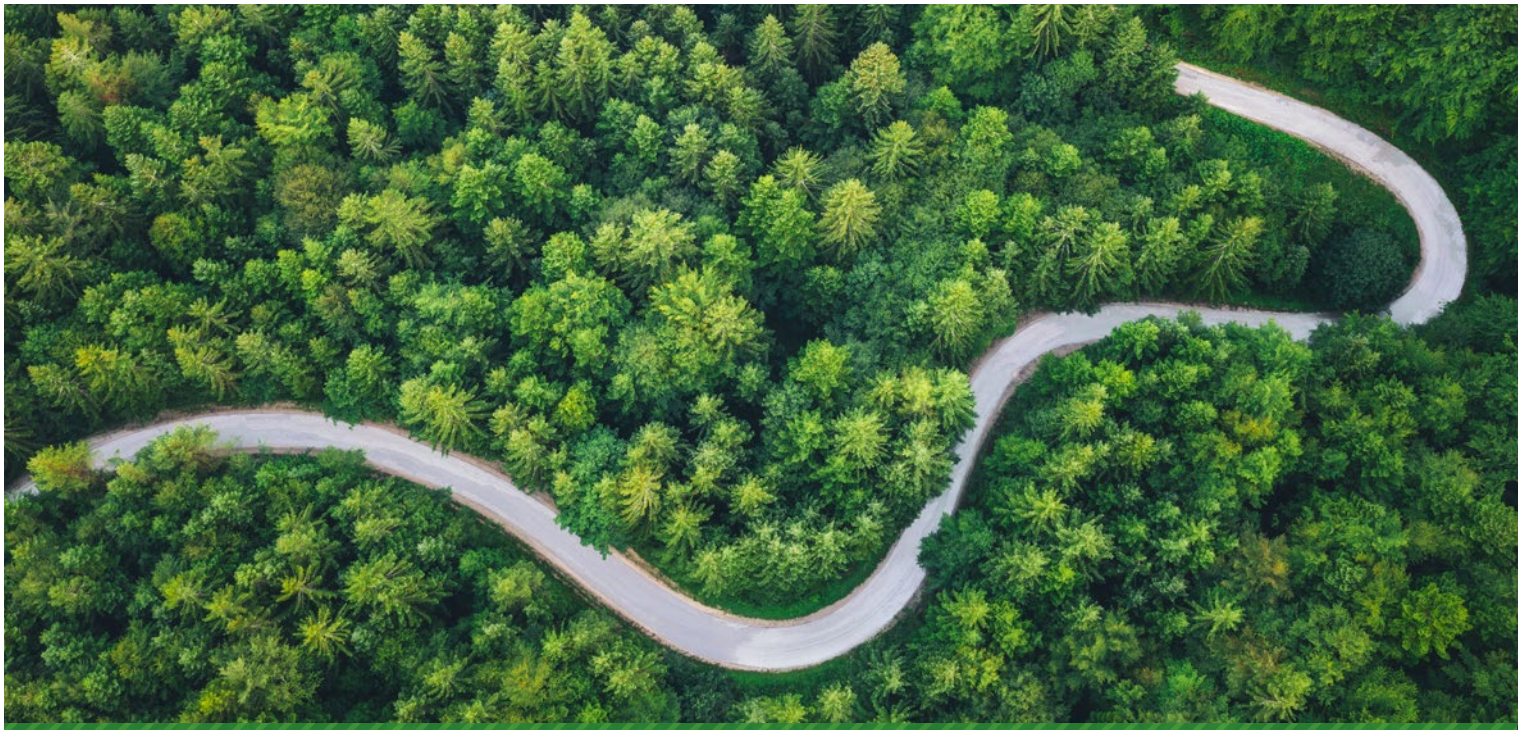

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Sustainable Pathways out of the Corona Crisis

The German Case

German Environment Agency

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Table of Contents

Summary

The Covid 19 pandemic is causing considerable social and economic disruption worldwide. The effects of the crisis also pose new challenges for environmental and sustainability policy. In recent times, environmental protection and climate protection have often been high on the political agenda – now it is important to make sustainability the target of economic recovery as well. The best way to do this is to direct short and medium-term financial aid towards mitigating the acute effects of the Coronavirus in such a way that simultaneously promotes the necessary long-term change towards a sustainable and climate-neutral society. If the two go hand in hand, we will not loose sight of the UN sustainable development goals by 2030.

In this paper the German Environment Agency (UBA) presents initial ideas on how the Corona economic stimulus packages could be made sustainable in the long term. Six basic principles have guided us in this:

The six basic principles

1. Consistently drive forward environmental and climate policy, implement the European Green Deal
2. Avoid lock-in through investments in outdated technologies
3. Use financial resources for future-oriented structural change
4. Promote sustainable work and consider social consequences
5. Strengthen European solidarity and cooperation
6. Evaluate economic stimulus programmes with regard to sustainability

Sustainable ways out of the crisis

We believe that the foundation of an economic recovery must be based on measures that set a good **framework for new economic prosperity** and at the same time set the course for more sustainability (points 1 to 6 of the action plan, see the table on the right). It is important to think of both together in order to mobilise private investments for change.

Building on this, **investments in socio-ecological transformation in key sectors – energy, mobility, and buildings** – should be promoted (points 7 to 13 of the action plan, see the table on the right). The focus here is on the dissemination of existing and promotion of new innovations for sustainable development – both technological and social.

Europe, and in particular the **European Green Deal**, forms the roof of this overall architecture of national measures. Germany should work within the framework of the forthcoming EU Council Presidency to ensure that the Green Deal becomes the central mechanism for economic recovery (points 14 and 15 of the action plan).

Push forward with the European Green Deal

AIM	PRIORITY MEASURES
15. Strengthen solidarity in Europe.	· Provide generous German contribution to the European financing instruments
14. Pursue climate neutrality and conservation of biological diversity as clear goals.	· Support of an ambitious climate target for 2030 (at least minus 55 % and aiming for 60 % or more)

Promote investment in socio-ecological transformation – revive the economy sustainably

SECTOR	AIM	PRIORITY MEASURES
BUILDINGS	**13. Implement climate premium for heating systems and buildings.**	· Strengthen promotion of heating systems using renewable energies and efficient renovations · Increase promotion for the sustainable standard "KfW Efficiency House 40 Plus" in new buildings · Support the development of an industry in the field of serial renovation
MOBILITY	**12. Accelerate decarbonisation of the transport sector.**	· Temporary doubling of the federal share of the "environmental bonus" for electric vehicles; addition of a bonus for private charging stations · Quickly implement the Charging Infrastructure Master Plan · Introduction of E-fuels in aviation and maritime transport
	11. Promote sustainable mobility.	· Compensation of loss of public transport revenues by the federal and state governments · Increase supply in the short term by activating vehicle purchase options · Promotion of walking and cycling · Accelerate infrastructure development and digitalisation of rail transport
ENERGY	**10. Strengthen power grids with batteries.**	· Publicly subsidised investments in the construction and operation of batteries
	9. Launch expansion package for wind energy and photovoltaics.	· Increase expansion paths for photovoltaics and onshore wind energy to 6 GW per annum each · Statutory offshore wind energy target of 20 GW by 2030 · Continued operation of fully functional EEG plants after the end of funding · Removal of the 52 GW cap in photovoltaics · Photovoltaics usage obligation for new buildings and roof renovations
GENERAL	**8. Make use of the potentials of digitalisation.**	· Drive forward the expansion of digital infrastructure with solutions that protect the climate and conserve resources · Increase existing AI funding programmes · Couple existing KfW promotional programmes to strengthen ecological Industry 4.0 applications
	7. Introduce a mandatory sustainability audit.	· Examination of all measures for consistency with EU climate taxonomy and the goals of the European Green Deal

Create a sustainable framework to ensure the right direction

AIM	PRIORITY MEASURES
6. Remove environmentally harmful subsidies, initiate socio-ecological tax reform.	· Reduce environmentally harmful subsidies or transform them into incentive structures that promote sustainability · Tax relief for labour and environmentally friendly business practices
5. Improve the ability of local authorities to act.	· Increase investment programmes for energy-efficient renovation and sustainable mobility · Strengthening municipal planning capacities
4. Start qualification initiative for future-oriented professions.	· Establish appropriate training programmes
3. Strengthen green innovations.	· Establish a green, cross-sectoral innovation fund · Integrate green criteria into all existing funding programmes as a condition for funding
2. Expand sustainable financial markets effectively.	· Increase KfW's ecological lending and funding programmes, and financing operations credit volume for ecological solutions with clear criteria · Implement double materiality perspective in the reporting obligations of the CSR Directive
1. Strengthen purchasing power with energy price reform.	· Reduce Renewable Energy Sources Act (EEG) surcharge in the short term beyond the level already decided

1. Introduction

The Covid 19 pandemic and the measures to contain it are currently causing considerable social and economic disruption worldwide. The effects of the crisis also pose new challenges for environmental and sustainability policy. Environmental protection and climate protection have been high on the political agenda recently, but the focus on fighting the pandemic and its social and economic impact must not allow them to be forgotten – the forest fires in Australia, which have been raging for weeks, have just been extinguished and the current period of drought in Germany, which directly follows on from two extremely dry years, show that climate change does not stop for breaks. Climate change and biodiversity loss are human challenges that can only be mitigated by immediate action. Although they are progressing more slowly than the pandemic, their consequences will affect us for centuries and the impact will be more severe than that of the current pandemic. In climate change the window of opportunity for a 1.5 °C future is rapidly narrowing. As with pandemic control, decisive, evidence-based, rapid action is needed now to avoid fatal consequences in the future. The state of scientific research is clear: this decade must be used to change course in order to avoid irreversible changes in the Earth system which would have catastrophic consequences. Only then will we be able to achieve the sustainable development goals (SDGs) for 2030 and the Paris Climate Agreement, as well as implement the vision of a climate-neutral, resource-efficient society in accordance with the European Green Deal.

The economic stimulus programmes designed to overcome the economic crisis offer a great opportunity to set the course for this transformation towards sustainability. Combating the consequences of the Corona crisis could then become a springboard for the transition to a sustainable economy and society. True to the SDG principle of "leave no one behind," structural justice issues must also be addressed – within Germany, within the EU, and in relation to the countries of the global South. After all, environmental protection and climate protection are inseparably interwoven with social and economic sustainability goals and health protection. In addition, the digitalisation and innovation agendas must be interlinked with the sustainability agenda in order to increase the transformation capacity of the economy and society.

Modern industrialized societies have experienced vulnerability and insecurity in the wake of the pandemic. This could break the fixation on the present and finally make it possible to take an ambitious approach to a sustainable future. Increasing resilience has moved into the focus of political debate. It describes the ability of societies to cope with shocks and ongoing structural changes in such a way that societal well-being is maintained and not at the expense of future generations and societies. Climate protection, environmental protection, and a resource-friendly circular economy can do a great deal to increase the resilience of our society.

For the countries of the Global South, however, uncertainty is the norm. They are more vulnerable due to structural weaknesses and are therefore likely to suffer much more severely and for longer from the consequences of the pandemic. Germany and Europe have a responsibility here – for humanitarian reasons and on grounds of justice, but also because of their own interest in resilient supply chains. The measures that the German Environment Agency believes should be taken here will be described in a further statement to be published shortly.

In the 2019 RESCUE study, the German Environment Agency used an integrated approach encompassing all relevant sectors to show for the first time how greenhouse gas neutrality can be achieved by 2050 while using raw materials as sparingly as possible[1]. The reduction of national greenhouse gas emissions by at least 70 % by 2030 compared to 1990 levels can only be achieved by reducing the use of primary raw materials, e. g. through increasingly circular economies.

1 German Environment Agency (2019): RESCUE – Resource-Efficient Pathways to Greenhouse-Gas-Neutrality Available online: https://www.umweltbundesamt.de/en/topics/climate-energy/climate-protection-energy-policy-in-germany/rescue-resource-efficient-pathways-to-greenhouse.

However, these changes are only part of Germany's fair contribution to compliance with the 1.5 °C temperature guardrail, to globally sustainable resource use, and to the protection of ecosystems. The other part is to support the European and global transformation towards greenhouse gas neutrality and sustainability. A resource-friendly circular economy can serve as a vision, design principle, and solution approach.

This paper describes how this path can now be taken and how it can contribute to overcoming the current economic crisis – if the economic stimulus packages that will soon be rolled out are cleverly targeted. Based on six basic principles for a sustainable way out of the crisis (chapter 2), it contains a compact, 15-point action plan that outlines the most important adjustments and addresses measures that should be initiated in the coming weeks and months (chapter 3). For long-term sustainable development, however, these measures must be complemented by further measures which should also be initiated soon, but the implementation of which extends well beyond 2020. These measures concern both the framework conditions for sustainable economies (chapter 4) and investments in socio-ecological transformation (chapter 5). The paper concludes with policy recommendations on the most important climate and environmental policy processes at European level (chapter 6).

2. Six basic principles to follow

2.1 Consistently drive forward environmental and climate policy, implement the Green Deal

Easing or postponing environmental policy instruments (European Green Deal, coal phase-out, CO_2 fleet targets, CO_2 domestic pricing, etc.) is not a sensible option for crisis management, as global warming, species extinction, and environmental pollution will cause even greater social and economic damage in the medium and long term than the current crisis. In order to avoid abrupt and irreversible changes in the climate and Earth system and to increase the resilience of our societies, we need to increase our ambitions and take decisive action in climate, environmental, resource, and nature conservation immediately and in the years to come. Paths to sustainability should follow appropriate, measurable targets.

2.2 Avoid lock-in through investments in outdated technologies

Support for the economy must not contribute to a lock-in with outdated, unsustainable technologies, as these aggravate the environmental crisis, hinder innovation, and reduce the competitiveness of the economy. Only sustainable technologies may be promoted as replacement investments or new investments in order to enable necessary innovations and quality leaps in technologies and processes.

2.3 Use financial resources for future-oriented structural change and sustainable innovations

To overcome the economic crisis, large scale substantial financial resources must be mobilised and channelled into building sustainable business models compatible with environmental, climate, resource, and biodiversity objectives. The channelling of private capital into sustainable investments that promote resilience requires an adjustment of the economic framework conditions, especially with regard to the development of sustainable financial markets and the promotion of green innovations. Utilising the potential of digitalisation for greater environmental and climate protection in the economy and strengthening a digital culture for sustainability is also highly relevant.

2.4 Promote sustainable work and consider social consequences

Measures to stimulate the economy must also help to create good, sustainable jobs, ensure social welfare and justice, and strengthen social solidarity. To this end, environmental consequences, social consequences, and distributional effects must simultaneously be taken into account when designing funding programmes. Furthermore, the refinancing of the immense Corona-induced expenditure of public budgets must be tied to the guarantee of intra- and

intergenerational justice in the coming years in a traceable way. By reducing environmentally harmful subsidies and reforming the tax system with a focus on environmental and social balance, synergies can be exploited between the goal of fair burden sharing and environmental and climate policy objectives.

2.5 Strengthen European solidarity and cooperation

The economic and social consequences of the Covid 19 pandemic in the EU – like the achievement of the objectives of the European Green Deal – can only be tackled jointly. This requires the solidarity between economically and financially better off states and those states that are more severely affected or financially less well-off. The resources for cushioning direct social and economic consequences should primarily be used to support the socio-ecological transformation of the economy and to build sustainable and resilient infrastructures to enable stable, competitive and sustainable economic development in the long term, rather than exacerbating future problems.

2.6 Evaluate economic stimulus programmes with regard to sustainability

To ensure that the funds from the Corona economic stimulus programmes are used effectively for the socio-ecological transformation of the economy and the development of sustainable and resilient infrastructures, a parallel monitoring of the measures adopted should be established. Only in this way can the effects on the environment, resources and climate, sustainable development (SDGs), employment, and distributional impacts be examined and promptly adjusted and learning effects for the design of future measures be achieved.

3. Action plan

In order to mitigate the consequences of the Corona crisis and to set the course for sustainable development of the labour market and economy, a number of measures must now be put in place. This includes, firstly, the sustainable design of the economic framework conditions as the basis for long-term socio-ecological structural change (measures 1 to 6) – thus setting the course for sustainable development paths. Secondly, this includes supporting and increasing investment in future-oriented technologies and avoiding investment in unsustainable technologies and business models (measures 7 to 13). Sustainable investment boosts serve both to revive the economy and to create future-proof jobs. General measures for sustainability audit and use of the opportunities offered by digitalisation (7 and 8) must complement the sector-specific measures (9 to 13). Thirdly, sustainable development requires the consistent implementation of the European Green Deal as well as crisis management and transformation based on solidarity. If Europe succeeds in overcoming the recession by accelerating the transition to sustainability, this would send a signal to the world economy as a whole (measures 14 and 15). These 15 measures can be initiated in the coming months of 2020. They support particularly hard hit sectors, promote sustainable employment, lead to the mobilisation of urgently needed private capital, and guarantee public services and the local authorities' ability to act. For long-term, large-scale sustainable development, however, they must be supported by further measures, which should also be initiated immediately, but the implementation of which extends well beyond 2020. All measures are explained in detail in chapters 4 to 6.

Create a sustainable framework to ensure the right direction

1. **Strengthen purchasing power with energy price reform.** Substantially reduce the EEG surcharge in the short term beyond the level already decided by the Conciliation Committee by financing the existing plants (grid connection before 31.12.2016) through the budget and, from 2021, to an increasing extent through CO_2 pricing. This will relieve the burden on lower-income households and facilities in catering, tourism, services, trade, and parts of industry that are currently particularly affected, and will provide incentives for sector coupling.

2. **Expand sustainable financial markets effectively.** Promote extensive expansion of the extension of credit for ecological solutions through KfW and domestic banks and tie it to clear criteria (e. g. consistency with EU taxonomy, SDGs). To this end, KfW should be ambitiously and rapidly developed into the German climate protection and sustainability bank; banks and investors should be given effective incentives to finance green projects, e. g. through state guarantees for ecological loans, support in project development, and the establishment of a project platform that brings investors and green projects together. To make it easier for the financial markets to identify green investments, the double materiality perspective (reporting obligation in the case of a significant environmental risk for the company or a significant risk for the environment by the company) should be implemented in the reporting obligations of the Non-Financial Reporting of the CSR Directive in German law.

3. **Strengthen green innovations.** Establish a national Green Innovation Fund that supports cross-sectoral ecological innovations in all sectors for socio-ecological transformation. Additionally, integrate green criteria into all existing funding programmes as a condition for funding. Only in this way can we create space for the technical and social breakthrough innovations required for the socio-ecological transformation – beyond the technologies already known today.

4. **Start qualification initiative for future-oriented professions.** Establish further training programmes and use Corona-induced short-time work or unemployment to qualify people for sustainable jobs and to meet the demand for skilled workers in the context of socio-ecological structural transformation and digitalisation (e. g. bus drivers, urban and transport planning, occupations for sustainable construction and energy-efficient building renovation, skilled workers for digitalisation, care professions).

5. **Improve the ability of local authorities to act.** Increase investment programmes for the energy-saving renovations and sustainable mobility, provide financing to strengthen municipal planning capacities, and suspend the municipalities' financial contribution. Additionally, support financially disadvantaged municipalities in order to ensure their ability to act, to maintain public service operations, and to enable sustainable procurement.

6. **Remove environmentally harmful subsidies, initiate socio-ecological tax reform.** As a contribution to the financing of Corona-related measures, reduce environmentally harmful subsidies or transform them into incentive structures that promote sustainability. The current low fuel prices make it possible, for example, to abolish the diesel tax privilege and kerosene tax exemption (approx. EUR 15 billion annually[2]) without additional burdens compared to the pre-Corona phase. In addition, initiate a socio-ecological tax reform in order to reduce the tax burden on labour and environmentally friendly business practices, thereby preserving jobs and improving the competitiveness of sustainable production and consumption.

Promote investment in socio-ecological transformation – revive the economy sustainably

7. **Introduce a mandatory sustainability audit.** All measures are to be checked for consistency with the EU climate taxonomy and the European Green Deal and for significant environmental damage (no-significant-harm principle). In this way, misinvestments which would later lead to delays and substantial additional burdens on public budgets in achieving the climate and sustainability goals can be avoided.

8. **Make use of the potentials of digitalisation.** Promote the expansion of digital infrastructure using climate-friendly and resource-saving solutions, e. g. through a funding initiative for green data centres. Increase existing AI funding programmes at federal and state level and improved coupling of existing KfW funding programmes to strengthen the marketability of ecological Industry 4.0 applications. This promotes the innovation and application capability of artificial intelligence systems in business and administration for effective environmental and climate protection. Strengthen economic and social initiatives to consistently develop the positive effects of a digital culture and new forms of organisation and work (e. g. virtual meetings instead of business trips, teleworking, digital administration, etc.).

2 The total value of all environmentally harmful subsidies is estimated to be around EUR 57 billion per year. See Köder, L., Burger, A. (2016): Umweltschädliche Subventionen in Deutschland. ("Environmentally Harmful Subsidies in Germany.") Dessau-Roßlau: German Environment Agency. Available online: https://www.umweltbundesamt.de/publikationen/umweltschaedliche-subventionen-in-deutschland-2016.

9. **Launch expansion package for wind energy and photovoltaics.** Increase the expansion potential for onshore wind energy and photovoltaics to 6 GW per annum each, set the offshore wind energy target of 20 GW for 2030 by law, ensure that fully functional EEG plants continue to operate after the end of the subsidy, remove the 52 GW cap for photovoltaics, speed up the planning and approval process for wind energy, make PV use compulsory for new buildings and roof renovations. The expansion of wind energy has almost come to a standstill. However, the development of renewable energies urgently needs to be intensified as a basis for sustainable energy supply and a prerequisite for the decarbonisation of industry. This secures existing jobs and creates new ones.

10. **Strengthen power grids with large battery storage systems.** With publicly subsidised investments in new large battery storage systems as a grid buffer, the existing power grids can transport more renewable electricity and can be operated more safely. Moreover, grid buffers can reduce considerably redispatch costs for electricity customers. The construction of the battery storage systems creates jobs in an emerging industry and paves the way for more renewable energies.

11. **Promote sustainable mobility.** Set up a Rescue and Future Package for public transport by compensating for revenue losses by federal and state governments and improving public transport services in the short term by expanding existing programmes and activating vehicle purchase options early. This is intended to relieve municipalities of the financial burden as public transport authorities and to make bus and rail transport more attractive – both during and after the pandemic – and to support the accompanying hygiene measures. In addition, promote foot and bicycle traffic more widely. Accelerate infrastructure development and digitalisation of rail transport in order to create alternatives to domestic air transport and to shift goods from road to rail.

12. **Accelerate decarbonisation of the transport sector.** Prevent lock-in and false incentives when designing exchange or scrappage schemes for passenger cars and refrain from offering incentives to buy vehicles powered exclusively by combustion engines. Double the federal government's share of the environmental bonus for electric vehicles for a limited period of time and supplement it with a purchase bonus for a corresponding charging point. Implement the Charging Infrastructure Master Plan swiftly and with clear expansion targets. Equip motorways with overhead lines for trucks. Introduce E-fuels in aviation and maritime transport.

13. **Implement climate premium for heating systems and buildings.** Promote heating systems based on renewable energies and efficient renovations ("Efficiency House 55" and "Efficiency House 40") more strongly and increase the promotion of the sustainable standard "KfW Efficiency House 40 plus" in new buildings. Support the development of an industry in the field of serial renovation.

Push forward with the European Green Deal

14. **Pursue climate neutrality and conservation of biological diversity as clear goals.** Place the Green Deal at the centre of the German Council Presidency as the central response to the economic consequences of the Covid 19 pandemic. Secure support for an ambitious climate target for 2030 (at least minus 55 % and aiming for 60 % or more) and the European Climate Law, and consistently campaign for the transition to a resource-friendly circular economy and compliance with biodiversity targets.

15. **Strengthen solidarity in Europe.** Make a generous contribution to European financing instruments[3] that goes beyond current commitments and use the expanded financial scope to promote sustainable production methods. Apply the investment plan for the Green Deal consistently and effectively for the decarbonisation of the European economy, the promotion of a circular economy, nature conservation and environmental protection, and a fair transition of emission-intensive regions. In particular, significantly increase the *Innovation Fund* and the *Modernisation Fund* with contributions from financially stronger Member States and develop them in line with the priorities of the Green Deal. Advocate for a strengthening of solidarity and balance of interests between the Member States during the Council Presidency.

3 These include in particular the EU budget 2020–2027, the financing plan for the European Green Deal, the Innovation and Modernisation Funds fed by the revenues of emissions trading and the newly discussed European Recovery Fund.

4. Change framework conditions in favour of the environment and climate

In order to overcome the economic crisis caused by Corona and restructure the economy in a socio-ecological way, the initiative of all social agents and high public spending are necessary. For long-term stable economic development and to ease the burden on public budgets, considerable private financial resources must be mobilised in parallel. The political and economic framework must ensure that these funds benefit both the recovery of the economy and the fight against the climate and environmental crisis, since only by harnessing synergies will there be sufficient capital available for both objectives.

4.1 Ecological energy price reform

Instead of strengthening purchasing power through general tax relief, the German Environment Agency recommends a fundamental reform of energy prices. It not only strengthens purchasing power, but also creates economic incentives for investments in climate protection and the development of green markets for the future.

- **Significant reduction of electricity prices through a short-term, substantial reduction of the EEG surcharge** beyond the level agreed by the Conciliation Committee by financing the existing plants (grid connection before 31.12.2016) through the budget and, from 2021, to an increasing extent through CO_2 pricing. This should go hand in hand with a short-term adjustment of the monthly electricity instalments. This will ease the burden on those who are particularly affected by the crisis, such as low-income households, the catering trade, commerce, service companies, and parts of industry. In addition to stimulating the economy, this also creates incentives for investment in electromobility, heat pumps, hydrogen production plants, and other sector coupling technologies required for the climate-friendly transformation of the energy system.

- **Ensure financing of the reduction of the EEG surcharge initially via the general budget.** Aim to switch to partial, later complete counter-financing through revenues from fuel emissions trading. Since, due to the moderate price level, the revenues generated in the first years are not sufficient for a substantial reduction of the EEG, the Federal Government should examine to what extent the price level can from 2023 be raised beyond the level agreed in December 2019[4] or the transition to a phase with flexible prices can be brought forward. By the end of the fixed-price phase at the latest, it must be ensured that the CO_2 price in combination with other instruments provides sufficient incentive to ensure that the German emissions budget from the Effort Sharing Regulation is adhered to.

- **Commitment of the Federal Government at EU level for a higher CO_2 price:** In addition to strengthening EU emissions trading through a substantial cap reduction in the context of raising the European climate protection target (see 6.1), this applies in particular to the introduction of an EU-wide CO_2 price in sectors not previously covered by emissions trading[5].

4.2 Sustainable financial systems

Overcoming the Corona crisis requires private and public capital at large scale. To ensure that this contributes to the sustainable development of the economy and does not lead to stranded assets and a lock-in into fossil and environmentally damaging economic practices, the instruments for developing sustainable financial systems must be consistently pursued and expanded as priority.

- **Speeding up the transformation of the KfW into a German climate protection and sustainability bank** by increasing the issuing of green bonds at larger scale, expanding the volume scale of eco-credits and -financing, developing the project pipeline by preparing projects for financ-

4 The following price path was agreed by the Conciliation Committee on December 18, 2019: 2021: EUR 25, 2022: EUR 30, 2023: EUR 35, 2024: EUR 45, 2025: EUR 55. For 2026 a price corridor of 55–65 € applies. It remains open for the following years as to whether a price corridor should be maintained.

5 It has not yet been decided at European level whether there will be a tax or a trading solution for CO_2 pricing.

ing suitable financing models for green projects, and establishing a project platform for investors and ecological projects.

- Provide incentives for the increased use of eco-credits from KfW programmes and financing by **simplifying and accelerating the granting procedures**.

- **State guarantees for loans and financing which take ambitious ecological targets into account**, thereby reducing the risk for banks/investors and promoting sustainable investments. This would also benefit industries whose creditworthiness has suffered as a result of the economic crisis.

- In order to identify green investments, the **requirements for corporate reporting** should be significantly increased in order to obtain concrete information on all relevant environmental effects along the supply chain. In the short term, the double materiality perspective (obligation to report if there is a significant environmental risk for the company or a significant risk to the environment from the company) should be implemented in German law in the reporting obligations of the Non-Financial Reporting Directive ("CSR Directive").

- **Strengthen the Federal Government's role model function** through the sustainable investment of public assets (e. g. from pension schemes), expansion of the planned Green Bond programme of the Federal Government 2020, reduction of capital gains tax on ecological investments for small investors.

- **Further develop sustainable financial markets in the EU** by supporting the Sustainable Investment Action Plan, the Renewed Sustainable Finance Strategy, and the accelerated transformation of the European Investment Bank into a climate change bank

- **Mandatory application of green** ecological criteria must be considered in the alignment to activities to stabilise the financial markets, e. g. when the European Central Bank purchases corporate bonds.

4.3 Innovations in economy, society, and administration

The promotion of green innovation is central to the development of an environmentally sustainable and competitive economy and thus to the creation of future-oriented jobs. They can contribute significantly to establishing sustainable solutions in administration and society.

- **Establish a cross-sectoral fund to promote green innovation in the economy, administration, and society**, which also addresses the areas not covered in this paper (e. g. agriculture, tourism, gastronomy, culture, trade, services).

- **Focus on the promotion of green innovations, from research and development to market entry and dissemination in the market**; where possible, building on existing programmes (e. g. Environmental Innovation Programme) and closing existing funding gaps; specific support for green start-ups, for example by creating competence centres and improving the provision of capital.

- Additionally, integrate **green criteria** into all existing environmentally relevant funding programmes **as a condition for funding**.

- **Create cross-sectoral innovation platforms and experimental spaces** for exchange and communication; increased financing of real-world laboratories for testing environmentally friendly concepts and measures in practice.

4.4 Labour market and training

The socio-ecological structural change offers great employment opportunities, but also requires appropriately qualified workers. Labour market instruments geared to these needs can reduce both unemployment and skills shortages and strengthen the competitive position of the economy. Accompanying instruments should ensure that the current crisis does not lead to the gradual dismantling of social standards.

- **Start a qualification initiative** to make use of corona-related short-time work or unemployment, to qualify people for future-oriented jobs, and to meet the demand for skilled workers in the context of socio-ecological structural change (e. g. mobility, urban and transport planning, electrical engineering, occupations for sustainable construction and energy-efficient building renovation, skilled workers for digitalisation, care professions, scientific professions with a focus on sustainability, e. g. chemists) accompanied by an increase in short-time work benefits when participating in further training measures. Involve institutional partners (trade unions, social associations, etc.) and labour market experts in designing the initiative.

- In parallel, **increase the appeal of the professions needed for structural change**, for example through better working conditions and higher pay; promote the professions of the sustainable economy through an accompanying campaign.

4.5 The role of public administration

Public budgets are under considerable pressure because of the measures taken to combat the pandemic and its economic and social consequences. However, the financial and human resources capacity of public administration, especially at state and municipal level, is a prerequisite for maintaining services of general interest, cultural and social life, establishing sustainable infrastructures and promoting sustainable products and production processes through public procurement.

- **Increase investment programmes for municipalities for energy-saving renovations and sustainable mobility, including the financing of additional planning capacities**, and suspend the municipalities' own financial contribution. It is necessary, among other things, to increase the municipal guidelines of the National Climate Initiative (NCI) and urban development programmes for targeted support of climate protection measures, adaptation to climate change, and improvement of green infrastructure. Additionally, support financially weak municipalities in order to ensure their ability to act, to maintain public service operations, and to enable sustainable procurement.

- **Increasing (personnel) capacities in planning institutions and regulatory authorities** in municipalities, states, and the federal government, e. g. to accelerate the swift development of wind energy, networks, and sustainable transport and heating infrastructure, to implement climate adaptation measures, but also to advance integrated climate protection planning (including municipal heating and cooling planning) in municipalities and plans for ecological neighbourhood development.

- **Common platform for all environmental, resource conservation, and climate-protection-related subsidies** (e. g. NCI municipal guidelines) aimed at municipalities, including advisory and information services (a one-stop shop).

- Promote sustainable public procurement and thereby increase the demand for environmentally friendly products and services, using, for example, the "Blauer Engel" eco-label or the criteria listed on the German Environment Agency's information portal[6].

- **Establish a digital pact for "Municipal Services of General Interest and Sustainability"** to strengthen cities and communities in the improved use of digital solutions for implementing the 2030 agenda.

4.6 Reduction of environmentally harmful subsidies and socio-ecological tax reform

The gradual reduction of environmentally harmful subsidies and a shift in the tax burden from labour to environmental consumption can have an important steering effect towards a sustainable economy with future-oriented work and, once the economic crisis is overcome, can also make a significant contribution to consolidating public budgets.

- **Reduce the tax burden on labour, environmentally friendly technologies, and circular economies business models** in order to preserve jobs and improve the competitiveness of sustain-

6 German Environment Agency (2020): Green procurement. Available online: www.beschaffung-info.de.

able production and consumption (e. g. reduction of social security contributions, reduced VAT rate for repair services).

- Conversely, **increase the share of environmental taxes in total tax revenue** so that the environmental costs incurred are more heavily charged to the polluters and competitive distortions at the expense of environmentally friendly production and consumption patterns are reduced.

- **Reduce environmentally harmful subsidies** in order to create financial leeway and thus create incentives for environmentally friendly economic activity; use presently lower fuel prices, for example, to abolish diesel tax privileges and kerosene tax exemptions without creating additional burdens compared to the pre-Corona phase. Additional examination of a (gradual) conversion of environmentally harmful subsidies into subsidies that promote sustainability, as well as for cushioning social effects.

5. Investing in socio-ecological transformation

5.1 Cross-sectoral measures and instruments

5.1.1 Environmental criteria for funding

The **principle of "public money for public goods"** should apply to funding for companies and institutions. It must therefore be ensured in all funding schemes that the companies and institutions which receive funding reciprocate by taking an important step towards an environmentally and socially responsible economy geared to the model of the circular economy and sustainable employment.

- **Congruence with the EU climate taxonomy** which is to be successively developed further, **the European Green Deal, and the do-no-significant-harm principle as a condition for new and existing funding programmes**, e. g. in the High-Tech Strategy, the Agentur für Sprunginnovationen (Agency for Innovation), the promotion of digital transformation, the Circular Economy Action Plan, etc.

- **Link the funding to the (delayed) implementation of an "environmental check"** (for SMEs) and the introduction of comprehensive environmental reporting (for large companies) in order to develop energy and resource efficiency potential and to trigger the corresponding investments. Link with free consultancy programme for SMEs to help them make the transition to sustainable business models.

5.1.2 Digitalisation

The measures to contain the Covid 19 pandemic have triggered a surge in digitalisation in businesses, educational institutions, administrative bodies, and private households through mobile working and online communication. This momentum should be utilised and further developed, as the sustainable **expansion of digitalisation can help to drive forward the energy transition, create sustainable mobility and avoid traffic, establish an improved circular economy, and ensure greater transparency in supply chains and in the financial system.** At the same time, it is important to reduce the significant negative effects on the environment as much as possible, e. g. due to increased consumption of energy and raw materials and a higher volume of waste from electronic equipment and used batteries. The **certification of software and hardware solutions** such as the "Blauer Engel" label for green IT or for energy-conscious data centre operation can make an important contribution to this. The "environmental digital agenda"[7] of the Federal Environment Ministry offers important guidance for sustainable digitalisation.

7 Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (2019): Eckpunkte für eine umweltpolitische Digitalagenda des BMU. Available online: https://www.bmu.de/download/eckpunkte-fuer-eine-umweltpolitische-digitalagenda-des-bmu/.

- Support companies and public authorities in the increased implementation of technology for mobile working, web conferences, and digital collaboration platforms. Focus should be placed on **increasing the energy efficiency of data centres and their preferably renewable power supply** as well as the procurement of green IT and green software. The aim should be to establish data-safe green IT infrastructure in Germany and Europe.

- Establish **digital solutions for tracing supply chains** as well as for recording and evaluating environmental risks, environmental impacts, and environmental and social standards when realigning production structures and supply relationships. Following the collapse of international supply chains, the creation of resilient supply chains is now being discussed. Through greater supply chain transparency and demanding standards, both sustainable trade relations and circular economies can be supported.

- **Industry 4.0 and the environment**: Increased funding of innovations and marketable applications in the field of Industry 4.0 and the environment by increasing the existing KfW funding programmes (*ERP Digitalisierungs- und Innovationskredit*, *ERP Mezzanine f*ür *Innovation*) or by granting particularly favourable funding conditions (e. g. exemption from liability for high environmental components) with the aim of strengthening the use of new digital technologies (e. g. digital twin, digital product memory) and their intelligent networking at individual industrial locations and in production and service networks with the aim of achieving significant environmental relief. In addition to expanding the current KfW environmental programme to include aspects of digitalisation, there should be targeted promotion of marketable pilot applications by establishing a new funding priority "Industry 4.0 and the environment" within the framework of the BMU Environmental Innovation Programme by substantially increasing the funding available.

- Systematically promote AI applications for environmental protection and climate protection in business, society, and administration. To this end, increase the existing funding programme *AI – Lighthouses for Environment, Climate, Nature, and Resources*.

5.2 Sectoral measures and instruments

In all areas of application, ambitious measures for energy efficiency, use of renewable energies, material efficiency, and the closing of material cycles must be taken quickly. In the climate sector, the Federal Government has adopted a comprehensive programme in the form of the Climate Protection Programme 2030, which should continue to be ambitiously developed in order to achieve a **1.5 degree compatible transformation path**[8].

5.2.1 Sector coupling

The **climate-friendly integration of PtX**[9] **technologies** should be a top priority in keeping with their substitution potential and effective greenhouse gas reduction potential.

- **Preference** should be given to promoting and encouraging **immediately efficient technologies for direct electricity use**, such as electromobility and heat pumps, in a broad mix of instruments that are accessible to all citizens.

- **Promote the market entry of PtG hydrogen plants**, so that green hydrogen can be integrated in the decade after 2030, especially in the steel and chemical industries. PtG plant operators will also benefit from a reduction in the state-induced price components of electricity costs.[10]

8 For information on missed targets see Harthan, R. et al. (2020): Treibhausgasminderungswirkung des Klimaschutzprogramms 2030. Kurzbericht. ("Greenhouse Gas Reduction Effect of the Climate Protection Programme 2030. Summary report.") Dessau-Roßlau: German Environment Agency. Available online: https://www.umweltbundesamt.de/publikationen/treibhausgasminderungswirkung-klimaschutzprogramm-2030.

9 Electricity-based fuels, combustibles, and basic materials.

10 See Purr, K. et al. (2019): Wege in eine ressourcenschonende Treibhausgasneutralität – RESCUE: Langfassung. ("Resource-Efficient Pathways towards Greenhouse-Gas-Neutrality – RESCUE: Long Version") Dessau-Roßlau: German Environment Agency. Available online: https://www.umweltbundesamt.de/rescue; Günther, J. et al. (2019): Resource-Efficient Pathways towards Greenhouse-Gas- Neutrality – RESCUE: Summary Report Dessau-Roßlau: German Environment Agency. Available online: https://www. umweltbundesamt.de/rescue/summary_report; Purr, K. et al. (2016): Integration of Power to Gas/Power to Liquids into the ongoing transformation process. Dessau-Roßlau: German Environment Agency. Available online: https://www.umweltbundesamt.de/publikationen/integration-of-power-to-gas-power-to-liquids-into.

- **Promote** the production of **sustainably produced E-fuels** for non-electrifiable applications, e. g. international air and sea transport (see 5.2.3) within the framework of sustainable **European or international projects**, similar to those for real-world laboratories in Germany (e. g. financing pilot projects). This could simultaneously support the EU's southern economies, which have been severely affected by the Corona crisis.

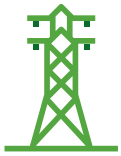
5.2.2 Energy industry

Increased expansion of renewable energies contributes to economic recovery **and is a key prerequisite** for sector coupling and achieving climate protection targets.

- **Significantly increase the gross expansion paths for onshore wind energy and PV** to 6[11] GW per year[12]. Due to the current area restrictions for onshore wind energy, the corresponding tender volume should increase over time, as a sudden increase in expansion is unrealistic. The joint offshore agreement reached at the beginning of May 2020 by the Federal Government, coastal states, and transmission system operators on an **expansion target for offshore wind energy** of 20 GW in 2030 should become legally binding. Free grid capacities (1.5 GW) should be quickly put to use now. At the same time, the expansion beyond the year 2030 must be legally anchored at an early stage in order to initiate the necessary preliminary land examinations and environmental assessments and create planning security for the industry. In doing so, the interests of nature conservation must be taken into account.

- **Lift the 52 GW expansion cap for photovoltaics.** This is a prerequisite for increasing the gross expansion paths and has already been agreed in the Climate Protection Programme 2030. As the cap will, depending on the expansion, be reached in the third quarter of 2020, there is already a reluctance to invest, as it is unclear whether a plant will even be subsidised when it is commissioned. **The removal of the cap does not cause any additional costs** and helps to maintain this PV segment and **secure employment** – especially in the crafts.

- Introduce an **obligation to use PV in new buildings and roof renovations**. Supplementary option e. g. for the use of solar thermal systems within the framework of the EEWärmeG (Renewable Energy Heat Act). This can also be expected to have a positive impact on employment in the crafts.



- **Strengthen power grids with large battery storage systems:** With publicly subsidised investments in new large battery storage systems as grid buffers, the existing power grids can transport more renewable electricity and can be operated more safely. Moreover, grid buffers can reduce considerably redispatch costs for electricity customers. The construction of the battery storage systems creates **jobs in an emerging industry** and **paves the way for more renewable energies**. This network optimisation can bridge delays in network expansion and reduce the additional network expansion requirement after 2030.

- **Subsidise flexible and highly efficient gas power plants for secure grid operation and crisis prevention:** In order to ensure secure grid operation in crisis situations and with the decommissioning of coal-fired power plants, additional gas-fired power plants should be built in southern Germany with state funding. The plants should only operate outside the electricity market and used by the transmission system operators only for grid operation purposes. Thereby **electricity customers' costs for grid fees can be considerably reduced** (especially costs for reserves and redispatches). Moreover **jobs at power plant construction companies in Germany can be secured**. These plants are also needed in a completely renewable electricity system as a backup and are then operated with renewable fuels.

11 The tender volume for open-space photovoltaic systems should not fall below the 2 GW per annum level reached in 2021.
12 In the background paper for the RESCUE project, lower expansion paths had been identified – but with regard to the target year, the delayed implementation periods of 24 months and the assumed service life of 20 years must be taken into account.

- **Introduce a land use designation bonus (for municipalities) for onshore wind energy.** Introduction of land consumption quotas and tradable land use designation rights. The availability of sufficient land is a basic prerequisite for further expansion. The Corona crisis has further delayed the current installation processes.

- **Introduce participation obligations for wind energy projects for residents and municipalities:** Financial participation opportunities are an instrument to increase the acceptance of projects and can thus contribute to speedy implementation. The opportunity for (even modest) financial participation should therefore be available for each project.

5.2.3 Mobility and transport

The transport sector has been affected by the Corona crisis on several fronts: Firstly, production in the automotive industry and its supplier sectors has been severely affected by a lack of sales opportunities and disrupted supply chains. Secondly, the demand for leisure and business travel has collapsed, as has the use of public transport. Depending on the course of the economic recovery, demand for vehicles and travel could remain weak in the medium term.

In order to secure jobs and at the same time orient the mobility sector towards a sustainable future, a combination of demand- and supply-oriented measures is needed. **It is essential that environmental regulations are not relaxed and that any measures to support the automotive or aviation industries are linked to ecological criteria, including rescue packages for airlines in particular.**

The current crisis must not lead to a situation where the **transport transformation ("Verkehrswende")** needed for environmental and climate protection is out of focus both in (sub-)urban and rural areas. Measures are needed to help further strengthen ecomobility, i. e. public transport, walking and cycling, multimodality, combined transport, and sustainable logistics. There are good examples of this in Germany and abroad which can serve as building blocks for the sustainability transformation of mobility: cycling in Copenhagen, attractive local transport and parking in Vienna, rail transport in Switzerland, and multimodality in Finland.

- **Double the federal share of the *environmental bonus* for partially electric and electric vehicles** (from EUR 1,875–3,000 to EUR 3,750–6,000) temporarily and add a **purchase bonus for a charging point** at the regular parking location of the subsidised vehicle, in addition to the measures of the Federal Government's Charging Infrastructure Master Plan. Subsidies for plug-in hybrid vehicles should be linked to conditions such as a minimum electrical range. This will provide greater support for vehicle manufacturers who are converting their fleets to electric vehicles more quickly. In addition, we recommend introducing a malus for high-emission vehicles (**bonus-malus**). This increases the ecological incentive effect and reduces the burden on public budgets. For the concrete design, experiences in other European countries should be considered.

- **Accelerate the expansion of infrastructure for electric vehicles**, e. g. public charging infrastructure for electric vehicles and overhead lines for trucks on motorways. The Federal Government's Charging Infrastructure Master Plan is to be implemented swiftly in order to agree on clear expansion targets for the period after 2021 to 2025.

- **Scrappage or exchange schemes and indiscriminate purchase incentives** (e. g. VAT reduction) for vehicles with combustion engines only entail the **risk of a technological lock-in**. This should be avoided at all costs, both for reasons of climate protection and with regard to the development of a future-oriented and competitive automotive sector.

- Increase and extend the *subsidy programme for energy-efficient/low-carbon heavy goods vehicles* and **double the subsidy for electric trucks and semi-trailer tractors** (from EUR 12,000–40,000 to EUR 24,000–80,000) as well as **extend it to commercial vehicles over 3.5 t** (EUR 12,000) The corona-related changes in the distribution networks for parts of the non-food retail trade offer the opportunity to revise processes and integrate newly purchased electric trucks into the delivery processes.

- **Rescue and Future Package for public transport:** Compensation by the Federal Government and the Federal States for the loss of fare revenues from municipal and private local public transport companies, as this places a very heavy financial burden on municipalities, particularly in the event of a sustained drop in demand[13], and jeopardises long-term investments in ecomobility. Accompanying measures for hygiene and an image campaign are also needed to get people back on buses and trains after the pandemic. By increasing and raising the subsidy rates in state programmes for the purchase of public transport vehicles and activating order options for vehicles early, the quality of public transport would be improved in the short term, its attractiveness increased, and the vehicle industry strengthened.

- Expand **infrastructure for cycling and walking and create sufficient planning capacity for ecomobility** in local administrations and authorities (see 4.5). Active mobility in particular has become more attractive again in the wake of the Corona pandemic[14]. Innovative, short-term measures such as temporary cycle lanes help to make this development permanent[15]. The positive experience gained from less motorised individual transport should be used to accelerate the development of a new multimodal mobility system.[16]

- Accelerate **digitalisation and automation in rail transport**, for example by accelerating the expansion of the European Train Control System (ETCS) or promoting automated terminals in combined transport. This can strengthen the more resilient rail (freight) transport and improve its market position vis-à-vis road (freight) transport in the long term. By increasing the appeal of rail passenger transport, domestic short-haul flights can be shifted to rail in the long term.

- In air transport, rescue packages and economic stimulus measures should in principle benefit the ecological restructuring of the sector and not promote growth.[17] In addition, an **"Air Transport Innovation and Demonstration Fund"** should be established to promote the sustainable restructuring of the air transport sector (e. g. in the amount of the planned revenue from air transport tax – before the Corona pandemic – of EUR 785 million per year).[18]

- A key element of this is the **creation of production capacities for PtL kerosene** from renewable energies. In order to reduce current private sector risks, the state should hedge these financial risks until the fuels are approved (e. g. ASTM certification) and create a secure sales market through a blending quota for domestically sold aviation fuel (e. g. 10 % in 2030 and an ambitious intermediate value for 2025). PtL plant operators would also benefit from a reduction in the state-induced price components of electricity costs (see 4.1).

- **Increase the existing *BMVI funding programme for urban logistics*.** The sale of fast moving consumer goods in online trade has experienced strong growth in the wake of the Corona crisis.[19] If this development continues, it could lead to a further increase in delivery traffic and the need for action regarding the development of sustainable urban logistics would become even more pressing.

- **Strengthen sharing economy in the transport sector** by reducing the VAT rate from 19 % to 7 %, in particular for bike and car sharing services as a complement to public transport.

13 Passenger numbers currently falling by between 70 % and 80 % (period until 17.04.2020) (see infas and motiontag (2020) Alles anders oder nicht? Unsere Alltagsmobilität in der Zeit von Ausgangsbeschränkung oder Quarantäne. ["Everything is different or is it? Our everyday mobility in times of curfew or quarantine."] Available online: https://www.infas.de/fileadmin/user_upload/infas_mobility_CoronaTracking_Nr.02_20200421.pdf) these could amount to EUR 8 to 10 billion per year.

14 infas und motiontag (2020).

15 Senate Department for Environment, Transport and Climate Protection, Berlin (2020): Temporäre Radfahrstreifen. ("Temporary cycle lanes") Available online: https://www.berlin.de/senuvk/verkehr/politik_planung/rad/infrastruktur/temporaere_radstreifen.shtml

16 See German Environment Agency (ed.) (2017): Tomorrow's Cities: Environmentally friendly mobility, low noise, green spaces, compact housing and mixed-use districts Dessau-Roßlau: German Environment Agency. Available online: https://www.umweltbundesamt.de/publikationen/tomorrows-cities.

17 e. g. no discounts on ticket tax or value added tax.

18 Bopst, J. et al. (2019): Umweltschonender Luftverkehr: lokal – national – international. ("Environmentally friendly air transport: local – national – international.") Dessau-Roßlau: German Environment Agency. Available online: https://www.umweltbundesamt.de/publikationen/umweltschonender-luftverkehr.

19 Absatzwirtschaft (2020): Corona-Umfragen: Auch der Online-Handel leidet massiv. ("Corona surveys: Even online trade is suffering tremendously.") Available online: https://www.absatzwirtschaft.de/corona-umfragen- auch-der-online-handel-leidet-massiv-171477/.

- **Increase existing *funding for corporate mobility management*** at the BMVI with a focus on health care facilities (e. g. hospitals, nursing homes, and retirement homes).

5.2.4 Buildings

The construction industry and crafts are also increasingly suffering from the current economic crisis. It therefore makes sense to promote sustainable construction and in particular energy-saving renovation more strongly, especially since the subsidies used provide a great deal of leverage and a significant boost in energy-saving renovation is necessary to achieve the climate targets. In order to ensure rapid implementation, existing funding programmes should be increased where possible.

- **Further develop the climate bonus for heating systems.** Fossil-fired heating systems are still dominant (85 % market share, 90 % of existing). The aim is to initiate the structural change towards heating technologies required for climate neutrality by increasing the subsidies for heat pumps and solar thermal systems by at least 10 percentage points. Heat pumps using natural refrigerants should receive an additional bonus. The promotion of heating technology that uses biogenic fuels must be ruled out.

- **Extend climate bonus for buildings (renovation).** The renovation rate of existing buildings is still too low and the renovation standards achieved are insufficient. Every new building causes additional greenhouse gas emissions. **Serial renovation** to a zero energy balance with industrially prefabricated components enables affordable prices and can further develop the construction industry from predominantly individual craftsmen's activities to a classic industrial structure with "renovation factories"; the federal government should support the housing and construction industry in such a way that at least 100,000 apartments are renovated in this way in three years. In addition, **renovation** should be raised by at least 10 percentage points to long-term climate protection standards ("Efficiency House 55" and "Efficiency House 40") for at least 100,000 houses.

- **Increase climate premium for buildings (new construction).** For **new buildings**, the subsidy for the "Efficiency House 40 plus" standard should be increased by at least 5 percentage points.

- **Enable better funding for the conversion, expansion and new construction of renewable district heating using renewable energies:** The promotion of heating and cooling networks for the integration of renewable, non-fuel-based heat sources (especially large heat pumps, geothermal energy and ground-installed solar thermal energy) and waste heat is an important step towards the decarbonisation of heat supply – especially in urban areas. The subsidy rates should be increased for this purpose (at least to KWKG level). At the same time, the market entry of the above-mentioned alternative heat and cold sources should be promoted more strongly than before.

5.2.5 Energy-intensive industry

In energy-intensive industry, the primary objective is to consistently implement the course set out in the Climate Protection Programme 2030 and to further develop it in line with demand. Existing support programmes such as energy efficiency in the economy should be continued, and new programmes such as *investment in decarbonisation of industry, hydrogen use in industrial production, as well as CO_2 avoidance and use in basic industries* must be launched promptly. In addition, the broad effect of the decarbonisation programme should be increased by extending the number of eligible applicants beyond the facilities subject to emissions trading. In the light of the current uncertain economic situation, however, industry's willingness to make new investments in techniques that have not yet been tested very well is likely to be severely limited. Necessary investments in breakthrough innovations for the decarbonisation of emission-intensive processes and the development of sustainable business models may become delayed or fail to occur. Instruments and measures are therefore needed to address these investment obstacles and promote the transition to post-fossil production methods.

- Increase the availability of **electricity from renewable energies** as well as the hydrogen or other PtX products produced with them as a **necessary prerequisite for the decarbonisation** of the energy-intensive industry. The expansion of renewable energies and the associated infrastructure must therefore be promoted in parallel (see 5.2.1). When promoting efficiency measures, it should also be kept in mind that a switch to renewable energy sources, preferably to renewable electricity, is necessary in the medium to long term. Efficiency improvements in the use of fossil fuels have at best only short-term benefits.[20]

- **Improve companies' readiness to invest** by first **stabilising sales opportunities and demand**, e. g. from the mobility and building sectors. Suitable **state guarantee systems** should be developed to **cover the production risks** of sustainable and large-volume investments in less proven technologies. For example, in the draft of the National Hydrogen Strategy for the steel and chemical industry, the planned pilot programme for **Carbon Contracts for Difference (CfD)** is an important element in hedging price risks and thus supporting the commercial market launch of innovative CO_2-free products[21]. In this way, large-volume innovative technologies with high innovation potential, such as direct reduction with green hydrogen in steel production, can be brought to large-scale commercial application.

- Make greater use of public **procurement** as an instrument for **stimulating demand for climate friendly and environmentally friendly products from energy-intensive industries**. This should take into account the environmental benefits of secondary raw materials, but also their possible limited availability.

20 See Purr (2019) and Günther (2019).

21 The basic principle of the Carbon Contracts for Difference is to grant investment and operating subsidies for a longer period of about 10–20 years in order to compensate for the higher operating costs of low-CO_2 technologies compared to conventional production processes. The amount is based on the difference between the current certificate price in emissions trading and the CO_2 avoidance costs. See Joas, F. et al. (2019): Klimaneutrale Industrie. ("Climate-neutral Industry") Berlin: Agora Energiewende. Available online: https://www.agora-energiewende.de/fileadmin2/Projekte/2018/Dekarbonisierung_Industrie/164_A-EW_Klimaneutrale-Industrie_Studie_WEB.pdf.

6. Pushing environmental and climate policy processes ambitiously in Europe

The European negotiations on the EU budget and the Green Deal in the second half of 2020 will set the course for restoring a strong and future-oriented European economy and achieving climate neutrality by 2050. Both processes can only succeed if there is solidarity between the Member States and renewed confidence in the usefulness and effectiveness of European action. The Federal Government, as EU Council Presidency, has a great responsibility to balance interests and bring about viable and consensual compromises. It is in Germany's interest for the European states to emerge strongly from the crisis together, as the German economy benefits greatly from the single market in the EU.

- **EU Budget 2020 and the negotiation of the Multiannual Financial Framework (MFF) 2021–2027:** According to the EU Commission, the EU budget is the key element both for the European Green Deal and for overcoming the current economic crisis. Additionally, the investment plan for the Green Deal (EUR 1 trillion in the 2021–2030 period) and a European Recovery Programme are being negotiated, which will provide additional funds for investment, especially in the first three years of the MFF. The traditional controversies between Member States in budget negotiations are now considerably exacerbated by the fact that the pandemic and the social and economic consequences of combating it have affected some states to a much greater extent than others. Given the additional financial burden, a number of Member States also fear that they will not be able to meet the costs of implementing the Green Deal. In particular, the investment plan for the Green Deal must be used consistently and effectively for the decarbonisation of the European economy, the promotion of a circular economy, nature conservation and environmental protection, and the fair transition of emission-intensive regions.

In its role as EU Council Presidency and on account of Germany's significant economic and financial power, the Federal Government has a great deal of influence and a high level of responsibility for the success of the negotiations. Given the considerable financing volume required this year and in the coming years, the German Environment Agency believes that a generous contribution from Germany that goes beyond existing commitments is a prerequisite for reaching an agreement. Within the EU budget, consideration should be given to the extent to which the share of the budget allocated for climate purposes can be increased to well over 25 %. This also requires better monitoring of the use of funds, e. g. by linking them to national energy and climate plans or the European Semester.

The ***Innovation*** **and** ***Modernisation Funds***[22] financed from the revenues of emissions trading should be further developed and significantly increased with contributions from financially stronger Member States in order to press ahead with the decarbonisation of industry and energy supply in Member States with a high need for transformation, given the scarcity of budgetary resources. It could also be useful to extend the Modernisation Fund to other Member States.

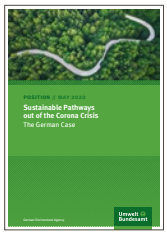
22 While the Innovation Fund supports demonstration projects for innovative technologies and breakthrough innovations in the industrial and energy sectors in all EU Member States, the Modernisation Fund enables investment in the modernisation of the energy sector, the improvement of energy efficiency, and the facilitation of structural change in carbon-dependent regions in ten Member States with below average economic performance.

- **Implementation of the European Green Deal, raising the climate target for 2030:**
  The European Commission has committed to adhere to the timetable for the planned increase in the European climate target for 2030 to 50–55 % compared to 1990 and to present a proposal (including impact assessment) in September 2020. Together with the EU Climate Law, this process is the central basis for the orientation of the EU's energy and climate policy in the next decade with the target of achieving climate neutrality by the middle of the century. Internally, the more ambitious reduction target must be translated into binding emission caps for emissions trading and for national emissions budgets within the framework of the Effort Sharing Regulation (ESR) and supplemented by more ambitious targets and policies for energy efficiency and renewable energies. Different interests and potential concerns regarding the financial or economic capacities of individual Member States must also be addressed in climate and energy policy. At the same time, the European climate target also defines the EU's updated contribution (NDC) to the Paris Convention and thus sends out a very important political signal internationally. Only a significantly higher EU NDC will be able to motivate other relevant parties to substantially increase their ambition. **The German Environment Agency believes that the Federal Government should support an increase in the European climate target to at least 55 % by 2030.** In order to embark on a steady path towards climate neutrality by the year 2050, the framework conditions must be designed in such a way that a reduction of at least 60 % is possible by 2030. The promise of an ambitious German reduction contribution can take the pressure off financially and economically weaker member states and promote acceptance of an ambitious EU climate protection target. The German government should also insist that the adjustment of the binding emissions budgets in EU emissions trading and the ESR takes place immediately, if possible as early as 2021, and is not postponed until the second half of the decade.

- In addition to climate and energy policy, the European industrial strategy, the action plan for a circular economy, the "From Farm to Fork" strategy, the biodiversity strategy, and the zero pollution action plan must also be advanced in the context of the European Green Deal. Here too, it is important to pursue the high, formulated ambitions and use the extended European financing instruments to promote a sustainable economy.

Outlook

The German Environment Agency believes that the proposed investment and funding measures combine what is necessary in the short term to revive the economy with an ambitious medium-term agenda extending to 2030 for the sustainable and socially acceptable transformation of the German and European economy. It remains important to do this within a long-term, reliable framework, such as the outlook path to climate neutrality for Europe in 2050. Monitoring of the measures should reveal possible undesirable developments so that follow-up action can be taken. This applies to all key areas of the forthcoming transformations – e. g. energy, housing, mobility, digitalisation and land use – and especially with regard to their environmental and social consequences. The Corona crisis shows that a new focus must be placed on the resilience of these various areas.



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