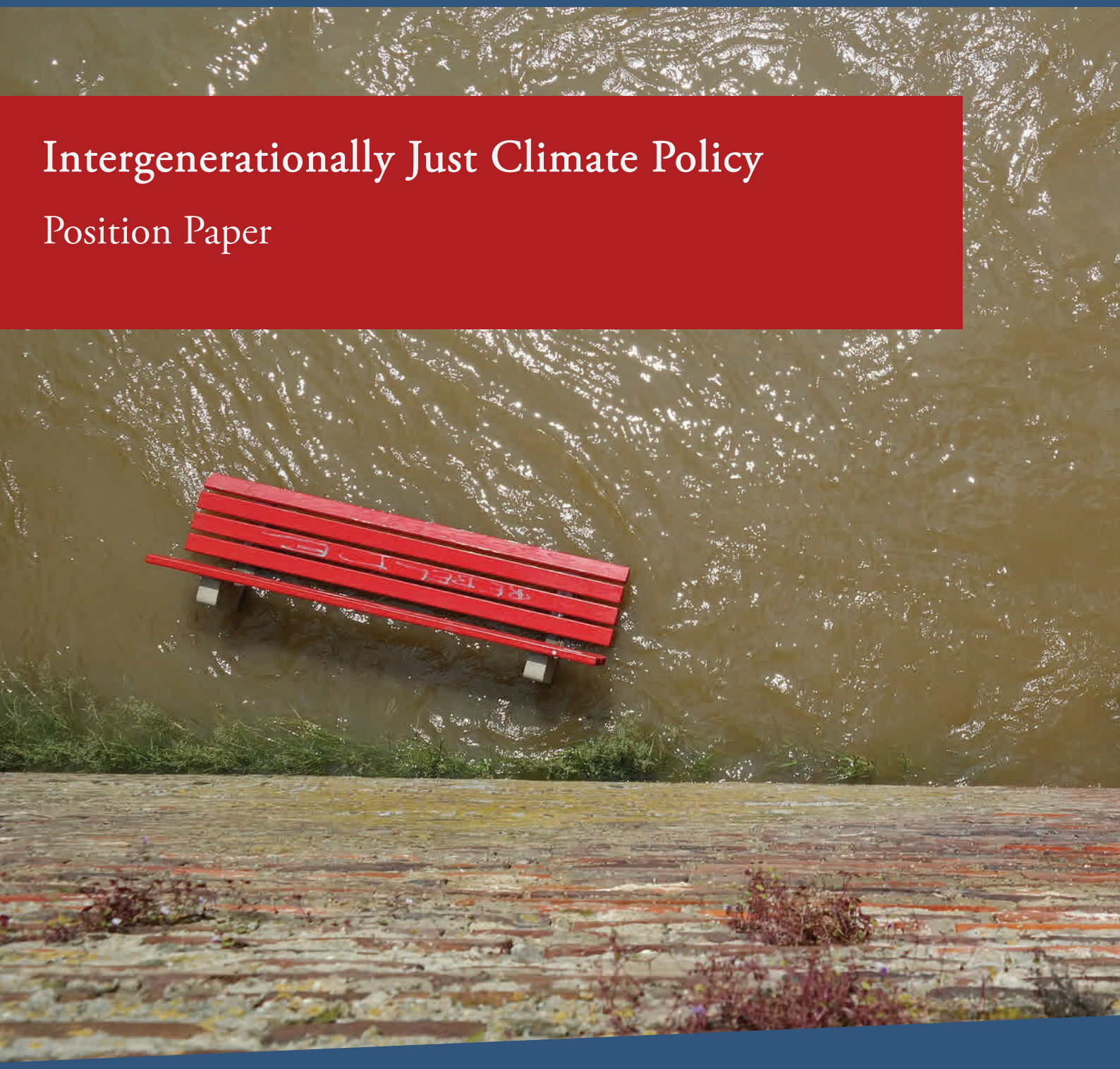
Foundation for the Rights of Future Generarions

Intergenerationally Just Climate Policy

Position Paper



Summary

The **climate crisis** is a **security risk for all people living today and for future generations.** The rise in average global temperature, rising sea levels and increasing frequency of extreme weather events threaten the **food and water security** and **health** of hundreds of millions of people worldwide and will lead to **conflicts and migration flows.** From a global perspective, the climate crisis also endangers a considerable proportion of animal and plant species as well as entire ecosystems.

These consequences will be felt most by future generations and the younger ones living today. Those who are younger today will have to spend a large part of the rest of their lives in a "hot period" (compared to the last millennia). **Those who will be even more affected, the future generations, our descendants, children, grandchildren and great-grandchildren, however, have no possibility of influencing or sanctioning the situation today**. Therefore, special commitment is needed for the coming generations, including the children and young people living today. The SRzG calls on today's decision-makers to pursue a responsible climate policy that is fair to all generations. You have only borrowed this world from us. And we have all only borrowed **this world from our children and grandchildren.** We should hand it over to them in at least as good a condition as we inherited it.

To prevent severe and irreversible climate change, humanity must drastically reduce its greenhouse gas emissions. To ensure this, it is essential to **meet** the **climate targets** agreed in the Paris Agreement in 2015, which aim to limit global warming to 1.5 °C, but in no case above 2 °C. **With current efforts, however, the global community would be exposed to a warming of far more than 3 °C by 2100.** Therefore, as put forward in the IPCC report of 2018, rapid and far-reaching system transitions in energy, land, urban and infrastructure, as well as in industrial systems, must be brought about in order to achieve the 1.5 °C target.

The global community as a whole has committed to greenhouse gas neutrality by 2050. In Germany, the "climate ruling" of the Federal Constitutional Court in spring 2021 called for an adequate contribution to this. In 2020, greenhouse gas emissions (CO_2 equivalents) in this country were 739 million tonnes. **Following the climate ruling and the planned amendment of the Climate Protection Act (Klimaschutzgesetzes), the German government now wants to become greenhouse gas neutral by 2045, i.e. to achieve net zero. The intermediate targets are to be a reduction of 88 % by 2040 and 65 % by 2030 (compared to the reference year 1990).** However, the way to get there is completely unclear. To reach these targets, we would have to immediately start changing our lifestyles and transforming our societies to reduce CO_2 emissions.

The good news is that most of the **knowledge and technological know-how** to achieve greenhouse gas neutrality, even earlier than 2045, is **already available today.**

The bad news: The **(political) will** to use this knowledge and potential to save greenhouse gases and stop the climate crisis is still **too weak in** Germany. It is now **high time for German politics and society to take the speed and severity of the climate crisis seriously, to finally implement concepts ambitiously and to seriously commit to protecting the basis of life**. The "climate ruling" of the Federal Constitutional Court establishes by the highest court that the climate policy of the current government has so far not been ambitious enough and in parts even violates the principles of the constitution. We can no longer afford to sit back comfortably and worry about the climate only after unusually warm single days or particularly severe floods. We need a real structural and cultural change. In order to achieve the goals of the energy transition, a tripling of electricity generation from photovoltaics and a doubling of electricity from onshore wind power is necessary in Germany in the next few years. In addition, it would have to be stipulated in 2022 that no more passenger cars with combustion engines would be registered from 2032 onwards in order to initiate the transformation of individualised road transport. Furthermore, the shift of traffic to relatively climate-friendly modes of transport (rail and public transport, cycling and walking) is necessary. Policymakers would now have to initiate a move away from mass livestock farming and promote a shift in the population to a lower-meat diet through incentives. In the "buildings and construction" sector, ambitious new building standards and the large-scale implementation of heat and efficiency measures in existing buildings would now be necessary.

The climate crisis is certainly one of the greatest, if not *the* greatest, challenge facing humanity at the beginning of the 3rd millennium. With regard to Germany, the Federal Constitutional Court has ruled: "The state cannot evade its responsibility by referring to greenhouse gas emissions in other states."

It is the task of our generation to make Germany a climate-neutral country as quickly as possible. As representatives of the young generations, we call on politics, business and society to finally take responsibility for the climate! The window of opportunity for this change of direction is closing. It is time to act now. Immediately does not mean 2023 or 2025.

Immediately really means immediately.

We therefore demand from the German Federal Government:

1. Aligning all actions **with the 1.5° target of the Paris Agreement** and diplomatic engagement in the international community for its international compliance.
2. **Compliance with the new climate protection plan,** which is **geared towards the target year 2045,** as well as the **interim targets for 2025, 2030, 2035 and 2040.**

To achieve this we demand

For the energy production sector

3. The **decommissioning of all German** coal-fired **power plants by 2030.**
4. The nationwide expansion of electricity generation **from photovoltaics by 150 GWh and from onshore wind power by 100 GWh by 2030** and a **complete switch to renewable energies for electricity generation by 2040,** with interim targets of **70 % by 2030** and **85 % by 2035**.
5. Shaping the energy transition as a **citizens' energy transition 2.0.**

For the industry sector

6. The **Germany-wide reduction of emissions** in **the industrial sector** by **50 %** by **2030** and **greenhouse gas neutrality by 2042**. This can be achieved, among other things, by successively replacing chemical raw materials with chemical recycling and synthetic feedstocks based on non-fossil CO_2.

For the buildings and construction sector

7. The large-scale implementation of **heating and efficiency measures, ambitious new building standards** and the **creation of incentives, obligations and a unified identification system for owners** to increase investment in renovation measures to realise the energy saving potential, promote the use of renewable energies and reduce energy demand.

For the carriage and transport sector

8. **Shifting transport** from energy-intensive and greenhouse gas-intensive modes of transport (motorised private transport and air transport) to relatively **climate friendly modes of transport** (local and long-distance public transport, walking and cycling).
9. The **transformation of individualised road traffic** to emission-free, innovative and integrated mobility concepts. From 2032, no more passenger cars with combustion engines may be registered.

For the human settlements, infrastructure and spatial planning sector

10. **Intelligent urban and spatial planning** that makes **urbanisation climate-compatible,** focuses on human health and takes into account the requirements of climate change adaptation.

For the agriculture and forestry sector

11. **Moving away from industrial factory farming** to reduce methane emissions and promoting vegetarian or vegan diets.
12. Ecological and **sustainable silviculture**.

Biological and technical measures for the active removal of CO_2 (if CO_2 reduction has priority in principle)

13. **Biological measures** such as the large-scale reforestation of cleared forest areas or the rewetting of drained peatlands**, which should take priority over technical measures.**
14. **Technical measures** such as the increased promotion of basic and applied research into **carbon dioxide removal technologies**, especially with regard to the underground injection of CO_2.
15. The **refraining from geoengineering methods** that pose major risks.

Democracy and law

16. The **institutionalised protection of the rights of future generations** through the creation of a Future Council and the further development and upgrading of existing institutions such as the Parliamentary Advisory Council on Sustainable Development.
17. The strengthened **constitutional anchoring of** intergenerational **justice, sustainability and climate protection.**

Empowerment for climate protection

18. The early **implementation of climate education** (kindergarten, primary school) and the anchoring of **climate change, sustainability and intergenerational justice in the curriculum** at the latest in lower secondary school.
19. The **active participation of young people** in decision-making and legislative initiatives **at regional, national and international levels.**
20. A **right to vote by registration** without age limit.

We also call on the German Federal Government to advocate for the following goals at the international level:

21. **Strengthening the institutions of European and international climate policy**.
22. More **diplomatic and financial efforts for international climate policy**.
23. Aligning national and European economic cooperation and development policies with the **principle of sustainable development**. **Providing more resources** for emission-reducing measures and climate impact adaptation in particularly affected regions worldwide.

Content

1. Climate policy today– ambitious and generationally just?

1.1. The climate crisis: a question of generational justice

Heatwave summers, extreme weather events, loss of species, flooded coastal regions – environmental and climate policy influences the opportunities of young and future generations like hardly any other policy area.

The climate crisis is a product of the overstepping of planetary boundaries, specifically the ability of planetary sinks to absorb climate gases. Climate change began with the start of the Industrial Revolution around 1750[1] and is already having a crisis-like effect on those living today. The most serious effects of the climate crisis, however, will only become visible in the future. The future generations, i.e. our descendants – children, grandchildren and great-grandchildren – do not have any opportunities to exert any influence or to sanction in the "today". Since they are not yet born, they are not part of the usual political balancing of interests. This is why **today's generations** need to be **especially committed to the coming generations.**

Climate policy must be generationally just. For us, intergenerational justice is realised when the chances of future generations to satisfy their own needs are at least as great as those of the present generation. This means a fair distribution of resources as well as of burdens and obligations between the generations. **The consequences of failing to protect the climate affect both future generations and the younger ones living today the most.** Climate protection is therefore a question of justice between all those living today and the generations to come, but also a question of justice between old and young today (temporal or intertemporal generational justice, cf. Tremmel 2012; 2019). Climate change also affects global justice (justice between the global North and the global South).

Future generations have a right to different forms of capital – for example, artificial capital in the form of infrastructure, institutions and financial assets, social capital in the form of intact relationships, solidarity and consolidated social norms, and cultural capital such as linguistic diversity. As individuals, however, they are also entitled to human capital such as health, education, skills and knowledge and to so-called ecological capital (cf. Renn/Knaus 1998: 45). This last form of capital is the foundation and prerequisite for all others. **Generational justice includes the passing on of a fair ecological heritage, i.e. an intact environment, to future generations.**

[1] pre-industrial = the period spanning several centuries before large-scale industrial activities began around 1750. The reference period 1850-1900 is used as an approximation for pre-industrial mean global surface temperature. (IPCC 2018b, Glossary).

With a risky "business-as-usual" policy, this right of future generations to an intact basis for life is being violated today. Inaction in climate policy would be fatal for future generations. It will lead to high future costs that will be borne by our descendants.

On 12 December 2019, the Bundestag (German Parliament) passed the **Federal Climate Protection Act (Bundes-Klimaschutzgesetz, KSG).** The goal was the long-term achievement of **greenhouse gas neutrality by 2050,** to which the Federal Republic of Germany had committed itself at EU summits as well as at the climate summits of the nations. The purpose of the KSG 2019 was to ensure that national climate protection targets are met and that European targets are met. Through a gradual reduction of greenhouse gas emissions, a reduction rate of at least **55 per cent was** to be achieved by 2030. For the annual reduction targets, permissible annual emission quantities were defined for the sectors: energy, industry, transport, buildings, agriculture and waste management and other. For the periods from 2031 onwards, it was determined that the federal government would **not** set annually decreasing emission levels by statutory order **until 2025.**

After several climate activists filed constitutional complaints, the **First Senate of the Federal Constitutional Court decided on 24 March 2021,**[2] that the regulations of the Climate Change Act are in part incompatible with fundamental rights (cf. Federal Constitutional Court 2021a). The incompatibility with fundamental rights refers to the lack of sufficient measures for further emission reductions from 2031 onwards. The provisions of the KSG were classified as a violation of the liberty rights of the complainants, some of whom are still very young. The judgement states (the following is a translation of the original quote):

> As a climate protection requirement, Article 20a of the Basic Law has an international dimension. The national obligation to protect the climate does not conflict with the fact that the global character of climate and global warming precludes a solution to the problems of climate change by one state alone. The climate protection imperative requires the state to act internationally for the global protection of the climate and obliges it to work towards climate protection within the framework of international coordination. The state cannot evade its responsibility by referring to greenhouse gas emissions in other states. (cf. Federal Constitutional Court 2021b: 2).

This makes it clear that Germany – regardless of the international dimension of the climate crisis – has an obligation towards its own citizens. It was stated that the legislator had not violated its legal duty to protect the complainants from the dangers of climate change. However, the regulations irreversibly postpone high emission reduction burdens to periods after 2030. The steps to achieve greenhouse gas neutrality by 2050 must not be pushed into the future at the expense of younger generations. However, since this is precisely what

[2] The ruling was not published until 29 April 2021.

happened with the KSG 2019, the complainants' civil rights were violated by the provisions (cf. Federal Constitutional Court 2021a).

In fact, Germany had reduced its greenhouse gas emissions by 40 percent by 2020 compared to 1990, if only thanks to the Corona crisis, and thus achieved its climate target (Federal Government 2021).[3] Within a decade, by 2030, only 15 more percentage points would have been added according to the KSG 2019 (with the aforementioned target reduction rate of 55 per cent in 2030). In the two decades between 2030 and 2050, the last 45 percent would then have had to take place, i.e. 22.5 percent per decade (always based on 1990 levels). This inequality was rightly criticised by the Federal Constitutional Court. **Someone from Angela Merkel's generation would then have been able to maintain a significantly more energy- and greenhouse-intensive lifestyle than someone from Luisa Neubauer's generation.** The federal government now wants to make improvements. It could have done so long ago. "Die Schonung künftiger Freiheit verlangt auch, den Übergang zu Klimaneutralität rechtzeitig einzuleiten" ('the protection of future freedom also requires that the transition to climate neutrality be initiated in good time') writes the Federal Constitutional Court in its press release (Bundesverfassungsgericht 2021b). Timely would have been ten or more years ago, according to the SRzG.

Failure to protect the climate can be expensive for the German government and the people of Germany.[4] The European Union has raised its 2020 reduction target from 40% to 55% (by 2030).[5] If Germany fails to meet the national targets set by internal EU agreements, it must compensate for its deficit by buying EU emission rights.

[3] https://www.umweltbundesamt.de/presse/pressemitteilungen/treibhausgasemissionen-sinken-2020-um-87-prozent. Press release from 15.03.2021.
[4] The Federal Environment Agency published in 2018 that the emission of one tonne of carbon dioxide (CO_2) causes damages of around 180 euros (Umweltbundesamt 2018a).
[5] https://ec.europa.eu/clima/policies/eu-climate-action/law_en.

1.2. The clock is ticking for 1.5 °C

When making political decisions today, the current generation must already take into account the people who will inhabit the earth after us. Therefore, the SRzG demands a responsible, generationally just climate policy from today's decision-makers. You older people have only borrowed this world from us younger people. And we have all only borrowed **this world from our children and grandchildren.** We should not pass it on in a much worse condition.

In order to ensure damage limitation, it is essential to meet the climate targets agreed in the **Paris Agreement** in 2015 (cf. European Union 2016):

1) Limit the increase in the global average temperature to **well below 2 °C** and continuing or increasing efforts to limit the rise in temperature to a **maximum of 1.5 °C compared to the pre-industrial era.**
2) Increase **adaptive capacity to** the negative impacts of climate change and promote resilience.
3) the **provision of all financial flows** in line with a pathway towards low greenhouse gas (GHG) emissions and climate compatible development.

The global inventory of **Nationally Determined Contributions (NDCs)** forms the core of the national ambitions to achieve the Paris climate targets. By 2020, all countries had to submit these contributions for the first time. So far, 84 states have done so.[6] **With the current NDCs, the global community would be exposed to warming of about 2.4 °C by 2100.**[7] The target of 1.5 °C would thus be clearly missed. If all countries were to follow the least ambitious targets, such as those of the USA, Russia, Saudi Arabia or Turkey, the climate would even be heading for 4 °C warming.

[6] https://www.climatewatchdata.org/ndcs-explore (as of 20.05.2021).
[7] https://climateactiontracker.org/global/cat-thermometer/ (as of 20.05.2021).

Figures 1 and 2 show how compatible the NDCs of the countries are with the goals of the Paris Climate Agreement. It is clear how many degrees global warming would be limited to if all NDCs were in the respective range (light green stands for the < 1.5° world).

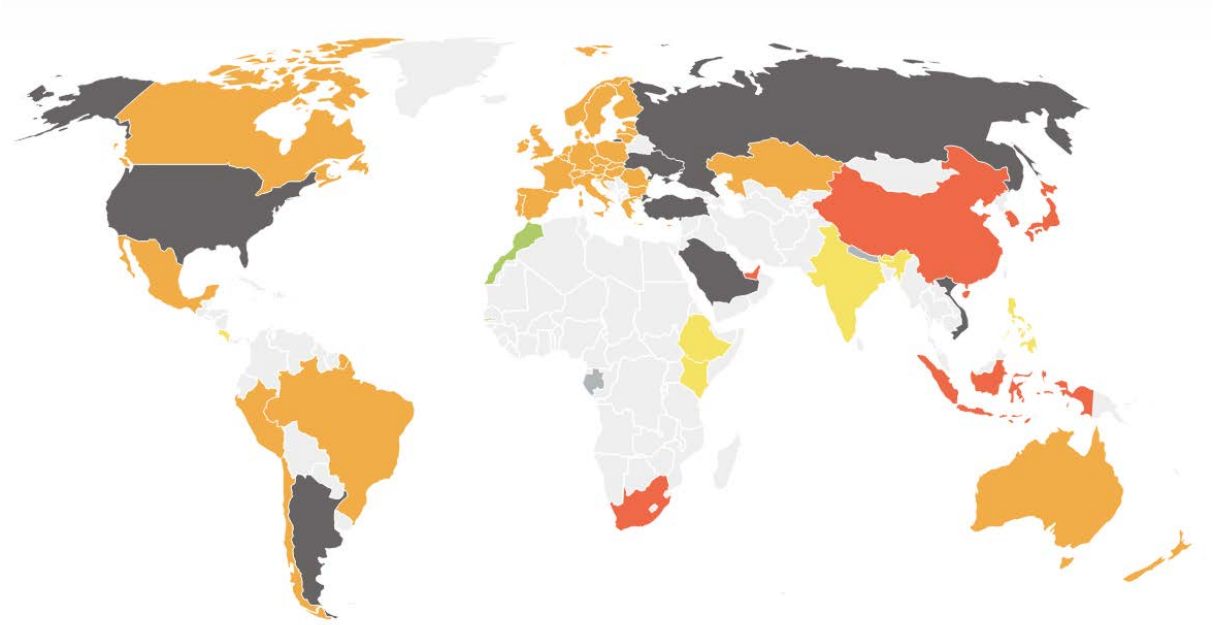


Figure 1: Compliance with the Paris climate targets in a country comparison
(Source: Climate Action Tracker 2021; as of November 2020), https://climateactiontracker.org/countries/.

Figure 2: Nationally Determined Contributions (NDCs) of individual countries and compliance with the Paris climate targets (Source: Climate Action Tracker 2021)

1.3. It is five to twelve

In order to meet the 1.5 °C target and avert the climate crisis, the international community still needs to make massive efforts, as things stand today.
All countries must significantly increase their individual ambitions and act collectively at the global level. The largest economies and emitters have a particular responsibility, especially the G20 countries, which are responsible for 79% of global greenhouse gas emissions and 81% of energy-related CO2 emissions (Climate Transparency 2018: 8). On average, 82 % of energy supply in the G20 countries still comes from fossil fuels (Climate Transparency 2018: 6).

We, as representatives of the young generation and future generations, observe the extent and speed of the advancing climate crisis, the inaction of the international community and the unambitious German climate policy with great concern. We call in the clearest of terms for politics, business and society to commit to protecting the basis of life for all. We already see the climate catastrophe approaching us like a train at breakneck speed. It is five to twelve, the decision is now ours: Do we want to stand idly by and watch the climate crisis overtake us, or do we set the right course to avert the future catastrophe?

2. After us the deluge? Dangers and risks of the climate crisis for human livelihoods

2.1. Five overarching systemic hazards

Human activities have already caused about 1.0 ° Celsius of global warming compared to pre-industrial levels (IPCC 2018 a,b). And the mean global surface temperature will continue to rise (at an accelerated rate) unless the cause is addressed. In physical terms, the change in the composition of the atmosphere is the cause of the temperature rise: the proportion of climate gases, especially carbon dioxide, has increased. The CO2 concentration in 2019 was 411 ppm. The pre-industrial CO2 concentration was 280 ppm, which means an increase of almost 50%. Accordingly, the rate of increase in atmospheric CO2 over the last 60 years is about 100 times faster than increases in the course of natural variations. Of particular concern is that the rate of increase is accelerating. In the 1970s it was 0.7 ppm/year. In the 1980s, the annual average rate of increase was 1.6 ppm/year. Last year, the rate of increase was 2.2 ppm per year (Latif 2020, 55-66).[8]

[8] The last time there was 411 ppm was 3 million years ago, when the average temperature was 2-3 degrees higher than today and the sea level was 15-25 m higher.

Figure 3 shows the CO_2 concentration in the earth's atmosphere and the global temperature since 1900 in context.

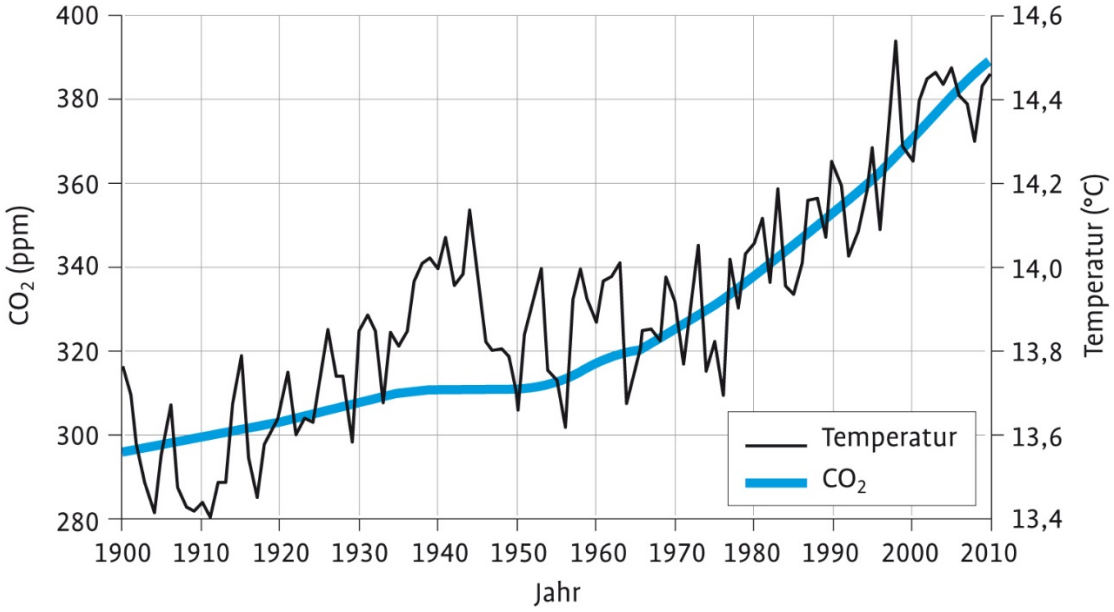


Figure 3: Global temperature and carbon dioxide (Source: Latif 2020: 12) (Translations: Temperatur= temperature and Jahr= year)

Some consequences of climate change are already being felt worldwide and will intensify if greenhouse gas emissions cannot be significantly reduced and warming of more than 1.5 °C averted. The IPCC (2018b: 12) speaks of reasons for concern.

First, climate change threatens unique and endangered ecosystems, such as coral reefs, glaciers or the Arctic. Depending on the degree of warming, not only will the number of threatened ecosystems increase but many plant and animal species with limited adaptability will also be endangered, and the livelihoods of indigenous peoples who depend on ecosystems will be threatened.
Secondly, weather extremes such as heat waves and droughts, but also heavy precipitation and storms as well as flooding are likely to increase, especially in coastal zones. Thirdly, different regions of the world will be affected to different degrees. The risk and the number of people affected will be particularly high in regions near the equator and in those with development deficits. In addition, these weather extremes will affect water resources and food production in all regions, with already vulnerable populations being particularly affected. These consequences will in turn have global impacts, such as worldwide soil degradation or risks to the global economy.
Finally, with increasing warming, systems are facing drastic and in part irreversible changes, such as the possible melting of the Greenland and Antarctic ice sheets (IPCC 2018b: 13f.).

These vulnerabilities highlight the limited adaptive capacity of people, ecosystems and the global economy to changes in the world's climate.

2.2. Core risks for the preservation of the foundations of human life

Some serious risks and threats to the existence of humankind can be derived from these hazards, which are not only far-reaching, but also mostly irreversible.

The population in flat and coastal zones and on small island states will lose their natural and material livelihoods. Due to sea level rise[9] , the risk to their health and lives will also increase. In inland and urbanised areas, too, the risk of enormous damage will increase due to a lack of adaptive capacity in the wake of floods. Such extreme events can cause the collapse of life-saving infrastructures and supply systems such as electricity, water supply or health care.

Extreme heat periods increase the risk of health problems and mortality, especially for city dwellers. This can lead to an overload of care services. In addition, rising temperatures increase the risk of fatigue, poor concentration and cardiovascular stress, which can subsequently affect performance in the workplace (Kjellstrom et al. 2017). The decade 2010 to 2019 was the warmest ten-year period in Germany as well as worldwide since measurements began (Latif 2020: 47). Australia was hit particularly hard: on 18.12.2019, the daily maximum temperature averaged 41.9 degrees across Australia. In one city in the state of Queensland, temperatures rose above 40 degrees for 43 days in a row (Latif 2020: 50). Of course, Germany was not hit that hard, but here in Germany, too, a temperature above 42 degrees was measured for the first time in July 2019. The extremely hot summer of 2018 had already prompted the Gesellschaft für deutsche Sprache (Society for the German Language) to choose the word "Heißzeit" (hot age) as word of the year. In the justification, it was explained that the phonetic analogy to the Ice Age is intended to illustrate the epochal dimension of the climate events we are currently experiencing.[10]

If harvests are threatened globally or locally due to droughts or highly variable rainfall, the risk to the food security of the population increases, especially in regions already threatened by poverty. In addition, the rural population in particular is threatened by such events and the resulting crop failures or livestock losses. As a result, they lose not only their natural livelihoods, but also their income.

The oceans absorb CO_2 – since the beginning of industrialisation, about 30 % of the CO_2 that was released into the atmosphere. At the same time, however, the uptake lowers the pH value of the seawater (acidification). Marine ecosystems are thus affected in two ways by the increase in greenhouse gases in the atmosphere. Due to rising water temperatures associated with global warming, marine ecosystems have to adapt to both higher temperatures and more acidic water, which means they lack the energy for growth, reproduction or resistance to other environmental stresses (BIOACID n.d.). As a result, the existence of regions and population groups dependent on these ecosystems, e.g. through fisheries, will be threatened.

[9] By 2100, global mean sea level rise is projected to be 26 to 77 cm with 1.5 °C global warming. With a warming of 2 °C, it will be about 10 cm more (IPCC 2018a). Tipping points such as the melting of the Greenland ice sheet could greatly increase sea level rise.

[10] https//gfds.com/word-of-the-year-2018/.

2.3. Core risks for sectors and regions

2.3.1. Food production and food security

Climate change will have an overall negative impact on agricultural yields, especially on grain and staple foods, even if the rise in temperature will be temporarily beneficial for some regions. Livestock farming will most likely be directly affected by the **collapse of agricultural yields,** as they will reduce not only the amount of available fodder but also the quality of fodder. In addition, there is the challenge of water availability during drought. This is likely to be accompanied by a greater spread of diseases that will threaten this sector of the economy and food security (IPCC 2018b: 11).

Fluctuating and declining yields will pose an extraordinary threat to disadvantaged and vulnerable populations. This will most likely affect populations in the Arctic, arid regions, island states, least developed countries, agriculture or fisheries-dependent groups, and indigenous groups and those already at risk of poverty (IPCC 2018b: 11; World Food Program 2018).

In this context, the **risk of poverty** and the **disadvantage** of affected groups are expected to increase as global warming progresses, while adaptive capacity decreases.

2.3.2. Freshwater supply

Water and food security are inextricably linked, because without water there is no life and no plant growth.

With global warming, a larger amount of water evaporates first, which then falls on the earth in precipitation. Although the amount of precipitation will therefore generally increase as a result of climate change, precipitation will not be evenly distributed around the world. Rather, dry regions will almost certainly become even drier, while wet regions will become even wetter (IPCC 2018b: 11f.). Paradoxically, however, the risk of heavy precipitation in dry regions will also increase. In addition, the decline of snow and ice in higher-lying areas, which have so far served as long-term freshwater reservoirs and store precipitation, will release freshwater reserves in the short term, which will then no longer be available to future generations.

As less water is stored and precipitation changes in terms of quantity and frequency, less water will be available for households, agriculture and industry. This affects all uses of drinking water – from the production of textiles, food and other goods to the generation of electricity. If more water is withdrawn for these purposes than is available and can be renewed naturally, we speak of water stress. Water stress is exacerbated by population growth and economic development, which lead to higher water demand. **If the earth warms from 1.5 °C to 2 °C, twice as many people are expected to be affected by water stress**. Again, populations in some regions of the world will be more affected than others (IPCC 2018b: 11). The Intergovernmental Panel on Climate Change assumes that with a warming of up to 1.4 °C, population development will be decisive for the water availability of an area. **Above 1.4 °C, climate change will be the decisive factor for water availability** (Jiménez Cisneros et al. 2014).

2.3.3. Climate change as a conflict factor

Global warming and its accompanying effects threaten the livelihoods of many people, especially in developing regions. It is true that a combination of factors usually leads to interpersonal, intra-state or inter-state conflicts, so that future conflicts cannot always be attributed exclusively to climate change. However, the **consequences of climate change** can **intensify conflicts or escalate them into violent conflict**.

Particularly with regard to the use of water as a livelihood, climate change and the consequences for water distribution will lead to increased conflicts – to a greater extent in regions affected by poverty, dependent on agriculture and structurally disadvantaged. It is **highly likely that climate change will act as a poverty-reinforcing factor from the second half of the 21st century onwards, making poor people even poorer and at the same time drastically increasing the number of people affected by poverty** (Hoegh-Guldberg et al. 2018: 114). Without countermeasures, the consequences of the climate crisis will exceed the adaptive capacity of many societies in the coming decades, resulting in an increase in migration (Hoegh-Guldberg et al. 2018: 114).
Climate change not only exacerbates structural inequalities. It can also be a trigger for conflict, violence and military confrontations between groups or states. This has also been the case, for example, in the civil war in Syria since 2011, where an extreme drought from 2006 to 2011 contributed to the outbreak of armed conflict (Gleick 2014, cf. Selby et al. 2017). **Climate change can further destabilise fragile states and regions, leading to military and non-military conflict at national and international levels**, e.g. in dealing with refugee movements.

2.3.4. Migration

As with conflicts, the individual decision to migrate is very rarely the result of a single factor. It is therefore problematic to attribute migration monocausally to climate change. However, it is hardly disputed that there is a **connection between global warming and poverty as well as emigration from agricultural regions** (Hoegh-Guldberg et al. 2018: 11). - If food security is threatened by drought or flooding, or if livelihoods are threatened by armed conflicts, extreme weather events or rising sea levels, it is obvious that migration movements will increase. If, for example, the Pacific island states are swallowed up by the sea as a result of rising sea levels, entire national populations will be rendered homeless. When people have to relocate involuntarily to other (densely) populated areas, cultural conflicts or conflicts over resources arise.

In 2017, a total of 68.5 million people left their homes. 40 million people are affected by internal migration. 25.4 million people left their home country in 2017 and fled to other countries. Half of them are under the age of 18 (UNHCR 2018).
In 2016, the number of people who had to leave their homes in connection with natural disasters and extreme weather events exceeded the number of "pure war refugees" threefold for the first time (Internal Displacement Monitoring Centre 2018). Climate

change will therefore also test the adaptive capacity of societies, regions, states and even the entire community with regard to migration movements in the future.

2.3.5. Human health

Global warming will have an impact on human health (see Andrews et al. 2018). **Heat waves, storm events, general warming and fires will increase the risk of injuries, heat stress, worsening of existing diseases, heat death (especially in children, the elderly and pregnant women), skin cancer and malnutrition** with a medium to very high probability (Hoegh-Guldberg et al. 2018: 11).

Climate change will also improve the living conditions for carriers of infectious diseases, such as mosquitoes and ticks (cf. UNEP 2019). In some regions, this will also increase the risk of contracting malaria and dengue fever, as well as diseases triggered by tick bites (Caminade et al. 2014). Food insecurity and an increase in poverty will also increase the risk of malnutrition and thus reduce resilience to disease (Hoegh-Guldberg et al. 2018: 11; Watts et al. 2018). Mental health will also be affected by climate change (Majeed/Lee 2017).

2.3.6. Urban agglomerations

The impact of climate change on urban agglomerations depends strongly on the location, the existing infrastructure and building stock, but also on the regional capacities for crisis management. Climate change can have **massive consequences for infrastructure and transport** or **water or electricity supply** – for example through extreme weather events or sea-level rise – and exacerbate already existing problems. As a result of more frequent and longer droughts, more and more urban dwellers will suffer from water shortages (cf. WBGU 2016: 85-89).

Major cities near rivers and coasts will be particularly affected, such as New York, Amsterdam or Bremen. Cities in Asia will be hit hardest (Hoegh-Guldberg et al. 2018: 92).

2.3.7. Loss of cultural heritage and diversity

Despite all the consequences of climate change for human health and livelihoods, the associated loss of cultural sites and cultural diversity is often overlooked, especially in industrialised societies in the northern hemisphere.

On the one hand, many UNESCO World Heritage sites, such as Venice, are substantially threatened by **rising sea levels.**

On the other hand, however, a society's **traditions and cultural practices,** such as attachment to one's homeland, identity and narrative culture, are also strongly influenced by the environment and by environmental changes. By the way, this also applies in Central Europe – keyword "white Christmas". **Indigenous people,** however, who are particularly closely connected to their environment, will be extraordinarily affected. In Arctic regions, for example, indigenous people depend on hunting polar bears and seals, fishing or herding reindeer. These traditions are not only the **basis of** their **livelihoods, but also the foundation of their cultural and social identity** (UN for Indigenous People 2018). In Pacific

small island states, where a small rise in sea level[11] threatens to swallow up entire island groups, land areas that are significant for the culture, identity and history of the societies and each individual are disappearing (cf. UN Environment 2018).

2.3.8. Ecosystems and biodiversity

Ecosystems are already under greater pressure today than in any other comparable time period in human history.

Climate change almost always exacerbates problems caused by other **stressors on the environment** (environmental stressors), such as habitat degradation, resource extraction, but also biological disturbances such as the introduction of non-native invasive species. A mechanism to reduce the negative impacts of climate change thus also reduces other stressors.

Many animal and plant species can only adapt to climate change to a limited extent and are thus exposed to a high risk even with a small amount of global warming. Species and populations that cannot shift their geographical distribution or have low resilience to environmental change are therefore at increased risk of extinction. There is increasing evidence of declines and local extinctions that are directly attributable to climate change. For example, there is much evidence to suggest that climate-related temperature increases could endanger up to every sixth animal or plant species worldwide (IPBES n.d.). Overall, the impacts of climate change are expected to lead to a net loss of global biodiversity and significant changes in the provision of ecosystem services (Staudinger et al. 2012: 2).

Changes in plant and animal species on land also alter the location and extent of species living communities. They **thus also change the composition, structure and function of ecosystems** (cf. Hoegh-Guldberg et al. 2018: 68-89). In addition, rising CO_2 concentrations in the atmosphere, **leading to higher ocean temperatures and ocean acidification**, are expected to have profound impacts on marine ecosystems, especially on coral reefs and near-bottom marine communities.

3. We determine the future of our descendants in the here and now

Climate change is certainly one of the biggest, if not the biggest, problem facing humanity at the beginning of the third millennium. What is alarming is that **even if CO_2 emissions were to be stopped worldwide overnight, climate change would continue for a considerable period of time due to the inertia of the climate system.** The climate gases already emitted in the past will continue to have an effect for a long time. Even if all emissions were stopped immediately, the temperature would remain constant at an elevated level for several decades and sea levels would even continue to rise for several centuries (IPCC 2018 a,b).

[11] The Marshall Islands, for example, are on average about 2 m above sea level.

This shows three things:

1) The climate will change due to past and ongoing CO_2 emissions and this will have an **impact on our livelihoods and the lives of future generations.**
2) How serious climate change and its consequences for the future of our livelihoods will be depends crucially on the **will of the international community** to **drastically reduce CO_2 emissions.**
3) In order to be able to pass on to future generations a basis for life that is as intact as possible, governments worldwide must **act quickly, consistently and in a way that is compatible with the future.**

3.1. A look into the future - which path are we taking?

The international community can be paralysed by the consequences of climate change. However, it can also use the threat for joint action. Climate change can therefore also be a motor for cooperation (cf. Petersen-Perlman et al. 2016). It can be the issue that unites humanity and leads it to see itself as a common steward of a fragile planet. It is in the hands of today's decision-makers, as well as today's societies, which path we take on the way to the future and, above all, what future life on our planet will look like.

The course for this is being set now. The future face of climate change will be dominated by the development of greenhouse gas emissions. The IPCC regularly summarises the state of research and aggregates projections and models that link future emission paths[12] due to various socio-economic developments with the possible impacts on ecosystems. These scenarios already give us a picture of how – depending on which path we choose – the global climate could change by 2100 and beyond.

Two extreme scenarios, the so-called **Representative Concentrated Pathways RCP2.6** and **RCP8.5**, are outlined below. Figure 4 illustrates the consequences of climate change in both scenarios with regard to a) surface temperature, b) changes in precipitation, c) ice melt in the northern hemisphere and d) ocean acidification.

[12] Emission paths represent the development of emissions.

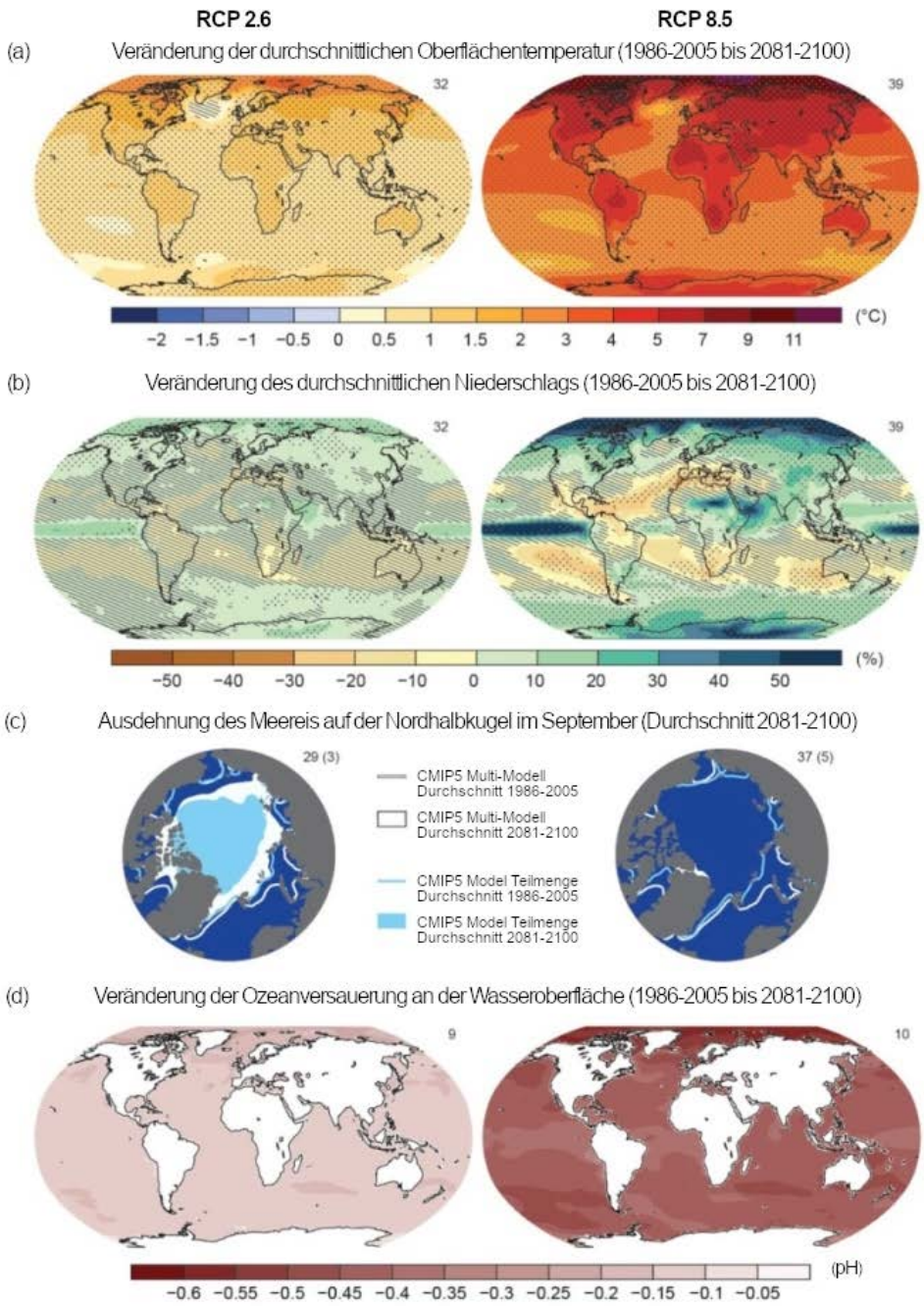


Figure 4: Scenarios in comparison (Source: IPCC 2013: 22)
Translations: a) change in average surface temperature (1986-2005 to 2081-2100) b) change in average precipitation (1986-2005 to 2081-2100) c) the extent of sea ice in the northern hemisphere in September (average 2081-2100) d) change in ocean acidification at the water surface (1986-2005 to 2081-2100)

Furthermore, this chapter uses an exemplary picture of the future to illustrate what life could look like for future generations, depending on how much climate protection effort we can make today.

3.1.1. RCP2.6 – better-case: 1.5 °C. This far and no further!

The RCP2.6 emissions scenario describes a path with a more positive development, but for which immediate action to reduce emissions and an ambitious global climate policy are essential.

The scenario assumes that greenhouse gas emissions peak by 2030 and then steadily decrease (see Figure 5).

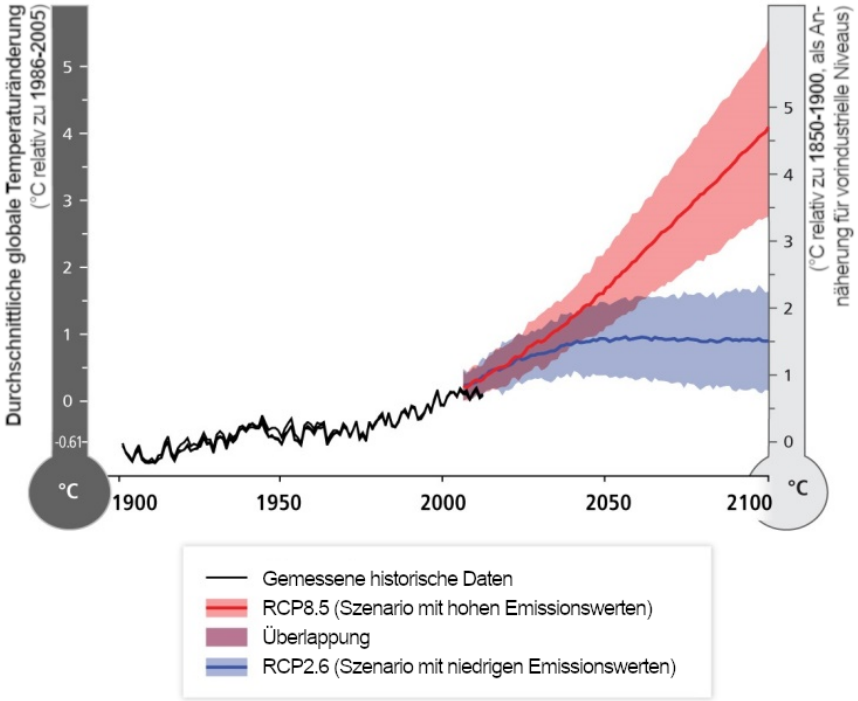


Figure 5: Average global temperature change (Source: IPCC 2014: 11)
Translations: y-axis on the left= average global temperature change (C° relative to 1986-2005) – y-axis on the right= C° relative to 1850-1900 as an approximation for pre-industrial levels – In the box (top to bottom)= measured historical data; RCP8.5 (high emission scenario); overlap; RCP2.6 (low emission scenario)

In this case, the average global surface temperature would not exceed 1.5 °C by 2100 compared to 1850-1900 (IPCC 2013: 20). Even after the end of the 21st century, global warming would not progress any further.

Limiting the temperature to a maximum of **1.5 °C significantly limits the harmful effects of climate change, but does not eliminate them entirely** (IPCC 2018b: 8). For example, the temperature of the oceans in the upper 100 m increases by about 0.6 °C, Arctic sea ice decreases by about 43 % in the summer months, glaciers lose about 55 % of their volume and permafrost decreases by about 37 % by 2050 (IPCC 2014: 24f.). As a direct consequence, global mean sea level will rise by up to 0.55 m by the end of the 21st century compared to the beginning of the century (IPCC 2013: 19-29). However, more severe systemic long-term damage to the climate system and livelihoods beyond the 21st century is largely averted in this scenario.
The goal of the international community is to initially achieve greenhouse gas neutrality in the sense of 'net zero' by 2050.[13] All future projections (except for scenario RCP8.5, see this

[13] 'Net zero' means that all anthropogenic emissions must be compensated by equally sized sinks.

chapter) then envisage **net negative emissions from the second half of the 21st century.** Achieving these projections requires **active removal of CO2 from the atmosphere**.

3.1.2. RCP 8.5 – worst case: 2 °C, 4 °C, 6 °C – climate disaster!

Now that the consequences of climate developments have been made clear in the case of high ambitions and immediate action, it is time to ask ourselves what we are heading towards if **humanity continues as it has done so far**: no to moderate implementation of climate policy goals, population growth and an increase in prosperity based on fossil energy carriers.

According to RCP8.5, there is then a danger that we will head unchecked, at full speed, towards **climate catastrophe.** We are talking here about **exceeding 2 °C by 2100. Warming will continue even after the end of the 21st century**, so that there is a probability of more than 50 % that the final result will be an **exceedance of 4 °C** (WBGU 2014: 20; see Figure 5 under 3.1.1.).

In concrete terms, this means that the temperature of the oceans will rise by 2 °C, the sea ice in the Arctic will decrease by 94 % in summer, the global glacier volume will decrease by up to 85 % and a further 81 % of the permafrost will melt by the middle of the 21st century (IPCC 2014: 24f.). As a direct consequence, the global mean sea level is likely to rise by one metre by 2100 compared to 2005.

However, continued global warming due to the burning of fossil fuels and the persistence of emissions-intensive economies will have much more serious consequences – beyond the end of this century. Exceeding 2 °C also means that **large-scale and irreversible systemic changes** will be triggered. These destabilisation processes are often referred to as "tipping points" or "tipping elements". Once set in motion, they are usually unstoppable (e.g. monsoon rains, melting of ice sheets, thawing of permafrost, ocean circulation, ocean acidification, sea level rise). These changes in the climate system have an **existential impact on the livelihoods of a large part of the world's population** and pose dangers, the exact extent of which is still partly unforeseeable.

Scenario RCP2.6

What does the future look like for our (great) grandchildren and descendants in a world with approx. 1.5 °C global warming?

If the average global temperature warms to 1.5 °C, around 9% of people (700 million) are likely to be exposed to extreme heatwaves at least once every 20 years (WWF 2018).
If population growth remains constant, by 2100 **around 350 million people in urban areas worldwide will** suffer **from extreme droughts and the associated extreme water scarcity** (Hoegh-Guldberg et al. 2018: 66). The risk of flooding increases by about 100 %, so that **up to 69 million people** are **affected by a sea level rise of about 48 cm by 2100 (**Hoegh-Guldberg et al. 2018: 91). **By 2500, the sea level will rise by about 1 m** (Hoegh-Guldberg et al. 2018: 91). The cities of Amsterdam, Bremerhaven, Hamburg, The Hague, Lisbon, Venice and Helsinki, among others, are already severely affected by this rise in Europe (Flood Maps n.d.).
Parts of the European population will also have to start facing existential questions about the future: The loss of one's own living space, property, the need to move and the compulsion to change jobs are just a few examples.
By 2100, up to 94 million people worldwide will be affected by floods each year, caused both by sea-level rise and by more frequent, more intense rainfall. By 2300, the number of people affected will rise to 188 million (Hoegh-Guldberg et al. 2018: 92).

The global economy is also not unaffected by global warming of 1.5 °C already. Countries that are heavily dependent on the fishing and tourism sectors feel the consequences particularly early and strongly (Hoegh-Guldberg et al. 2018: 110). A sea level rise of 1 m, for example, floods 29 % of the 900 coasts and thus 20 resorts in 19 Caribbean countries (Hoegh-Guldberg et al. 2018: 110). An existential economic sector is thus threatened with collapse. The **global annual catch of marine fisheries will decline by a total of about 1.5 million tonnes** (Hoegh-Guldberg et al. 2018: 101f.). Immediate consequences are job losses, the loss of an important food source and economic losses.

Besides fish and seafood, grain form another food base. The **decline in the production of wheat (up to 8.9 %), rice (up to 6.9 %), maize (up to 11.9 %) and soy (up to 3.1 %) for each additional degree Celsius** thus has direct consequences for world hunger (Hoegh-Guldberg et al. 2018: 100). Wheat production suffers a loss of about 82 million tonnes with a global warming of 1.5 °C.[14]

Already today, large-scale fires are occurring with increasing frequency in the summer months, threatening both vegetation and numerous human lives. The **frequency of fires will** increase to over 37.8 % of the global land area by 2039 (Hoegh-Guldberg et al. 2018: 75).

[14] Own calculations based on data from Hoegh-Guldberg et al. 2018: 100.

Of course, a global warming of 1.5 °C does not only have a direct impact on humans and their life together. Our grandchildren and great-grandchildren will also experience a loss of 5-10% of species each, as well as a 70% loss of global coral reefs (IPCC 2018b: 10; Hoegh-Guldberg et al. 2018: 9).

Scenario RCP8.5

What does the future hold for our (great) grandchildren and descendants in a world with more than 2 °C global warming?

Instead of 700 million people (9 % of the world's population), 2 billion more people (28 %) will be exposed to extreme heat waves at least every 20 years if the Earth warms by 2 °C (WWF n.d.).

The number of people exposed to extreme droughts and thus extreme water scarcity in urban areas by 2100 rises to about 410 million. For 2 °C warming, the **risk of flooding due to sea-level rise increases** to about 170 %, for 4 °C even to about 580 % (Hoegh-Guldberg et al. 2018: 63, 65).

By the end of this century, up to 79 million people will be affected by a sea level rise of 56 cm (Hoegh-Guldberg et al. 2018: 91). For the year 2500, a sea level rise of 6-7 m is expected (German Climate Consortium 2015). By that time at the latest, if not before, the entire Netherlands, cities such as Bremen, London, Copenhagen, Stockholm, Oslo, New York, Philadelphia, Miami, New Orleans, Rio de Janeiro and Singapore will be under water. In about two thirds of the island states, people will have already lost their living space (Flood Maps n.d.).

The number of people affected by floods will increase not only due to sea-level rise, but also due to changes in **precipitation**. Depending on whether global warming is stopped at 2 °C or continues to rise, the number of people affected will increase to up to 222 million or 700 million by 2300 (Hoegh-Guldberg et al. 2018: 92).
In this future, European tourism will also suffer losses totalling approximately 15 billion euros (-5%) annually (Hoegh-Guldberg et al. 2018: 109f.). Job losses, food insecurity and economic losses are further exacerbated by the annual decline in catches for marine fisheries of 6 million tonnes at 2°C and 12 million tonnes at 4°C (Hoegh-Guldberg et al. 2018: 101f.). **More and more people will go hungry due to a decline in grain production**. Wheat production decreases by about 9 % with each degree Celsius (Hoegh-Guldberg et al. 2018: 100). With a warming of up to 4 °C, this means a loss of 148 million tonnes.
With a global warming of about 3.5 °C, the **frequency of forest fires** would increase by about 62 % by the end of this century. (Hoegh-Guldberg et al. 2018: 75).

In addition, under the RCP8.5 scenario, our grandchildren and great-grandchildren will probably never see 8-20 % of the animal and plant species (IPCC 2018b: 10). Also, **all (100%) coral reefs** will be **lost by 2100 (**German Climate Consortium 2015).

Comparison of the effects of global warming			
Phenomenon		**With a warming of 1.5 °C < 2 °C until 2100**	**With a warming of 2 °C < 4 °C until 2100**
Extreme heat waves every 20 years		700 million people affected (9 % of the world population)	2 billion people affected (28% of the world population)
Droughts & water scarcity		350 million people affected	410 million people affected
Flood risk		*until 2100:* 94 million people affected *until 2300*: 188 million people affected	*until 2100:* exact dimensions unknown *until 2300:* 222-700 million people affected
Sea level rise		*until 2100:* 48cm rise 69 million people affected *until 2500:* 1 m rise	*until 2100:* 56cm rise 79 million people affected *until 2500:* 6-7 m rise
Economic losses & nutrition security	Tourism	29% of the 900 coasts and thus 20 resorts in 19 Caribbean states flooded	annual loss of 15 billion euros (-5 %) (in Europe)
	Sea fishing	decrease in catches *at 1.5 °C*: 1.5 million tonnes	decrease in catches *at 2 °C:* 6 million tonnes *at 4 °C:* 12 million tonnes
	Wheat production	*at 1.5 °C:*– 82 million tonnes	*at 4 °C:*– 148 million tonnes
Fire frequency		*at 1.5 °C until 2039:* Increase over +37.8 % of land area	*at 3.5 °C until 2099:* Increase over + 61.9 % of land areas
Biodiversity		5-10 % of species increased risk of extinction 70% of coral reefs lost	8-20 % of species at increased risk of extinction 100% of coral reefs lost

Table 1: Comparison of the impact of global warming (Source: Hoegh-Guldberg et al. 2018)

3.1.3. Damage limitation as a moral duty

The scenarios give an overall impression of the future we may bequeath to future generations. Our actions today always have consequences for future life on this earth. Changes have already occurred and will continue to occur in any case.

However, it is also clear that we have control **over how much our world changes**. We decide today how serious the consequences will be and how much stress and hardship we want to place on future generations. We can and must do damage limitation.

It would be presumptuous to justify inaction with powerlessness, because inaction is much more the consequence of conscious decisions. Decisions against the utilisation of our possibilities. Never has humanity been more developed, never have we known so much about the world we live in, and never have we had so many technologies at our disposal as we do now.

As a lobby for future generations, our vision is to pass on an intact livelihood to future generations. However, this would only be possible if we stay below 1.5 °C global warming. Today, this threshold is only 0.5 °C away. It is therefore realistic to estimate that we will exceed the limit necessary for our ideal goal in any case. The question now is: how far will the international community allow the deterioration to proceed?

The IPCC report shows that the 1.5 °C target is ambitious but realistic. This is the only way we can protect our descendants from poor living conditions and not have to explain to them at some point why we have simply stood by and watched their future being destroyed piece by piece.

3.2. The vision: passing on a good livelihood to posterity

The future is uncertain and future scenarios are extremely complex. They show us different corridors that we will follow under certain conditions. It would be disastrous to conclude from this uncertainty that we do not need to make ambitious efforts for the future today (Roser/Seidel 2016: 75-88). Even if we do not yet know who exactly will come after us, we can assume with a high degree of certainty that these people will have the same basic needs as today's generation.

However, it must be assumed that our responsibility towards future people does not end with leaving them an intact basis for life. Generational justice is only realised when the chances of future generations to satisfy their own needs are at least as great as those of today's generation. From this can be derived the moral appeal to leave behind a world that is at least as good as the one we live in (Caney 2018).
And since future generations, by definition, do not yet exist, it is up to us, the current generation, to stand in proxy for the rights of future generations and protect them today.

Implicitly, it means that disasters that would result in rapid and extensive losses to human well-being are to be averted preventively by the generation living today – this includes war as well as ecological, social and technical disasters (Tremmel/Robinson 2014: 102f.).

When we talk about different future scenarios, we should therefore aim for the one that will not unfairly burden future generations and allows us to be on an equal footing with our opportunities. In the case of climate policy, in the short term, this means making ambitious efforts to reach the 1.5°C target. If the representatives of all generations were to discuss how they want to treat future generations under a veil of ignorance, the result would always be that ecological catastrophes are to be avoided at all costs (Tremmel 2012). And any world that warms by more than 1.5 ° compared to the pre-industrial age is catastrophic for large parts of humanity as well as for the animal and plant world.

4. Problem areas and fields of action

According to the current state of science, the future scenario that places the least burden on future generations is the best-case emissions scenario RCP2.6 described in chapter three. This scenario envisages a peak in global greenhouse gas emissions within the next decade (until 2030) and a subsequent steady decline. The targets set in the Paris Agreement for limiting global warming to well below 2 °C and the target of limiting it to 1.5 °C in relation to pre-industrial levels are also based on this trajectory. In order to achieve the 1.5 °C target, greenhouse gas emissions on a global scale must reach zero within 20 years, i.e. by 2050, after their expected peak in 2030.

This requires a **profound reduction of CO2 emissions in** all nations. For Germany, this means the necessary compliance with the climate protection targets and corresponding

interim targets. The target set for 2020 – emissions of 749 million tonnes, i.e. a reduction of 40% compared to 1990 – was surprisingly achieved, but largely due to the effects of the Corona pandemic, not due to structural, political improvements in climate policy. Figure 6 breaks down the CO2 emissions of the individual sectors in recent years and shows that there is **still a long way to go to reach the next climate target – emissions of "only" 543 million tonnes of CO_2 -e in 2030.**

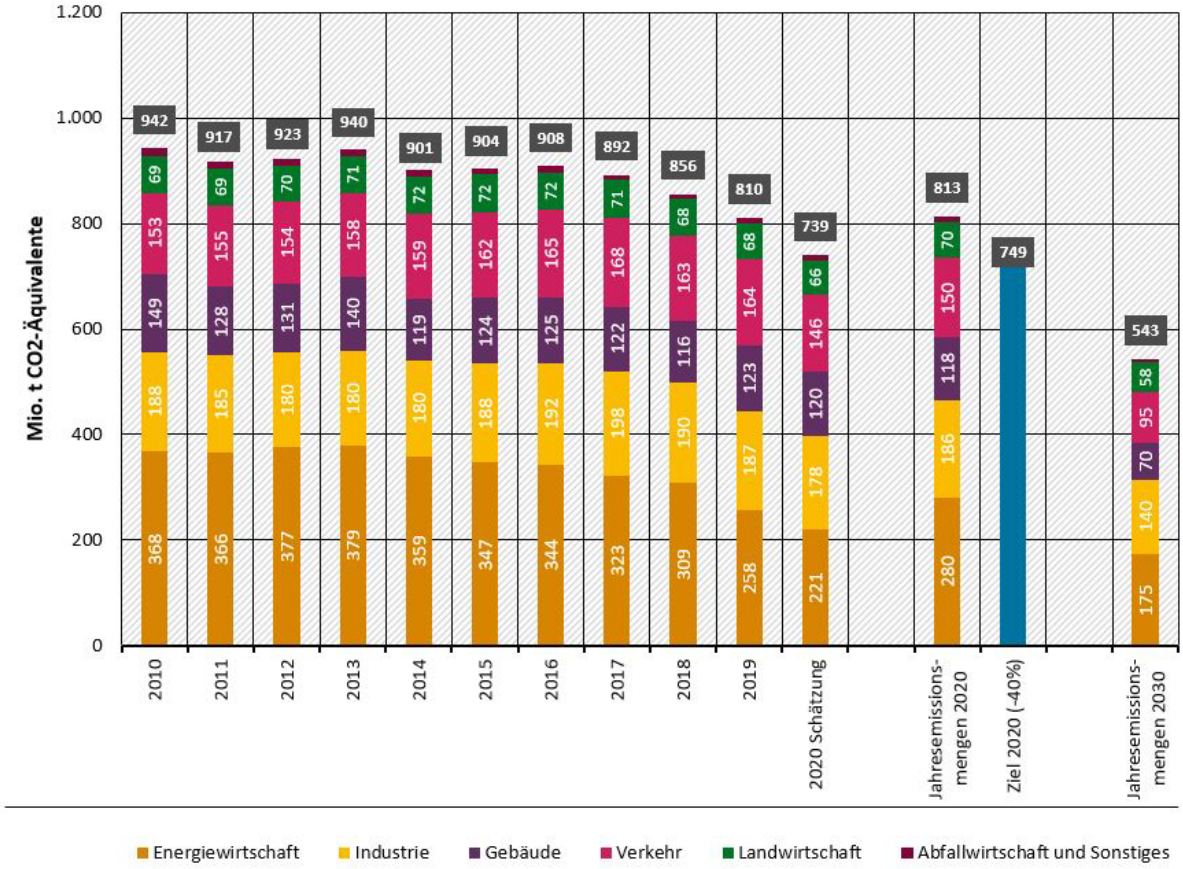


Figure 6: Development of greenhouse gases in Germany by sector (Source: UBA 2021)

Translation: y-axis= million tonnes of CO2 equivalents – x-axis (left to right)= 2020 estimate; annual emission volume 2020; 2020 target (-40%); annual emission volume 2030 – colour-coding (left to right)= Energy industry; industry; buildings; transport; agriculture; waste management and others

According to the initiated amendment to the Climate Protection Act, the German government now wants to become greenhouse gas neutral by 2045, i.e. to reduce emissions by 100% and achieve net zero, with interim targets of an 88% reduction by 2040 and a 65% reduction by 2030 (always compared to the reference year 1990). However, the path to get there is completely unclear. To achieve the ambitious targets, the SRzG calls for **immediate action to change emissions-related behaviour at** the **individual, economic and societal** levels. The climate crisis is certainly one of the greatest, if not *the* greatest, challenge facing humanity at the beginning of the 3rd millennium. With regard to

Germany, the Federal Constitutional Court has ruled: "Der Staat kann sich seiner Verantwortung nicht durch den Hinweis auf die Treibhausgasemissionen in anderen Staaten entziehen" ('the state cannot evade its responsibility by referring to the greenhouse gas emissions in other states') (Federal Constitutional Court 2021a: 2)

In the following two chapters, explicit problem areas and fields of action will be addressed which, on the one hand, have been the main causes of climate change so far, but which, on the other hand, have the greatest potential for change, transformation and solutions. For each of the largest sectors causing emissions, the problem situation and the current situation are first described. Subsequently, concrete demands for mitigation measures are derived (see 5.1). This is done with a view to both the national and the international level, whereby the focus can vary depending on the field of action. In addition, three fields of action are discussed that can support the reduction of greenhouse gas emissions politically and are indispensable for an overall societal change towards a CO2-neutral world (see 4.2).[15]

4.1. The largest emission-generating sectors and mitigation measures

4.1.1. Power generation

In Germany, 85 % of greenhouse gas emissions are energy-related (Umweltbundesamt 2020). There is therefore great potential for savings here. Surprisingly for many, Germany has been able to increase the share of renewable energies in net electricity generation to 50 % (Burger 2021). Wind power has the largest share with 27 %, followed by photovoltaics with 10.5 %, biomass with 9.3 % and hydropower with 3.7 %. Lignite only continues to have a share of 16.8 %, ahead of hard coal with 7.3 %. Nuclear energy still has a share of 12.5 %, but this will quickly decrease in the next few years due to the nuclear phase-out that has already been decided. Figure 7 shows the composition of the electricity mix in net electricity generation. The Federal Environment Agency calculated the gross electricity consumption[16] and wrote that the share of renewable energies in the electricity sector increased from 42.0 % (2019) to 45.4 % (2020) of the gross electricity consumption.[17] Even gross electricity generation from renewable energy sources exceeded electricity generation from fossil energy sources (coal, gas and oil) for the first time in 2020.

[15] For a complete listing of emissions per sector, see Umweltbundesamt (2018b).

[16] The difference: Net electricity generation only shows the amount of electricity that can actually be used by consumers or is exported. Compared to gross electricity generation, the power plants' own electricity demand and line losses are therefore missing. The ratio of the two quantities therefore shows how much of the electricity produced can really be used by end consumers. Countries with large conventional power plants, which have a high electricity own demand, therefore have worse values than, for example, countries with few large power plants or many renewable energy plants. (https://www.foederal-erneuerbar.de)

[17] https://www.umweltbundesamt.de/themen/klima-energie/erneuerbare-energien/erneuerbare-energien-in-zahlen#strom.

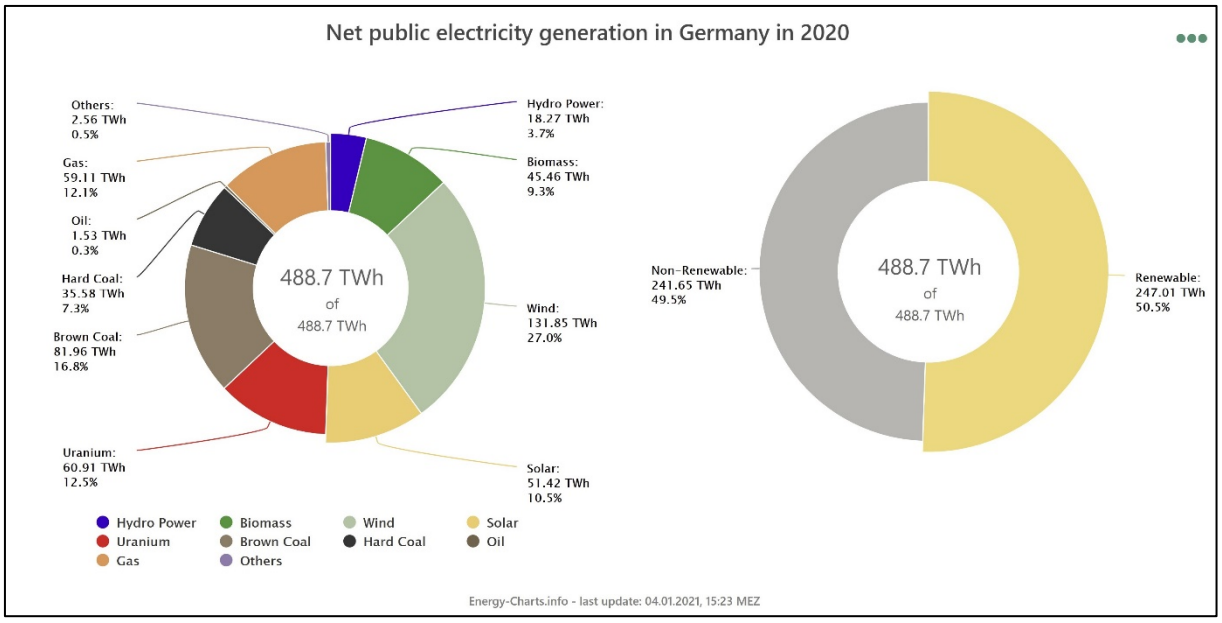


Figure 7: Net public electricity generation in Germany 2020 (Source: Burger 2021).

Renewable energies account for 23 % of the total final energy supply (i.e. including heat and transport) (Quaschning 2021). A **fundamental transformation of the energy sector towards 100 % renewable energy and lower consumption** is still a big step. However, this is indispensable in order to preserve the basis of life for future generations.

We reject the **use of nuclear energy – also called "green", clean and renewable by some.** It is associated with high risks and long-term damage (e.g. nuclear waste disposal, insecurity) (cf. Deutscher Bundestag. 2018) and is therefore not key to saving the world's climate.
In the German context, the last German coal-fired power plant must be taken off the grid by 2030 at the latest in view of the new climate targets. In this respect, the report[18] presented by the Coal Commission at the beginning of 2019 and the coal phase-out by 2038 envisaged therein is an important symbolic step, but it is not compatible with the findings of the IPCC 1.5 °C report, which had already been available to the Coal Commission for several months when the decision was taken. **The SRzG welcomes the decision to phase out coal, but criticises the late phase-out date.**

In order to achieve the goals of the energy transition, a tripling of electricity generation from photovoltaics and a doubling of electricity from onshore wind power is necessary in Germany in the next few years (Prognos/Öko-Institut/Wuppertal-Institut 2021). An earlier coal phase-out would give these future-oriented industries a boost. Transformation of the energy sector should be accompanied by generous structural aid for the affected regions to ensure future jobs and sustainable regional development. The potential and expertise of skilled workers from the conventional energy industry must be used wisely.

[18] For the full report, see Bundesministerium für Wirtschaft und Energie (2019).

The German energy transition was a great success at the beginning because citizens were the driving forces behind the expansion[19] (Agentur für Erneuerbare Energien 2018). Therefore, decentralised and citizen-driven solutions must be promoted. Only with the involvement of these actors can social acceptance and a sustainable expansion of renewable energies be achieved. Therefore, the SRzG calls for a **citizens' energy transition 2.0**. Local and regional potentials in renewable energies must be identified and the energy sources must be connected in an intelligent way, for example in "virtual power plants". In addition, massive support is needed for storage technologies to finally make them marketable.

The advancing digitalisation of our living environments and the worldwide population growth are individual factors that lead to higher energy requirements. On the one hand, this means that technologies must work even more efficiently, but on the other hand, it also means that consumption must decrease significantly. **A CO_2 price** can not only help to steer the type of consumption, but also make negative consequences and damage for future generations visible in business terms. The sums thus generated should flow into a future fund for the benefit of future generations.

4.1.2. Industry

In Germany, the industrial sector, including process emissions from industrial manufacturing, accounts for approximately 22% (2018: 195 million tonnes of CO_2-e) of energy-related emissions (Prognos/Öko-Institut/Wuppertal-Institut 2021: 28).

Particularly noteworthy are the metal industry (e.g. iron and steel), the production of mineral products (e.g. cement), the chemical industry with the production of basic chemicals and the production of goods and commodities. Of particular concern here are the emissions of carbon dioxide and nitrous oxide. We call for the **consistent increase of energy efficiency in the industrial sector, as well as the transition to the best available technologies**, in order to reduce the basic energy demand at the same time. Improvements in energy efficiency have already led to increased industrial productivity in many regions since 2000, so there is also great potential for economic benefits in the future.

Policies must go beyond energy efficiency and process optimisation to include technological transformation. A focus must be placed on policies that address the holistic reduction of CO_2 emissions, such as cross-sectoral or economy-wide, powerful emissions trading schemes.
A two-pronged strategy should be pursued, which on the one hand aims to replace fossil fuels with renewable energy, bioenergy and alternative raw materials, and on the other hand also aims to minimise the process-related energy demand. The extraction and use of alternative raw materials must always be carried out in compliance with social and ecological principles. Industrial by-products should be reused and recycled in a way that adds value to the circular economy. Synergies between different branches of industry must

[19] In 2016, 31.5 % of the nationwide installed capacity for electricity generation from renewable energy systems was generated in the hands of private individuals (Agentur für Erneuerbare Energien 2018).

be intensified and exploited. In connection with this, we call for the establishment of a research and development programme, as promised by the German government, which is geared towards the reduction of climate-impacting industrial process emissions (Bundesministerium für Umwelt 2016).

For German industry, we demand the **reduction of emissions in the industrial sector by approx. 63 % by 2030** compared to 1990 (Prognos/Öko-Institut/Wuppertal-Institut 2021: 28). We demand that German industry follow the principles of the circular economy and focuses on the lowest possible consumption of resources and energy (sufficiency principle). For example, anyone who manufactures and sells a television must take back the old appliance.

4.1.3. Buildings and construction

Emissions from the building sector accounted for 28 % of global energy-related CO_2 emissions (as of 2017) (International Energy Agency 2018). Germany (1.7 t CO_2 per capita) is among the **G20 countries with the highest direct building emissions per capita** (Climate Transparency 2018: 7).

The German government is aware of this issue and has also identified a large savings potential in the area of buildings. The federal government has already presented a roadmap for a nearly climate neutral building stock (Bundesministerium für Umwelt 2017). The government's goal is to achieve a refurbishment rate of 2 %; however, it is currently well behind this target (Deutsche Energie Agentur 2017). Renovated old buildings have almost the same energy consumption values as new buildings. Incentives for owners must be increased so that they are willing to invest in refurbishment and thus realise the energy saving potential.

A large part of the energy consumption of private households is used to heat the living space in both old and new buildings. The required energy is mostly provided by natural gas and only to a small extent by renewable energies (Bundesministerium für Wirtschaft und Energie 2017). Renewable energies must be more strongly integrated into the systems of the buildings.
By 2024, only heating systems based on the use of renewable energies are to be newly installed. We continue to advocate for a legally binding proportionate self-sufficiency of new building projects using renewable energies, as has already existed in the heating sector since 2009 through the Act on the Promotion of Renewable Energies in the Heating Sector (abbreviated: Renewable Energies Heat Act) (Umweltministerium Baden-Württemberg 2012). Existing buildings are to be renovated by 2045 in such a way that they meet the requirement of a 100 % climate-neutral building stock. In addition to large-scale heating and energy efficiency measures, old heating systems based on fossil fuels are to be completely replaced by systems powered by renewable energies.

In addition, the **basic energy demand** must be **reduced**. In this context, we call for the German government to keep its promise to further develop the lowest energy building

standard that will be valid from 2021, and to set standards with increased ambition from the beginning, so that new building standards meet the criteria of climate neutrality by 2030. In this context, we call for the orientation towards and area-wide application of the passive house construction method (cf. Passiv Haus Kreis 2008). If there is good thermal insulation and the heat demand is mainly covered by passive sources such as solar radiation and waste heat from people and technical equipment, then often no more conventional building heating is needed. Up to now, the construction of passive houses has only been supported by concessionary loans from the KfW Bankengruppe (KfW banking group). We call for an increase in the financial incentives for this construction method through subsidies from the federal government or the federal states.

We welcome in principle the introduction of the energy certificate system in 2007 by the Energy Saving Ordinance. The energy certificate is intended to provide tenants, leaseholders and others with information on how efficient buildings are in terms of heat and heating energy. We welcome such a means for more transparency and control. Nevertheless, we criticise the fact that so far there are two different versions of the certificate: the consumption-oriented and the demand-oriented energy certificate. The former is based on the actual consumption and the latter on the actual energy consumption. The former is based on actual consumption data, for example from previous tenants. The latter is prepared by an external assessor. The aim of the certificate is to enable different buildings to be compared with each other, similar to washing machines and other electronic devices, is made more difficult by this (Deutsche Energie Agentur n.d.). We therefore call for a unification and standardisation of the energy performance certificate system.

4.1.4. Carriage and transport

Both human mobility and the transport of goods are almost always associated with emissions and thus constitute a burden on the air and the environment. In Germany, the **mobility sector** accounted for **around 20% of energy-related greenhouse gas emissions in 2020,** or 146 million tonnes of CO_2-e (Prognos/Öko-Institut/Wuppertal-Institut 2021: 13). In addition to road traffic, air traffic is particularly damaging to the climate and is very consumptive. Internationally, it is experiencing considerable growth rates and accounts for 14 % of emissions in the German transport sector (Sachverständigenrat für Umweltfragen 2017: 72). Per passenger kilometre (pkm), a journey by plane is even five to six times more harmful to the climate than by long-distance train or coach (Bundesministerium für Umwelt 2017: 38).

According to the new German Climate Protection Plan 2050, the transport sector is expected to make a significant contribution to achieving the climate targets of 2030 with a 50% reduction compared to 1990. In our view, there is currently a **serious deficit of political will in the necessary transformation of the transport sector**. Earlier targets such as 1 million electric vehicles on German roads (Sachverständigenrat für Umweltfragen 2017: 76) have always been missed. This deficit must be remedied immediately by formulating and implementing a consistent target system. It would have to be stipulated in 2022 that no

more passenger cars with combustion engines will be registered from 2032 onwards in order to initiate the transfer of individualised road transport.

We call for the consistent pursuit of two approaches to achieve greenhouse gas neutrality of the transport sector by 2050.

On the one hand, individualised road transport must be transformed. On the other hand, transport must be shifted from energy-intensive and greenhouse gas-intensive modes of transport (motorised private transport and air travel) to relatively climate-friendly modes of transport (local and long-distance public transport in the form of trains and buses, walking and cycling).

To realise the second approach, it is essential to **increase the attractiveness of local and long-distance public transport, as well as walking and cycling.** These mobility options must be strengthened by significantly improving the comfort of use as well as the financial and time expenditure, while at the same time minimising barriers to use. In addition, the infrastructure must be built throughout the country and these mobility options must be strengthened in their competitiveness compared to options that are harmful to the climate. Funds should be used primarily within the framework of integrated spatial and urban planning for the expansion of cycle paths and footpaths, as well as the further expansion and optimisation of bikesharing systems. In addition, ticket prices for buses and trains should be reduced, high-speed lines for long-distance trains should be expanded and domestic flights should be replaced by night trains. Furthermore, we recommend more targeted marketing to make the advantages of climate-friendly mobility options more visible compared to car use and air travel.[20]

The following applies in particular to long-distance transport: Low-cost flights, especially short-haul flights, must no longer be an alternative to the use of buses and trains. In this context, we call for the implementation of a **paraffin tax.**

It should be noted that buses and trains are not yet 100% climate neutral. We therefore demand a further **increase in the energy efficiency of these means of transport, as well as an area-wide conversion to climate-neutral drive technologies by 2030**.

The second approach, the transformation of individualised road transport, involves the transition to 100 % renewable fuels and climate-neutral drive technologies. Logistically, there must be an increased bundling of transport, for example through state support for car sharing concepts within an integrated, climate-friendly mobility concept. Furthermore, we call for the improvement of traffic flow and the adjustment of speed limits in accordance with fuel and energy efficiency. Rapid progress in the digitalisation of transport can make a significant contribution to achieving these goals. Several million tonnes of CO_2 could be saved in a relatively short period of time simply by avoiding congestion.

[20] The use of cars involves costs that are often forgotten when comparing means of transport (repairs, insurance costs, fuel costs, wear and tear, etc.). Often, ticket prices of public transport are compared exclusively with fuel costs.

We support the introduction of a speed limit on motorways. By limiting the maximum permissible speeds on motorways, CO_2 emissions from passenger cars could be reduced. According to the Federal Environment Agency (2020), a limit of 130 km/h could already save 1.3 million tonnes of CO_2, a limit of 120 km/h even 2.6 million tonnes of CO_2 and a speed limit of 100 km/h a whole 5.4 million tonnes of CO_2.
In our opinion, it is also essential to **introduce a powerful CO_2 emissions tax** that provides targeted incentives for the purchase and use of fuel-efficient vehicles. For example, a 15-litre petrol engine would be taxed more heavily than a 5-litre petrol engine, which in turn would be taxed more heavily than an electric car.
In order to achieve climate neutrality in road transport by 2050, it is essential to move away from drive technologies that are based on fossil fuels. We therefore call for an immediate increase in **government funding for research in the field of innovative drive technologies** such as hydrogen drives. Furthermore, government incentives must be provided to encourage car manufacturers who already have such technologies ready for use to use them.

4.1.5. Human settlements, infrastructure and spatial planning

According to the Federal Statistical Office, 77.3% of the German population lived in cities in 2017 (Statista 2018). On the one hand, this means great potential for saving greenhouse gas emissions and increasing energy efficiency for housing and mobility, as explained in the previous chapters. On the other hand, it also means a high exposure of people in a changing climate.

Human settlements are the centre and "point of tension" of diverse, often antagonistic transformation processes. These include increasing densification in urban areas due to the need for (affordable) housing, and the restructuring and redesign of neighbourhoods due to demographic change, as well as climate change.
As explained at the beginning, this will most likely lead to more extreme weather conditions. On summer days, this can lead to a significantly **increased heat island effect** due to the increased degree of sealing in urban areas, which not only lowers the quality of life in the city, but also affects the health of the sick, the elderly and children. In addition, there is the increased **risk of unpredictable or difficult-to-predict flash floods,** for which current drainage systems are not designed and which can thus lead to major damage to the property and health of the population.

To sustainably maintain a liveable urban living space, it is therefore crucial to optimise the urban climate with appropriate measures. This not only has positive effects in the medium-term future, but also shows an added value for the living space in the short term. For example, **instead of redensification, more green corridors and areas must be created in inner-city spaces in addition to wind circulation and cooling effects through evaporation, in order to improve the recovery value in cities**. Likewise, the concept of decentralised rainwater management must be comprehensively implemented by creating retention areas and storage basins that are integrated into the cityscape in order to relieve

the existing sewer network, avoid flooding, and contribute to cooling effects by aligning with the natural water cycle run.
In order to implement these measures, it is crucial that **urban climate concerns and climate impact adaptation** can be better weighed against other concerns in the course of the development plan procedures for new areas or replanning. So far, this has only been possible in a qualitative, verbal-argumentative way. It is important that decision-makers at the local, state and national levels make resources available to actively promote the development of approaches for quantifying and better assessing urban climate questions.
Beyond the municipal task of urban planning, it is also important that appropriate regional planning also **makes more rural areas attractive** and, above all, offers young families, who have found fewer prospects there so far, a good alternative to urban or peri-urban life. Corresponding needs-oriented infrastructure planning and investments in the provision of services, especially public transport in rural areas, are essential in this context.

4.1.6. Agriculture and forestry

In view of extreme weather events such as drought and heavy rain, agriculture is already one of the main sufferers of climate change. But it too must change in order to maintain its own foundations. If we consider all areas of agriculture, we arrive at a share of 15 % of Germany's total greenhouse gas emissions (Wissenschaftlicher Beirat Agrarpolitik et al. 2016). Apart from the production of fertilisers and pesticides and fuel consumption, there are three particularly serious sources of emissions: a) the production of nitrous oxide from the use of mineral nitrogen fertilisers; b) the methane emissions of cows, sheep and goats; and c) the release of CO_2 from the conversion of moorland, pastures and meadows into arable land. It is precisely these points that must be addressed . The greenhouse gases nitrous oxide (N_2O) and methane (CH_4) are about 300 times (nitrous oxide) and 25 times (methane) as harmful as carbon dioxide (Umweltbundesamt 2017). **Fertiliser management must become more efficient, clear guidelines and strict controls** are required. Until now, fertiliser has often been applied to the fields in an untargeted and excessive manner. The nitrogen surplus, which cannot be absorbed by the plants, ends up as nitrous oxide in the air. This must be curbed.

Furthermore, methane emissions can only be reduced by **moving away from industrial mass livestock farming,** especially in industrialised countries. Agricultural subsidies should be linked to compliance with fixed upper limits for animals per area. In addition, only **farms** that **operate in a climate and environmentally friendly manner should be subsidised**.
The **conservation of meadows, pastures and peat soils** must be prioritised. Peatland soils are important carbon reservoirs. Therefore, a **renaturation offensive and re-watering of regenerable peatlands** is recommended.
Forests play a major and often underestimated role in climate change. They are one of the most effective terrestrial carbon dioxide sinks. In addition, the **forestry sector offers great potential for the long-term storage of carbon dioxide** in its products. Greater attention should be paid to them. The goal must be ecological and sustainable silviculture worldwide to maximise the sink potentials of forests.

4.1.7. Biological and technical measures for the active removal of CO_2

With the use of technologies to remove CO2 from the atmosphere, it would be conceivable to initially overshoot the original emissions budget and make up the resulting deficit in the course of the 21st century. Many emission scenarios, including those of the IPCC, are based on a combination of an early and strict reduction of greenhouse gas emissions in combination with biological and technical measures to actively remove carbon dioxide from the atmosphere (Carbon Dioxide Removal - CDR). All IPCC scenarios that assume that **global warming can still be limited to 2 or even 1.5 °C include the use of such CDR technologies (IPPC 2018a: 3). In order to avoid dangerous climate change, the IPCC thus considers anthropogenic carbon dioxide removal from the atmosphere (negative emissions) to be absolutely necessary. After all, significant emission reductions in the near future and measures to reduce energy and land demand could limit CDR use to a few hundred gigatonnes of CO_2.**

These anthropogenic measures for the active removal of CO2 range from nature-based measures such as reforestation of cleared forests, rewetting of drained wetlands and the restoration of mangrove forests and lake grass meadows to the injection of CO2 underground (carbon capture and storage; CCS) and geoengineering measures that artificially create cooling effects (European Academies' Science Advisory Council 2018; National Academies of Sciences, Engineering, and Medicine 2018). The SRzG advocates biological pre-technical measures. With regard to technical measures, a conceptual distinction must be made between CCS and geoengineering (Climate Analytics n.d.). We are critical of so-called geoengineering measures that entail major risks, such as solar radiation management (SRM), a technology in which mirrors in space reflect solar radiation, or the injection of sulphur dioxide into the stratosphere to form reflecting particles.

Basically, we already know a lot about some CO_2 removal technologies, especially those with nature and ecosystem-based approaches but also some CCS technologies,[21] while others have hardly been researched yet. The SRzG is in favour of all measures that have a positive risk-benefit balance according to current knowledge.[22] We consider reforestation measures to be sensible and effective in any case, because trees or forests are efficient, environmentally friendly, cheap and easily multipliable CO2 reservoirs.[23] A, not uncontroversial[24], study by the University of Zurich concluded in 2019 that the global

[21] One technology that is already being used to achieve a better CO_2 footprint for individuals is filtering CO_2 from the air and injecting it underground (see e.g. https://www.climeworks.com/faq-about-direct-air-capture).

[22] See Oschlies (2020 a,b) and Wieners (2020) for an assessment of Scientists for Future, for which this applies.

[23] In professional circles, a distinction is made between reforestation and afforestation. Reforestation involves the restocking of existing forests and woodlands. The establishment of a forest or tree cover in an area where there was no previous tree cover is called afforestation. Reforestation is particularly welcome, especially in combination with renaturation, e.g. the planting of near-natural mixed cultures of species that are as endemic as possible. Monocultures are associated with negative long-term consequences for biological diversity. Among other things, they have a higher susceptibility to pests or– such as some monocultures of eucalyptus or conifers– forest fires (Climate Change News 2018).

[24] See for the criticism of the study and the reaction of the authors: https://ethz.ch/de/news-und-veranstaltungen/eth-news/news/2019/07/wie-baeume-das-klima-retten-koennten.html.

reforestation of forests would be possible on an area of 0.9 billion hectares and that this measure could take away two thirds of the CO_2 emissions caused by humans at (Bastin et al 2019).

However, some possible anthropogenic measures to actively remove CO2 from the atmosphere or to mitigate anthropogenic climate change entail high risks (Geden/Schäfer 2016; Vuuren et al. 2018; Evans 2018). **Prior to the application of these measures, we therefore call for a mandatory risk and impact assessment, which should be made available to the public**. The human species has had an extremely profound and long-term impact on its environment through often unconscious, incidental actions, but at the same time is less and less able to control the negative consequences of these changes. Geoengineering could become the next chapter of the lack of consideration of "unknown unknowns". In view of the many examples of unknown consequences of human actions, fantasies of power and feasibility are unacceptable (cf. Tremmel 2018). At this point in time, the SRzG distances itself from technologies such as solar radiation management. **Once deployed, reversing this technology would become virtually impossible**. For example, halting stratospheric aerosol particle injection, as proposed in SRM, would lead to an abrupt warming of the planet as greenhouse gas emissions would inexorably increase (Kiehl 2006; Climate Analytics 2015). **The SRzG calls for all possible alternatives to be exhausted today in order to avoid and at least limit the dependence of future generations on geoengineering**. If humanity increases its decarbonisation ambitions and measures with immediate effect, risky climate engineering experiments will become unnecessary.

Since, in our view, it is currently impossible to say whether the necessity of using certain removal measures can be completely ruled out if the achievement of the long-term temperature targets of the Paris Agreement is not to be jeopardised, we call for the current **intensification of basic research in** this area. Should the use of such techniques become unavoidable, the associated risks should at least be researched and minimised by that time, so as not to expose future generations to further potentially devastating dangers in the long run.

4.2. Supporting political fields of action for a CO2-neutral world

4.2.1. Democracy and law

Today's democracy is fixated on the present. Election cycles force politicians to achieve political successes within the election period if possible. The long-term consequences of today's political decisions cannot usually be determined with certainty, which is why short-term benefits are preferred to long-term ones. While the proportion of older people in the electorate and in political parties is increasing and the voting weight of younger people is decreasing, future generations have no voice at all in the political decision-making process. - Seemingly "insidious" problems such as global warming, whose consequences lie mainly in the future, lack public and political attention. However, the glorification of the present and the neglect of the future are associated with negative consequences for our descendants. Therefore, an institutionalised protection of the rights of future generations is needed in order to decouple responsibility for the future from daily political events and to secure it in the long term.

Proposals on how to make German democracy fit for the future can be found in our position paper "Sieben Bausteine für eine zukunftsgerechtere Demokratie" ('seven building blocks for a democracy fit for the future'). Among other things, we call for the **further development and upgrading of existing institutions**. Although these institutions are formally supposed to fulfil the **task of looking after the future**, their competences are de facto too limited to guarantee effective protection. In concrete terms, this is about the further development of existing institutions into a Council for the Future,[25] which is to address recommendations for more future justice to the federal government. The Parliamentary Advisory Council for Sustainable Development is to be upgraded to a permanent committee and the sustainability impact assessment for regulatory projects is to be strengthened (SRzG 2020).

A further institutional **strengthening of intergenerational justice** is anchored **in constitutional law.** In Germany, Article 20a of the Basic Law refers to the ecological dimension of intergenerational justice, in the wording:

"Der Staat schützt auch in Verantwortung für die künftigen Generationen die natürlichen Lebensgrundlagen und die Tiere im Rahmen der verfassungsmäßigen Ordnung durch die Gesetzgebung und nach Maßgabe von Gesetz und Recht durch die vollziehende Gewalt und die Rechtsprechung".

[25] The Future Council, which works across policy fields, consists of 15 scientists and is appointed for a period of seven years (without reappointment option). Half of its members are appointed by the Parliamentary Advisory Council on Sustainable Development and half by the German scientific community. The Future Council has the right to information and, on the basis of its expertise and analyses, develops recommendations on how to ensure greater political justice for the future. For this purpose, all draft legislation is brought to its attention at an early stage. The addressees of the recommendations (usually the federal government) reply to the Future Council within a period of three months as to how they will implement the recommendations. If a recommendation is rejected, the reasons for this must be explained in writing. The recommendations and responses are published (SRzG 2020: 1).

Translation: The State shall, also in responsibility for future generations, protect the natural foundations of life and animals within the framework of the constitutional order by law and in accordance with law and justice by executive power and the administration of justice.

Similar formulations can also be found in the constitutions of the Czech Republic, France, Greece, Lithuania, Spain, Sweden, Switzerland and the Netherlands.
We call for a rewording that explicitly mentions "intergenerational justice" or at least "the interests of future generations" and consider two current proposals worthy of attention. Firstly, there was an amendment to the Hessian State Constitution in October 2018. After a referendum in 2018, Article 26 c now reads:

"Der Staat, die Gemeinden und Gemeindeverbände berücksichtigen bei ihrem Handeln das Prinzip der Nachhaltigkeit, um die Interessen künftiger Generationen zu wahren." (Hessischer Landtag 2018)

Translation: The state, the municipalities and municipal associations shall take into account the principle of sustainability in their actions in order to safeguard the interests of future generations.

The SRzG's proposal for a new Article 20b of the Basic Law, which is based on this, reads as follows: "*Der Staat hat in seinem Handeln das Prinzip der Nachhaltigkeit zu beachten und die Interessen künftiger Generationen zu schützen."*

Translation: In its actions, the state shall observe the principle of sustainability and protect the interests of future generations.

On the other hand, former Federal Constitutional Court President Papier suggested in 2019 to include a new paragraph directly in the fundamental norm Art. 20 GG: *"Der Staat hat über die Amtsperiode hinaus Vorsorge zu treffen für die dauerhafte Gewährleistung von Gemeinschaftsinteresse." (Papier 2019)*

Translation: The state has to make provisions beyond the term of office for the permanent guarantee of community interests.

What these three proposals have in common is that they would make intergenerational justice (or sustainability in the broadest sense) a state objective. A state objective is not only an appeal, but also contains a mandate for action, above all for the legislature, but also for the executive power, the administration and the administration of justice, to observe it in every state activity.

4.2.2. The "climate ruling" of the Federal Constitutional Court

State objective provisions differ from fundamental rights in that they do not establish a subject right and are therefore not enforceable.[26] State goals are therefore often criticised for being purely symbolic policy. Up to now, the German legal system has also held that

[26] However, this does not mean that such court proceedings are impossible; they take place when a state organ appears as the plaintiff (organ dispute).

individual citizens have no right to sue for a court decision **on environmental or climate protection** if the legislature, executive or judiciary remain inactive. [27]In the jurisprudential literature, until the "climate ruling" of the Federal Constitutional Court, the opinion was held that Article 20a is not justiciable (Tremmel/Laukemann/Lux 1999) because it is difficult for individuals to demonstrate how they are individually and directly affected and possibly harmed by climate change. However, the constitutional judges argued that the climate protection targets that Germany set for itself until 2030 in the Climate Protection Act 2019 would lead to the remaining greenhouse gas budget available to German citizens between 2030 and 2050 being too small. Consequently, if the 1.5° target were still to be achieved, radical cuts in freedom would have to be introduced after 2030. The too low ambitions of the Climate Change Act 2019 were classified as a violation of the liberties of the complainants, some of whom are still very young. Felix Ekardt, one of the complainants: "[Der Gesetzgeber] muss das verbleibende Treibhausgas-Budget fair zwischen den Generationen verteilen. Letzteres zwingt zu deutlich ambitionierteren Klimazielen – und vor allem Maßnahmen – schon vor 2030" ('the legislator must distribute the remaining greenhouse gas budget fairly between the generations. The latter forces significantly more ambitious climate targets – and above all measures – already before 2030'). [28]The BVerfG has thus created a fundamental right to climate protection – and fundamental rights are also affected if, as in the case of climate change, very many are affected. In substance, the precautionary principle is now finally being applied to fundamental rights. It is therefore not only a question of whether the complainants' fundamental rights have already been violated today; rather, impairments of fundamental rights that will only occur in the future are also justiciable if serious damage is sufficiently probable. In Ekardt's view, all this is a break with the previous logic of German law.

For the SRzG, this decision is a big leap in the right direction – not only for a generation appropriate climate policy, but also for other areas related to the protection of natural livelihoods for future generations.

4.2.3. Empowering young people for climate protection

Civil society actors, i.e. both non-governmental organisations and individuals, play important roles in national and international climate policy. As "watchdogs", they critically accompany governments worldwide in the planning and implementation of climate policy. Young people are not only an equal part of civil society, but also form a significant proportion of the world's population, with 1.8 billion people (UN Population Fund n.d.).

On the one hand, today's youth will already have to bear the consequences of climate change as a legacy of previous generations. On the other hand, they also have a great deal of potential to act as **change agents themselves**, to be active against climate change and

[27] State objective provisions differ from fundamental rights in that they do not establish a subjective right and are therefore not enforceable.

[28] https://www.sonnenseite.com/de/politik/bundesverfassungsgericht-klimarevolution-mit-schwaechen/. Last accessed on 23.5.2021.

thus to be the **driving force behind positive change.** Young people are tech-savvy, adaptable in their lifestyles and in shaping their careers and are good at spreading trends (UNRIC 2008). These characteristics make them particularly well suited to contribute to a CO2-neutral world.

Unfortunately, the potential and impact of young people is often underestimated, inhibited by structures and not taken seriously. In this way, we are giving away valuable opportunities to make our world more climate-friendly. Young people can make a significant contribution if they are empowered and supported accordingly. This is the task of individual states. Article 6 of the UN Framework Convention on Climate Change (UNFCCC) calls on all Parties to the Convention to provide resources in the following six areas: Education, training, public awareness, public participation, public access to information, and international cooperation on these issues (United Nations 1992: 10). The implementation of these areas has been identified as crucial for everyone to understand the complex challenges of climate change and to contribute to its mitigation.

In order to empower young people, we consider the **transfer of knowledge and skills on the** one hand and the **provision of opportunities** on the other to be essential (UN Population Division 2015). Both approaches are directly interrelated and at the same time dependent on a each other. In our view, climate empowerment must address the two main problem situations of young people worldwide: Insufficient investment in education, training and further education (human capital) and combating youth unemployment (bpb n.d.).[29]

The following applies to Germany: **Climate education should start as early as possible** (kindergarten and primary school). **At the latest, however, the topics of climate, sustainability and gene rational justice must become an integral part of the curricula in lower secondary school.** We call for an **ambitious modernisation of the curricula** (SRzG 2018). We call for **climate change and sustainability to be integrated not only in science lessons but also in the social science subjects of economics, social studies, civics and politics, language teaching and creative subjects such as art.**[30] Young people must be given an understanding of climate change that goes beyond its biochemical and biophysical effects. This can be implemented through an orientation towards the National Action Plan on ESD and the Orientation Framework for Global Development Education (Orientierungsrahmen für den Lernbereich Globale Entwicklung). Furthermore, we encourage schools to increase the number of extracurricular working groups in the field of sustainability and thus stimulate and promote peer-to-peer learning.

We call for **more financial resources to** be made available by the federal and state governments for the **training and further education of teachers in the field of**

[29] In Europe, around 4.4 million people under the age of 25 are unemployed (bpb 2016).

[30] We strongly recommend the free teaching materials available from the educational platform "Bildung vernetzt denken". Available at: https://www.wandelvernetztdenken.de/unterrichtsmaterial/themeneinheit-generationengerechtigkeit-und-nachhaltigkeit/

sustainability and climate education. We call on policymakers to recognise the **value of national and regional youth networks and training institutions** to a greater extent and to exploit their potential through targeted support and involvement.
For empowerment in the field of climate education, we consider the **formulation of concrete, comprehensive strategies** by the states or the federal government to be indispensable.

The consequences of climate change will shape the lives of young people and our future generations for centuries like no other policy area. Therefore, young people should also be given the chance to **actively** participate in **decision-making at regional, national and international level and to** work on legislative initiatives. To this end, we call for the **lowering of the voting age to 16** in the medium term, and in the long term for the **right to vote after registration for all young people and older children**. Furthermore, we call for the **introduction of youth quotas of 20% each for persons between 18 and 35 years of age** (SRzG 2019, 2017). This applies both to the drawing up of party lists and to appointments to political bodies such as federal and state cabinets, committees and working groups.
Another way to achieve this goal could be the empowerment of young people through the creation of youth bodies at different levels of the political process.

Creating opportunities and jobs in the green sector for young people is central to strengthening the transition to a climate-friendly society and economy. This includes getting young people excited about research into clean and sustainable energies and technologies. We call for the creation of incentives through federal and state policies for the establishment of training programmes and jobs in the green sector ("green economy").

4.2.4. Strengthening the institutions of European and international climate policy

Even though Germany, as a large modern economy, is a key player in climate policy, we cannot take on the fight against the climate crisis and its consequences alone. **All countries and actors must participate according to their capabilities, otherwise individual national climate protection efforts risk fizzling out globally**. Climate change does not care about national borders. Policymakers must take this into account.

We therefore call for strengthening the **international institutions at European and UN level that can exert political influence on global climate change with financial and diplomatic resources**. Germany should use all its soft power to lead the way in climate policy and to encourage and support its international partners in the fight against the climate crisis. In order to address the global climate crisis, the crisis of multilateralism must therefore also be solved. Germany can and should play an important role in this.

The budgetary decision to slightly reduce the budget for economic cooperation and development in 2021 in favour of the budget for defence was the wrong signal. Instead, we need **stronger and better development cooperation** that adheres to the guiding principle of sustainable development. Development policy funding decisions should be more strongly

geared to measures that help save CO2 emissions globally and increase the resilience of endangered regions, thus cushioning the ecological, social and economic consequences of the climate change we have helped to cause (climate impact adaptation measures). We can become much better at **transferring know-how, promoting socio-ecological management and enabling the citizens of the countries of the Global South to have a sustainable and adequate livelihood.** There is still a lot of room for improvement not only in German development and economic policy, but also in European trade policy.

5. Conclusion and demands

Climate change is no longer a distant future scenario. It is already a reality today and its – partly drastic– consequences are already being felt worldwide. **Climate change affects humanity as a whole,** although the anthropogenic causes of global change and its consequences are very unevenly distributed geographically. Climate change is above all a humanitarian, international and ecological security risk for all people living today and future generations, and a question of justice. The overwhelming majority of scientific studies point to these dangers.

To prevent severe and irreversible climate change, humanity must drastically reduce its greenhouse gas emissions. According to the IPCC, this requires a change to an almost CO2-neutral world economy and world community by 2050. The necessary technologies, which are also cost-effective or profitable, are already available today – many different solutions are also being successfully implemented by many countries.

It is now high time for the global community and German politics and society to leave behind remaining illusions about the speed and extent of the expected global warming, to finally implement concepts ambitiously and to seriously commit to protecting the foundations of life.

As representatives of the young generations, we call on politics, business and society to finally take responsibility for the climate! We have to make the decision now: Do we want to stand idly by and watch it sweep over us, or do we set the right course to avert the future catastrophe?

The IPCC report from 2018 shows: We can no longer afford to sit back comfortably and worry about the climate only after unusually warm single days or particularly severe floods. We need a real structural and cultural change.

It is high time for a policy that takes responsibility and makes serious efforts. We need a policy that is not one-sidedly oriented towards short-term economic interests, but that is concerned with stabilising our climate and safeguarding the common good, and that takes the growing global climate protection movement seriously.

The impetus for this will obviously not come solely from state-led multilateral negotiations, but must also be stimulated and driven from below by a large number of different actors.

It is therefore high time for political, social and entrepreneurial initiatives to shape the *Great Transformation* in a social way and to turn it into opportunities for new forms of commerce. It is high time for a change of values in society as a whole, in which the well-being of our children and grandchildren takes precedence over the special interests of the powerful in politics and business. But it is also time for a change in the consumption habits of each and every one of us! We simply cannot afford our ecological footprint, which has become far too large due to our consumer oriented lifestyle.[31]

[31] For suggestions on more climate protection and intergenerational justice in everyday life, see https://generationengerechtigkeit.info/wp-content/uploads/2018/04/Generationengerechtigkeit-im-Alltag.pdf.

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About the Foundation for the Rights of Future Generations (SRzG)

The Foundation for the Rights of Future Generations (SRzG) is an advocacy think tank at the interface between science and politics and is considered the best-known non- parliamentary think tank on intergenerational justice (Wirtschaftswoche). It was founded in 1997 by an alliance of five young people aged 18 to 27, is headed by one of Germany's youngest foundation board members and pursues the goal of raising knowledge and awareness of intergenerational justice and sustainability in politics, business and society through practical research and consultancy. The foundation is financially independent and is not affiliated with any political party.

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