the agricultural product processors (collecting trade, mills, bakeries), agricultural associations (DBV, BÖLW, DLG et al.), plant breeding and other federal institutions (MRI, JKI, TI, BSA) as well as the environmental side (Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection, BMUV), with the aim of developing a concept that is acceptable to all stakeholders along the value chain.

- **Further development of the funding programme to increase energy efficiency:** In addition to increasing energy efficiency, more funding will be made available for the use and storage of renewable energy, especially the direct use of electricity, in stationary applications (e.g. thermal energy) and for the conversion of mobile machinery and equipment in agriculture to alternative drive technologies (including battery-electric drives, fuel cells, advanced biofuels, biomethane and, where appropriate, adapted agricultural technology).

- **Development of a food strategy by the Federal Government:** The Coalition Agreement provides for the development of a food strategy, including measures to promote a more plant-based diet.

- **Reducing food waste:** The Federal Ministry of Food and Agriculture (BMEL) aims to halve food waste in all sectors from primary production to private households by 2030. To this end, the “National Strategy for Food Waste Reduction” (Nationale Strategie zur Reduzierung der Lebensmittelverschwendung) is being pushed forward. As around 60% of the approximately 11 million tonnes of food waste is generated in households, resource- and climate-friendly behaviour by citizens must become the norm. The aim of the “Too good for the bin!” (Zu gut für die Tonne!) campaign is to change behaviour in order to reduce food waste through target-group-oriented offers.

3.6. Land use, land use change and forestry (LULUCF)

Measures in the LULUCF sector

- On 29 March 2023, the Federal Government adopted the **Action Programme for Natural Climate Action** (Aktionsprogramm Natürlicher Klimaschutz, ANK), which aims to protect, strengthen and restore ecosystems. The programme combines climate change mitigation

with nature conservation and ensures, through a variety of measures, that degraded ecosystems become healthy, resilient and diverse again. It includes measures such as:

- **Expanding the forest area for climate change mitigation and biodiversity:** The Federal Government and the *Länder* will work together to identify and implement options for afforesting suitable areas on as large a scale as possible, if necessary in pilot regions, and in particular in ways that promote biodiversity. In return, the relevant funding section of the Joint Task for the "Improvement of Agricultural Structures and Coastal Protection" (Gemeinschaftsaufgabe "Verbesserung der Agrarstruktur und des Küstenschutzes, GAK) will be phased out in close coordination with the *Länder*.

- **Creating species-rich and climate-resilient forests through reforestation and forest conversion:** The Federal Government has earmarked further programme expenditure for forest conversion and reforestation. Provided that there are no constitutional or budgetary reasons to the contrary, this could be achieved through funding of the same quality and quantity in a joint implementation and financing structure with the *Länder* within the ANK framework. In return, the corresponding funding sections of the GAK will be phased out in close coordination with the *Länder*.

- **Financial incentives for additional climate change mitigation and biodiversity services in forests:** In addition to the existing funding programme for "climate-adapted forest management", which speeds up the conversion of forests into climate-adapted forests by the funding of targeted measures, it is planned to develop a supplementary funding instrument that creates targeted financial incentives for achieving desirable conditions such as additional structural diversity and biodiversity in forests that are already closer to their natural state, and thus also aims at partially extensive forest management.

- **Protecting old-growth, near-natural beech forests:** According to the Coalition Agreement, the Federal Government pursues the common goal of "stopping the felling of old-growth, near-natural beech forests in public ownership". As a first step, this goal will be implemented on land owned by the Federal Government. The contribution of the other public forest owners, i.e. the *Länder* and municipalities, will be implemented in an "alliance of volunteers". In addition, the possibilities of extending this objective to privately owned forests will be examined.

- **Climate Wilderness (KlimaWildnis):** The programme to conserve small wilderness areas in forests, peatlands, floodplains, coasts, mountains, former military training areas and post-mining landscapes will be relaunched.

- **Promoting near-natural areas:** In the interests of natural climate change mitigation, funding will continue to be provided for carbon storage measures in the agricultural landscape that also has a positive effect on biodiversity, a high degree of permanence, good verifiability, adequate additionality and low leakage effects as part of the Joint Task for the "Improvement of Agricultural Structures and Coastal Protection" and the Action Programme for Natural Climate Action.

- **Accelerating the rewetting of peatlands:** In order to accelerate the measures already adopted, the Federal Government will, in the short term, push ahead with federal funding measures for climate change mitigation through the protection of peatlands. The Federal

Government has adopted the National Strategy for the Protection of Peatlands (Nationale Moorschutzstrategie) and will rapidly start with its implementation. In addition, it will conclude appropriate agreements on peatland protection with the *Länder* as part of the acceleration of planning and approval procedures, review the planning law instruments together with the *Länder* with the aim of giving greater weight to peatland protection in specialist and general spatial planning, establish a pre-emptive right for the public sector in respect of peatland soils, and initiate a federal call for tenders for the purchase of specific areas in order to promote rewetting projects.

- **Strengthening and promoting urban trees, urban forests and forest gardens:** This new investive programme aims to promote the planting of trees and new urban forests for the purposes of climate adaptation and the promotion of biodiversity within the boundaries of the Federal Government's constitutional right to manage public finances.

- **Strengthening the ecological management of green spaces in municipalities:** This new funding programme aims to support municipalities in transforming the management of green spaces into an ecological management within the boundaries of the Federal Government's constitutional right to manage public finances.

- **Introducing and disseminating forest management particularly adapted to climate change**, that maintains and develops resilient, adaptable and productive forests. It helps improve biodiversity and contributes to climate change mitigation and other ecosystem services. To this end, the Federal Ministry of Food and Agriculture (BMEL) has launched the funding programme for “climate-adapted forest management".

- **Other measures to increase the resilience of terrestrial ecosystems:** Measures to increase the resilience of terrestrial ecosystems will include in particular

  - other funding programmes not listed in detail here, which will be implemented as part of the Action Programme for Natural Climate Action for the renaturation of ecosystems;

  - rapid implementation of the National Water Strategy adopted by the Federal Government on 15 March 2023 and establishment of a federal programme for “climate-related measures in water management and watercourse development”,

  - a funding programme for a national restoration plan in line with the European Union’s objectives for nature restoration;

  - a review of the legal basis for soil protection and, in particular, adaptation to the precautionary principle; and

  - reducing land consumption and soil sealing and making greater use of existing unsealing potential than in the past.

- **Improved greenhouse gas monitoring and reporting:** The accuracy and validity of emissions data and projection tools for reporting will be improved, using remote sensing for data collection, where possible. The authority to issue statutory instruments under Section 3a (3) of the Federal Climate Change Act (Bundesklimaschutzgesetz, KSG) is to be used to reg-

ulate the basis for the collection and reporting of greenhouse gas emissions data in the LULUCF sector. The draft statutory instrument is to be presented by the end of 2024.

- The **Joint Task for the "Improvement of Agricultural Structure and Coastal Protection (GAK)"** is already making various contributions to climate change mitigation and adaptation. This approach will be continued and strengthened in the future.

- **Strengthening communication and outreach:** All ongoing and new climate action measures in the LULUCF sector, especially natural climate action, will be presented and promoted more intensively in order to improve the acceptance and success of the measures.

- **Sustainable and regional value-added networks for wood as a raw material:** The Coalition Agreement provides for the implementation of a timber construction initiative to support regional value chains. The efficient and climate-friendly use of wood as a raw material will be promoted through model and demonstration projects, building on the Federal Government's function as a role model and pioneer in resource-efficient construction. In addition, relevant research and development projects will be promoted, knowledge transfer, advice and broad-based information for experts and consumers will be supported, and incentives will be created for sustainable and climate-friendly construction with wood and other renewable raw materials as well as other sustainable construction methods. To this end, the appropriate climate-related legal framework, regulations and decision-making basis will be further developed.

3.7. Cross-sectoral measures and measures for a socially just transformation

The effectiveness of climate action measures in the individual sectors depends crucially on whether the right regulatory framework is created at cross-sectoral level and whether the right answers are found to cross-cutting questions. This is why the Federal Government is taking a whole range of supporting measures, including communication, with regard to the Federal Government's function as a role model, the financial policy framework, planning and approval, efficiency, securing skilled labour, research and the challenges of a socially just transition. Only in this way can climate change mitigation succeed as a task for society as a whole.

Cross-sectoral measures

- **Climate-neutral federal administration:** The federal administration is to become climate-neutral by 2030 (including offsetting). A programme of measures in accordance with section 15 of the Federal Climate Change Act (KSG) will be presented in 2023. For the first time, it will include a climate footprint for the direct federal administration, which will then be updated annually.

- **Climate check:** Climate change mitigation is a cross-cutting task for the entire Federal Government. The Federal Government will introduce a climate check to assess the climate impact of Government bills and their compatibility with national climate targets. The Joint Rules of Procedure of the Federal Ministries (Gemeinsame Geschäftsordnung der Bundesministerien, GGO) will be amended accordingly.

- **Campaign to disseminate information on climate change mitigation in the energy transition:** The information and communication campaign "80 million together for the energy transition" (“80 Mio. gemeinsam für Energiewechsel”) (www.energiewechsel.de) is the key campaign of the Federal Ministry of Economic Affairs and Climate Action (BMWK) in the current legislative period and was launched in June 2022. In addition to the topics of energy saving and energy efficiency, the campaign will now focus in particular on the expansion of renewable energies.

- **Fiscal framework / sustainable finance:** The "Second Act Amending the Act Establishing a Special Energy and Climate Fund" (“zweites Gesetz zur Änderung des Gesetzes zur Errichtung eines Sondervermögens Energie- und Klimafonds”) turned the Energy and Climate Fund (Energie- und Klimafonds, EKF) into the Climate and Transformation Fund (Klima- und Transformationsfonds, KTF) in July 2022. In addition, based on the recommendations of the Advisory Council on Sustainable Finance, the Federal Government will implement a credible sustainable finance strategy with international reach.

- **Federal green bonds:** In order to expand the issuance of Federal green bonds and the required allocation of green expenditure, the responsible ministries will consider the need for a reliable and transparent reporting on the impact of the funding programmes set out here. In this context, the conditions will also be created to ensure transparency vis-à-vis investors.

- **Climate Club:** On 12 December 2022, the G7 heads of state and government established an open and cooperative international Climate Club and adopted terms of reference. The Climate Club is explicitly open to all countries that are committed to implementing the Paris Agreement. Many countries around the world have already joined the Climate Club. The Climate Club is to be fully operational by COP 28. The work in a multilateral task force is led by Germany together with Chile. The Climate Club is intended to serve as an inclusive intergovernmental forum for the ambitious implementation of the Paris Agreement and to accelerate climate action measures, also against the background of the need for a transition to a 1.5°C path and climate neutrality by mid-century. A particular focus will be on decarbonising industry and facilitating trade in climate-friendly products. The Climate Club also aims to limit the risks of carbon leakage, i.e. the shift of CO_2 emissions caused by emission-intensive products to countries with less ambitious climate policies. Developing and emerging countries that join the Club will be supported in their efforts to transform their industries towards climate neutrality.

- **Update of the National Hydrogen Strategy (NHS) 2023:** With the update of the National Hydrogen Strategy adopted by the Federal Cabinet on 26 July 2023, the 2020 NHS has been pushed forward with a view to achieving the climate target of greenhouse gas neutrality by 2045 and in the light of the changed situation on the energy markets caused by the Russian war of aggression against Ukraine. To this end, a specific target for 2030 has been defined, which essentially addresses four fields of action with corresponding measures: 1) provide incentives for an accelerated rollout of hydrogen and ensuring sufficient availability of hydrogen and its derivatives (through national production and imports), 2) implement the rapid development of an efficient hydrogen infrastructure, 3) establish hydrogen applications in the sectors (industry, transport, electricity and heat), and 4) create

a good regulatory framework for the rollout (e.g. acceleration of planning and approval procedures, R&D, regulatory framework at national, EU and international level).

- **Accelerating planning and approval procedures:** Accelerating the transformation of the energy, industry and transport sectors, and, in particular, the infrastructure measures needed to expand renewable energies, the electricity grid and hydrogen infrastructure, and expanding electrified railways can make a significant contribution to achieving the climate goals. In particular, faster and leaner administrative, planning and approval procedures are key prerequisites. Procedures need to be streamlined and digitalised, double checks avoided and existing barriers removed. In addition to the already adopted amendments in the Energy Industry Act (EnWG), the Federal Requirements Planning Act (BBPlG), the Grid Expansion Acceleration Act (NABEG), the Spatial Planning Act (ROG) and the Offshore Wind Energy Act (WindSeeG), further potential for acceleration is being examined in public procurement procedures, administrative court proceedings, the transport sector, the Federal Building Code (BauGB) and the Federal Immission Control Act (Bundesimmissionsschutzgesetz, BImSchG). Options for strengthening the infrastructure of public authorities, such as the use of innovative digital solutions, will also be examined. In addition, the Federal Government will take measures to speed up the modernisation and transformation of the transport system.

- **Abolishing the EEG levy (levy under the Renewable Energy Sources Act, EEG):** Bringing forward the full financing of the EEG levy from the Federal Budget or the Special Climate and Transformation Fund to 1 July 2022 provides significant relief and supports the electrification, particularly in the buildings and transport sectors, needed to meet the climate targets.

- **Avoiding malinvestment:** We will seek solutions, in dialogue with business, on how we can grant operating licences for energy infrastructure (power plants or gas pipelines) that runs on fossil fuels with legal certainty so that its operation can only continue with non-fossil fuels after 2045, without triggering an investment freeze, malinvestment and compensation claims.

- **Research and innovation:** In the Future Strategy for Research and Innovation (Zukunftsstrategie Forschung und Innovation), in particular Mission II, the Federal Government is implementing a systemic and impact-oriented research and innovation package for climate change mitigation which is open to all technologies.

- **Ensuring skilled labour for climate change mitigation:** The Federal Government's Skilled Labour Strategy launched on 12 October 2022 provides the regulatory framework for specific measures to secure skilled labour in economic sectors that are particularly relevant to climate change mitigation, and at the same time it brings together the Federal Government's cross-sectoral measures to secure skilled labour. “Make it in Germany", the Federal Government's portal for international skilled workers, provides employers in Germany and skilled workers from abroad with information on opportunities and requirements for the immigration of skilled workers, e.g. across sectors and countries, including special campaigns for IT and climate-relevant occupations and professions. In the Alliance for Education and Training, representatives from politics, business and trade unions will also focus

on STEM and climate-related occupations and professions in the dual vocational training system.

- **Climate action in the healthcare sector:** Cross-sectoral projects aim to enable institutions to identify energy-intensive areas, define reduction targets and develop mitigation measures so that stakeholders and institutions in the healthcare sector can develop measures tailored to climate change mitigation.

- **Climate action in the social sector:** The Federal Government will examine whether an adjustment of legal regulations or bureaucratic requirements is necessary to promote climate action in the social sector. Given the cost increases for social services and institutions resulting from the need to mitigate climate change, the Government recognises the importance of funding measures for this sector as well.

- **Shaping a socially just transition**

  - Social orientation of climate action policy: The Federal Government will establish a "social monitoring system for climate action". In a first step, the Federal Ministry of Economic Affairs and Climate Action (BMWK), in consultation with the Federal Ministry of Labour and Social Affairs (Bundesministerium für Arbeit und Soziales, BMAS), will be responsible for the design of the project, the external experts to be involved and the ongoing process, in particular with regard to reporting. In future, the social monitoring system will already be used to analyse the social distribution effects of climate action measures already in the course of their development of measures and to make the measures as socially just as possible.

  - Linking climate action with the goal of equal living conditions and actively involving the regions in the transformation process: The regional structural policy instruments will also make an important contribution to the transformation towards a socio-ecological market economy in the 20th legislative period. Rural regions in particular make a major contribution to the forthcoming transformation processes e.g. due to their availability of land and must be given the necessary support to meet the challenges ahead.

  - Federal STARK programme – programme to strengthen the transformation impetus and the new beginning in the coal regions and at the coal-fired power plant locations (Stärkung der Transformationsdynamik und Aufbruch in den Revieren und an den Kohlekraftwerkstandorten, STARK): This programme makes an important contribution to reducing greenhouse gas emissions in coal regions. It is in great demand and will therefore be expanded.

  - Exemption for financially weak municipalities from the obligation to bear their own share of the costs for staff specialising in municipal climate action and energy management: The aim is to give financially weak municipalities access to the “municipal climate action management” (kommunales Klimaschutzmanagement, KSM) and the “municipal energy management” (KEM). These municipalities receive full funding for the temporary employment of specialised staff within the funding.

- **CO_2 shadow price in investment decisions and in public procurement by the Federal Government:** For the application of the shadow price pursuant to Section 2 (3) of the

General Administrative Regulation on Climate (Allgemeine Verwaltungsvorschrift (AVV) Klima) in procurement practice, the Federal Government will determine the amount of the CO_2 shadow price to be used for the evaluation of alternatives (e.g. in economic feasibility studies) and will develop further specifications and guidelines for making investment decisions and for procurement by the federal administration by means of a ministerial order. This will promote the selection of climate-friendly solutions.

- **Energy Efficiency Act (EnEfG):** The Energy Efficiency Act is intended to create a cross-sectoral framework for increasing energy efficiency and to set energy efficiency targets for 2030 as well as indicative targets for final energy consumption in 2045 that are consistent with the level of ambition of the Climate Change Act (KSG). The aim is to support the implementation of the EED amendment (according to the Government's draft, e.g. by implementing the Federal Government's role model function and introducing an obligation for the public sector to save energy, obliging companies consuming more than 7.5 GWh of energy to introduce an energy management system (EMS), and specifying and publishing economic energy efficiency measures in specific plans (including the obligation to avoid, use and provide information on waste heat, the specification of efficiency and heat requirements for data centres and the establishment of a public register)). The draft Energy Efficiency Act was approved by the Federal Cabinet on 19 April 2023 and is expected to be adopted in autumn 2023.

- **Implementation of specific measures to promote the circular economy:** The circular economy and resource conservation can make a significant contribution to climate neutrality and decarbonisation. In parallel with the current process of developing the National Circular Economy Strategy (Nationale Kreislaufwirtschaftsstrategie, NKWS), which is due to be completed in 2024, the Federal Government will also examine specific measures that will already be effective in the short term to promote the circular economy and remove existing barriers to certain material flows.

- **Phasing out climate-damaging subsidies:** The Federal Government will present a reform concept for phasing out climate-damaging subsidies or redesigning them in such a way that they are less harmful to the climate. In this context, the Federal Government will also agree on a uniform definition of climate-damaging subsidies. It will conduct a more intensive and regular review of existing subsidies with regard to their impact of the climate (e.g. as part of spending reviews) and further develop reporting on climate-damaging subsidies.

- **Reforming the financing system of taxes, levies and charges in the energy sector:** The Federal Government will fundamentally reform the financing system of taxes, levies and charges in the energy sector and consistently align it with the goal of greenhouse gas neutrality. The reform will create effective incentives and a consistent regulatory framework for the reduction of greenhouse gas emissions, for the cross-sectoral use of renewable energies (electrification/sectoral coupling), decentralised generation models, system efficiency (e.g. demand flexibility) and for the increase of energy efficiency. The design of the reform will take into account the social acceptability for low-income households and the competitiveness of companies, as well as adequate financing by the state.

  With regard to the fundamental reform of taxes, levies and charges in the energy sector, the Federal Government will discuss possible solutions with the *Länder*, taking into account the ruling of the European Court of Justice of 2 September 2021 (Case C-718/18), in par-

ticular a fair distribution of grid fees for the integration of electricity generation from renewable energies.

- **Involving young people in climate policy:** The Federal Government will involve young people more closely in the decision-making processes of national, European and international climate and energy policy. In accordance with the Federal Government's Youth Strategy from 2019, the EU Youth Strategy 2019 - 2027 and Art. 12 of the UN Convention on the Rights of the Child, young people will be involved in political dialogue, and their concerns and interests will be taken into account in decisions that affect them. Ministries responsible for climate and energy policy will set up youth advisory councils or other participatory formats to ensure regular thematic exchanges at working and political level as well as participation in consultations and hearings on key climate and energy decisions.

4. Monitoring

The Federal Government will continue to submit the annual monitoring of emissions trends. It will transparently list the reductions achieved for each sector. In future, the emissions data from the previous year will be used to show the emissions trends projected for the years up to 2030 and with regard to 2035, 2040 and 2045.

The Federal Ministry for Economic Affairs and Climate Action will regularly request the ministries to report on the implementation of the adopted climate action measures. The results will be reported to the members of the Federal Government at least once a year and will also be included in the Federal Government's Annual Climate Action Report submitted to the Bundestag and the Bundesrat.