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EXECUTIVE SUMMARY

EU policies for climate neutrality in the decisive decade

20 initiatives to advance solidarity, competitiveness and sovereignty

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20 initiatives to advance solidarity, competitiveness and sovereignty.

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Preface

Dear reader,

Negotiators from the Council and the European Parliament are wrapping up the last elements of a comprehensive update of EU climate and energy laws that aim at reducing greenhouse gas emissions in Europe by 55 percent by 2030.

With European elections in June and the appointment of a new European Commission in November 2024, there is growing interest in climate policy priorities in the 2024–2029 EU policy cycle. An effective implementation of the Fit for 55 policy package will be a major focus. In addition, the political focus will already be on the time after 2030. New policy initiatives will face a different political context compared to five years ago as solidarity, industrial competitiveness, and sovereignty concerns have moved to the fore. Policies for the post-2030 period also need to address a different set of issues and dynamics than pre-2030 policies.

This discussion paper pulls together expertise from across the Agora Think Tanks. As a starting point for a dialogue, we make recommendations for 20 policy initiatives across all sectors to advance EU policies for climate neutrality in this decisive decade.

We hope you enjoy the read and look forward to your comments and a fruitful exchange.

Frauke Thies
Executive Director, Agora Think Tanks

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Key findings at a glance

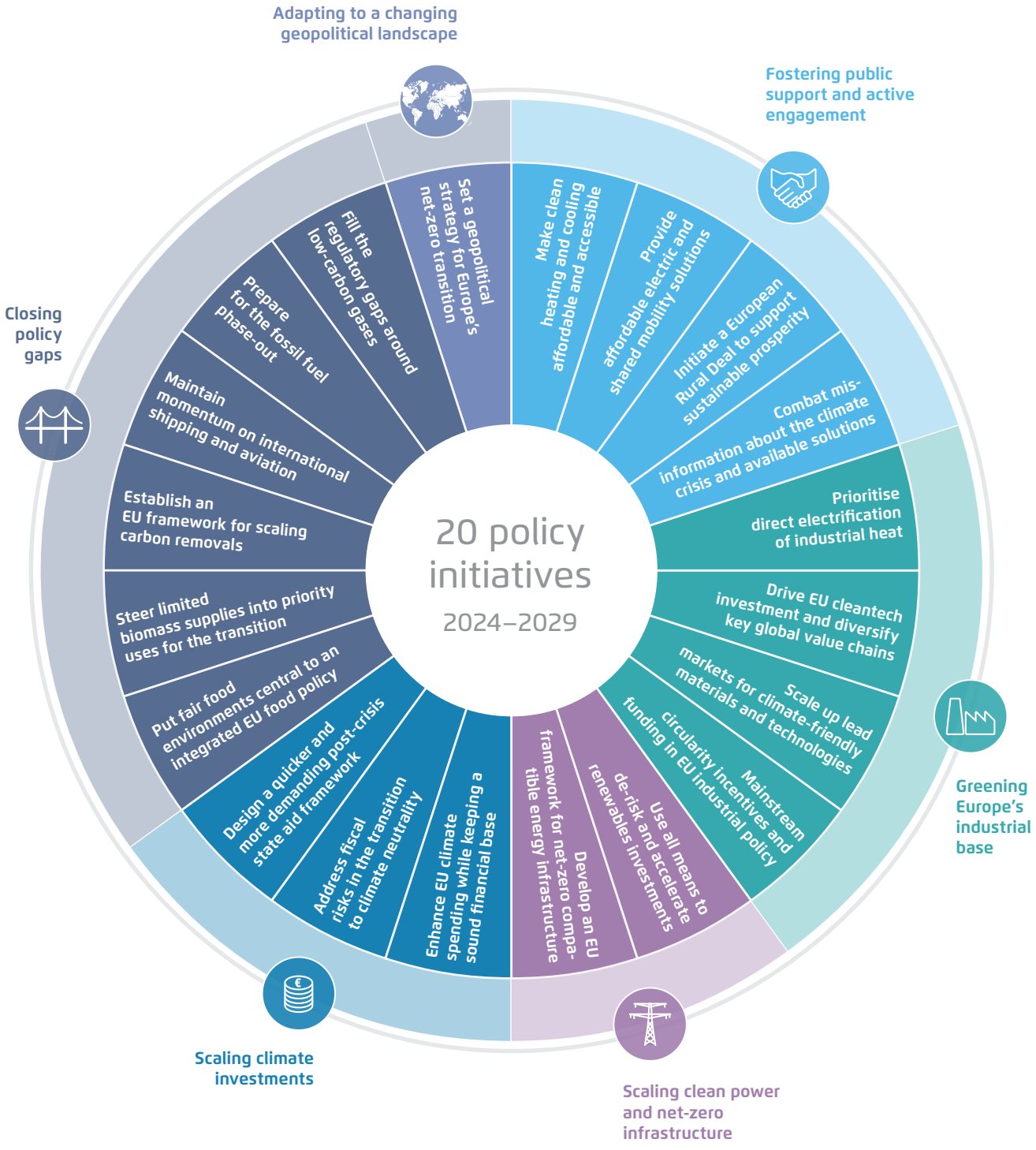
1 **Europe needs to consider the climate crisis in all policy areas – from security to fiscal planning, agriculture to industrial development – as it seeks feasible solutions for achieving net zero by mid-century.** Following European elections in June 2024, the EU will need to set a greenhouse gas emission reduction target for 2040 and build on the "Fit for 55" package. New policy initiatives should strengthen solidarity, competitiveness and sovereignty while maintaining a sound financial basis.

2 **The successful transition requires broader public support and active engagement of citizens.** The next EU Commission should take initiatives to make climate-friendly heating, cooling and mobility options affordable and accessible, and develop a European Rural Deal to enable farmers, forest owners, and rural communities to benefit from the transition.

3 **Greening Europe's industrial base while strengthening strategic cleantech competitiveness and resilience should be at the core of the next Commission's work programme.** Policy initiatives should prioritise direct electrification technologies for industrial heat, deployment funding for green basic materials production, leveraging Europe's single market to drive demand, growing strategic clean industrial manufacturing at home, and incentivising diversification of green global value chains.

4 **The next mandate needs to ensure sufficient EU funding for the transition to climate neutrality.** The EU budget for 2028–2034 should increase overall funding available for the transition by allocating funds across the budget more closely with climate investment needs. A new climate fund should fill the gap after the Recovery and Resilience Facility ends, financed with a balanced mix of sources including carbon pricing revenues and EU debt. In the future, EU funding can also play a stabilising role as governments will see gradually declining revenues from taxing fossil fuels while the EU advances towards climate neutrality.

20 policy initiatives to advance solidarity, competitiveness and sovereignty



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Content

1 Introduction: Climate and energy policy in the next EU legislative cycle

We are nearing the end of this policy cycle. Negotiators from the Council and the European Parliament are wrapping up the last elements of a comprehensive update of climate and energy legislation to reduce greenhouse gas emissions in Europe by 55 percent by 2030 and to achieve a climate-neutral continent by 2050. The current policy cycle was shaped by two major crises, namely the COVID-19 pandemic followed by Russia's invasion of Ukraine and the ensuing fossil energy crisis. Driven by security concerns, the past 18 months brought Europeans much closer together on energy policy, helped deliver an ambitious climate and energy agenda and accelerated the deployment of clean technologies. However, they also exposed rifts within and between EU Member States. At the same time, rampant forest fires, scorching heat waves, as well as widespread droughts and floods have made the growing impacts of the climate crisis tangible to European citizens.

Where does this leave the climate and energy agenda ahead of the next European Parliament elections and what should the European Commission do in its next mandate to advance the continent-wide transition to climate neutrality?

The policy context is different today than in 2019

Looking ahead to the next EU policy cycle, the context for climate and energy policy in Europe is different today than it was in 2019, and in part more challenging:

- **The EU is stretched institutionally.** Russia's war against Ukraine has put EU accession of Ukraine – a country of 37 million people before the war with an estimated GDP per capita of less than half of Bulgaria, and a huge agricultural sector – high on the political agenda and with it the ongoing accession process of the six Western Balkan countries (Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, Montenegro and Serbia). In December 2023, EU leaders decided to open accession negotiations with Ukraine and Moldova and to grant candidate status to Georgia. The strategic and security motivations behind a further expansion of the EU are clear. But it could well overstretch the Union as it currently is, while a further development of the EU institutions would tie up much political energy and carry significant political risks.
- **The EU is stretched financially.** The Covid pandemic, the energy price crisis and humanitarian and military support to Ukraine required hundreds of billions of euros in unforeseen public funding and pushed several Member States beyond sustainable debt limits under the EU fiscal pact. Increased inflation has been easing the relative weight of public debt on government budgets. However, the expected drop in available EU funding, from a combined 1.85 trillion euro EU budget for 2021–2027[1] to a "normal" EU budget as of 2028, suggests that it will be challenging for several Member States to offer sufficient support for the build-out of clean energy infrastructure, for home renovations, for the replacement of fossil heating systems or old cars, for regions phasing out coal mining, etc. At the same time, the outlook for the next EU budget period is characterised by much higher borrowing costs compared to 2019, which will increase demands for public programmes that facilitate access to finance through soft loans, guarantees and other financial support instruments.

1 That is EUR 1.1 tn Multiannual Financial Framework plus EUR 750 bn recovery budget "Next Generation EU".

- **EU and national climate policy will affect the lives of citizens more directly.** New EU climate laws, particularly the expanded system for greenhouse gas emissions trading, will see more citizens directly affected by climate policy. While an EU-wide price on greenhouse gas emissions will drive cost-cutting innovation and enable new business models, it will also increase costs for households and businesses that are unable to replace climate polluting technologies with clean alternatives. Demand for public support for green investments will hence rise significantly. This means the EU should continue to invest in green R&D and maintain the fiscal space of governments to support private investments into the green transition through grants, preferential loans or financial de-risking. An insufficient pace of investments into clean technologies would likely translate into very high carbon prices that could well erode public support for the transition.
- **Security and resilience concerns have moved centre stage.** Europe's transition to climate neutrality requires a fast increase in the annual deployment of clean technologies, in particular solar PV, onshore and offshore wind, batteries, heat pumps and electrolysers. However, the pandemic, Russia's war against Ukraine and rising trade tensions between the US and China demonstrate that Europe cannot take the smooth functioning of international clean-tech value chains for granted. Efforts to de-risk current industrial value chain dependencies and enhance the resilience of Europe's energy transition have thus moved centre stage. Similarly, the agriculture and food sector is discussing efforts to strengthen 'open strategic autonomy' by reducing reliance on the import of key farm inputs (e.g. fertilizer and feed).
- **The EU faces strong competition for green markets and a challenge to the global trade order.** The vision of a green, competitive industry in Europe with highly qualified and well-paid jobs that build on a vibrant network of innovators is at the heart of the EU Green Deal project. However, Europe's implicitly assumed green-technology leadership is challenged through green industry initiatives of key competitors such as China and the US and an eroding rules-based international trading system.
- **Climate policies have become mainstream but are losing momentum.** In the run-up to the 2019 European elections, the Fridays for Future movement made accelerated climate action into a central political issue. Five years on, polling shows broad public awareness of the climate crisis and continuously high demand for effective climate action. At the same time, political support for new and more far-reaching climate policy initiatives seems to be eroding. This reflects both a push-back of incumbent interests in a fossil-based energy system as well as the fact that deeper cuts in greenhouse gas emissions will more directly affect the lives of citizens and thus need to relate to widely different social and economic interests.
- **Increasing physical and economic impacts of the climate crisis raise the importance of adaptation.** Flash floods, heat waves and droughts as well as widespread forest fires make the climate crisis increasingly visible in the lives of EU citizens and impair the productivity and resilience of ecosystems, which are critical for agriculture, forestry, and carbon management; and these impacts will get worse. The European Environment Agency estimates that extreme weather and climate events caused 59.4 billion euros and 52.3 billion euros of economic losses in 2021 and 2022, respectively, compared to an average of 12 billion euros per year from 1980 to 2022[2]. The growing visibility of the impacts of the climate crisis underscores the need for stronger climate action as only the rapid transition to net-zero greenhouse gas emissions will stabilise the situation. At the same time, the inevitable effects of the climate crisis will demand increasing attention to adaptation measures, to reduce the risk of fires, to manage scarcer freshwater resources, or to avoid extreme heat in urban environments. Politically, it will be important to avoid that increasing political and economic resources for climate change adaptation will crowd out measures to rapidly reduce greenhouse gas emissions.

2 European Environment Agency (2023a)

The Fit for 55 package initiates the transformation in all sectors

EU climate action in the 2024–2029 policy cycle can build on major achievements of the European Green Deal. The EU Climate Law sets legally binding targets to cut emissions by at least 55 percent by 2030 relative to 1990 levels and to reach climate neutrality continent-wide by 2050. The Fit for 55 package translates this ambition for 2030 into specific climate and energy targets and measures, and establishes several sectoral and technology-specific policies, such as CO_2 standards for cars and trucks or efficiency requirements for the buildings stock. These policies both complement and reinforce the overarching climate and energy targets as they accelerate action on the ground (see Table 1).

Overview of headline climate and energy targets in the Fit for 55 package

→ Table 1

Climate	Other
Revised EU economy-wide climate target: → 55 percent net GHG emission reductions by 2030 (vs 1990 levels) **Revised 'ETS 1' emissions trading system for power, industry and bunker fuels, and a new anti-'carbon leakage' instrument (CBAM):** → 62 percent emission reductions by 2030 vs 2005 levels → Accelerated phase-out of free allowances for installations at risk of 'carbon leakage' and the parallel introduction of a new 'Carbon border adjustment mechanism' to address embodied emissions for select products → Expanded scope to include CO_2 emissions from maritime transport from 2024, and CH_4 (methane) and N_2O (nitrous oxide) as of 2026 → Potential scope extension for international aviation, non-CO_2 emissions in aviation and waste incineration → EU-wide emissions cap (no national targets) **New 'ETS 2' emissions trading system for transport, buildings, and small industry installations:** → 42 percent emission reductions by 2030 vs 2005 levels → EU-wide emissions cap (no national targets) **Revised 'Effort Sharing' targets for transport, buildings, agriculture, small industry, waste:** → 40 percent emission reductions by 2030 vs 2005 levels → National targets ranging from -10 percent to -50 percent	**Revised CO_2 standards for cars and vans:** → Targets to reduce 55 percent of CO_2 emissions for new cars and 50 percent for new vans from 2030 until 2034, and for 100 percent CO_2 emissions reductions from 2035 for both new cars and vans **New ReFuelEU Aviation Regulation:** → Obligation on EU airports and fuel suppliers to ensure that fuel available to aircraft operators contains at least 2 percent Sustainable Aviation Fuels from 2025 onwards, increasing every five years and reaching 70 percent in 2050 **New FuelEU Maritime Regulation:** → Limits on the GHG intensity of the energy used on-board large ships, decreasing by 2 percent in 2025 and 6 percent in 2030 and 80 percent by 2050 **Revised Energy Performance of Buildings Directive:** → Obligation for all new residential and non-residential buildings to have zero on-site emissions from fossil fuels, as of 2028 for publicly-owned buildings and as of 2030 for all other new buildings → National trajectories to reduce the average primary energy use of residential buildings by 16 percent by 2030 and 20–22 percent by 2035 → Minimum energy performance standards for non-residential buildings to renovate the 16 percent worst-performing buildings by 2030 and the 26 percent worst-performing buildings by 2033 → Gradual solar obligation for new and existing public and non-residential buildings from 2027 → No subsidies for the installation of stand-alone fossil-fuel boilers from 2025

Climate	Other
New land-use, land-use change and forestry (LULUCF) GHG emissions targets: → 310 Mt CO_2eq net removals by 2030 → National targets ranging from -39 Mt to +0.4 Mt CO_2eq	
Renewables	**Energy Efficiency**
Revised Renewable Energy Directive: → 42.5 percent renewable energy share of gross final energy consumption in 2030 – with potential to increase to up to 45 percent; each Member State will contribute to the collective delivery of this EU-wide target with a contribution to be included in its updated National Energy and Climate Plan (NECP) → Buildings: indicative renewable energy target of 49 percent by 2030 → Transport: binding 14.5 percent greenhouse gas intensity reduction or 29 percent share of renewable energy in final energy consumption → Transport: binding combined sub-target of 5.5 percent for advanced biofuels and Renewable Fuels of Non-Biological Origin (RFNBOs), with a minimum requirement of one percent RFNBOs → Industry: indicative 1.6 percent annual increase in in renewable energy in final energy consumption → Industry: binding target of 42 percent of hydrogen to come from renewable fuels of non-biological origin by 2030 and 60 percent by 2035	**Revised Energy Efficiency Directive:** → Binding final energy consumption target of 763 Mtoe in 2030 and indicative primary energy consumption target of 992.5 Mtoe in 2030; each Member State will contribute to the collective delivery of this EU-wide target with a contribution to be included in its updated NECP → Increasing annual energy savings obligation from 0.8 percent (at present) to 1.3 percent (2024–2025), then 1.5 percent (2026–2027) and 1.9 percent from 2028 onwards; an average of 1.49 percent of new annual savings for the period from 2024 to 2030 → Annual energy consumption reduction target of 1.9 percent for the public sector as a whole → three percent renovation rate for public sector buildings

Agora Energiewende (2024)

The Fit for 55 package initiates a fundamental transformation in nearly all sectors. Effective implementation of the package would see the share of renewable energy in the EU power sector increase to around 70 percent by 2030 and a phase-out of coal use around 2035. The new CO_2 standards for cars could see the sale of internal combustion engine passenger vehicles decline to zero by 2035; additional standards for heavy duty vehicles could see new truck fleets largely decarbonised by 2040. Stationary emissions of energy-intensive industry will reach zero by 2039, as a consequence of the reformed EU emissions trading system. Renovation of Europe's building stock will accelerate and by 2040 heat pumps and renewables-based district heating systems should have largely replaced fossil boilers.

EU climate and energy laws require a significant acceleration of greenhouse gas emissions reductions, renewable energy deployment and energy efficiency improvements over this decade compared to historical trends. At sectoral level, the steepest overall emissions reductions should happen in the power sector, driven primarily by the scaling of renewables and the phase-down of coal-based power generation. However, compared to past efforts, the most significant acceleration must occur in the buildings, transport and land-use sectors (see Figure 1 below).

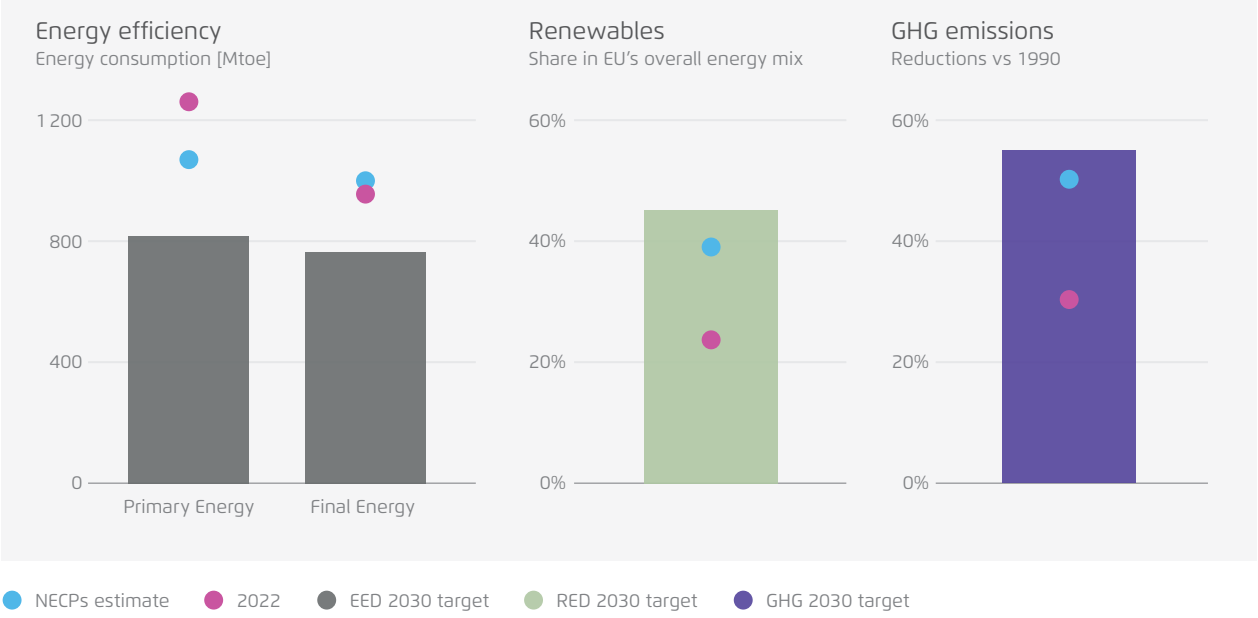
The "Trends and Projections in Europe 2023" report of the European Environment Agency indicates that the EU is currently not on track for achieving its

2030 climate target[3]. Policies and measures currently in place or under preparation would achieve only 48 percent net greenhouse gas emissions reductions by 2030 relative to 1990 levels, leaving a gap of 7 percent. A significant 'delivery gap' currently also exists for both the EU energy efficiency and renewable energy targets. Progress also varies from a geographic standpoint, with net greenhouse gas emissions even rising in several countries. Moreover, the decline in ecosystem services poses a grave challenge to both climate change mitigation and adaptation, and none of the targets on biodiversity monitored by the report

3 European Environment Agency (2023b)

The EU Green Deal delivery gap: EU climate and energy targets vs past and future trends

→ Figure 1



Agora Energiewende (2024). Data from EC (2023a) and EC (2023b). Note: EED: Energy Efficiency Directive. RED: Renewable Energy Directive. NECPs: National Energy and Climate Plans. MIX scenario refers to the European Commission's core policy scenario underpinning the 2030 Climate target plan.

are likely to be met by 2030. The 'EU Climate Action Progress Report 2023' of the European Commission therefore concludes that additional climate action is needed in all sectors, particularly in transport, buildings and the land-use sectors. At the same time, the need for additional climate measures should not hide the real progress made. Two years ago, governments planned for only 41 percent greenhouse gas emissions reductions. Furthermore, the energy (price) crisis sparked major investments into renewable energy and energy efficiency:

- → 2022 saw record high wind and solar installations (around 60 GW) and a new record share of renewables in the power sector (40.7 percent)
- → 2022 also saw a record-high deployment of heat pumps with 3 million units sold, an increase of 37 percent
- → In 2022, electric cars sales reached a share of 21.6 percent, while the availability of publicly accessible chargers surged by more than 50 percent compared to 2021.

Effective implementation of the Fit for 55 package will further accelerate this good progress.

Policy making for post-2030 will be different from pre-2030

Implementation of the Fit for 55 package will be a major focus of the next European Commission. However, the Commission also needs to consider new initiatives for the post-2030 period. Most prominently, the EU Climate Law obliges the Commission to propose an EU climate target for 2040.

The 2040 emissions reduction target is an important milestone on the EU's pathway to climate neutrality and will provide an important benchmark for governments, industry and citizens when deciding on investments into clean technologies and infrastructure planning.

In 2020, European Commission modelling identified an 86.4 percent greenhouse gas emission reduction for 2040 as cost-effective benchmark between the 2030 climate target and climate neutrality by 2050[4]. A recent Agora Energiewende study[5] found that based on latest technological progress, an EU greenhouse gas reduction target of 90 percent by 2040 is realistic. Moreover, the European Scientific Advisory Board on Climate Change found that staying within a recommended EU greenhouse gas emissions budget for the period 2030 to 2050 required emissions reductions of 90–95 percent by 2040[6].

Several reasons suggest using the 2024–2029 policy cycle not only for setting the EU's 2040 climate target but also to develop complementary policy initiatives:

- → From an investor and infrastructure planning perspective, early decisions on next steps in EU climate policies in industry, buildings or transport are as important as the overall ambition level of the 2040 climate target. If decisions on next steps are not taken in the next EU policy cycle, then additional measures cannot be adapted before 2031/32.
- → In the next EU policy cycle governments and the Parliament will also decide on the EU's next multiannual budget that will likely run from 2028–2034. Clarity on climate and energy policy priorities beyond 2030 will be critical when deciding on the amount and on the priorities of EU funding to support the next steps in Europe's transition to climate neutrality, particularly in the transport, building and agriculture sectors, where implementation gaps are currently most concerning.
- → Clarity on the EU climate and energy framework beyond 2030 and on available EU funding in support of climate-related investments will also be critical reference points for governments, when they prepare their National Energy and Climate Plans (NECPs) for 2030–2040.

New initiatives on post-2030 climate and energy policies will face several new challenges. To give some examples:

4 See European Commission (2020a), p. 128, Figure 20.
5 Agora Energiewende (2023).
6 European Scientific Advisory Board on Climate Change (2023).

1. **The need to manage the ETS 'endgame':** The EU Emissions Trading System (EU ETS) was recently reformed as part of the Fit for 55 package and now also covers buildings and transport with consequences for the period after 2030. Most importantly, the cap on emissions for the two emissions trading systems is set to decrease to zero in 2039 (ETS I) and 2044 (ETS II), respectively. Emissions trading is thus expected to enter an 'ETS endgame' where the supply of emissions allowances approaches zero. What will be the impact on market liquidity? Will prices remain politically acceptable or become very volatile? Should the trading of negative emissions certificates be permitted for compliance? Should the two emissions trading systems be merged?
2. **Carbon leakage protection will need to evolve:** In the post-2030 era, carbon leakage protection is imperative as the EU transitions from free allocation to the Carbon Border Adjustment Mechanism (CBAM). While the CBAM addresses immediate concerns of European industry, it also creates political challenges internationally. The absence of internationally accepted approaches to carbon leakage protection creates legal and diplomatic ambiguities in a world of uneven climate policies. International cooperation is essential to balance objectives of carbon leakage protection with rules-based and fair international trade. Initiatives like the OECD climate club or the US-EU-led Global Steel and Aluminium Arrangement may constitute the potential nucleus of broader international cooperation but could also undermine effective global climate action.
3. **Difficult to avoid residual emissions will become dominant:** Currently energy-related emissions make up around 77 percent of EU greenhouse gas emissions. However, these will decline by more than 90 percent in all ambitious 2040 climate target scenarios. Accordingly, residual emissions in more difficult to decarbonise sectors like agriculture, waste, international shipping and aviation and certain industrial sectors, such as cement, will begin to dominate total greenhouse gas emissions in coming decades. Addressing these residual emissions will require the accelerated deployment of carbon removal technologies[7], renewable hydrogen, biomethane, e-fuels as well as their associated infrastructure. These technologies will change the focus of climate action as decarbonisation becomes technically more difficult and more costly. In the same context, reversing the loss in natural carbon sinks and enhancing the carbon removal capacity of forests and soils will be critical.
4. **Distributional questions between EU Member States become more complex[8]:** Until now, the EU climate target architecture includes national targets for sectors not covered by emissions trading – the so-called "non-ETS" sectors. The national targets for 2020 and for 2030 are set according to the relative wealth measured in GDP per capita for each Member State. For both periods the chosen spread between targets for the low-income and high-income Member States is 40 percentage points. Bulgaria, for example, has a target of -10 percent, while Luxembourg has a target of -50 percent. This approach was initially chosen because per capita emissions in low-income Member States were lower, and to show solidarity. Closer to climate neutrality, this logic cannot continue since all Member States will need to reduce emissions as much as possible. Already under the current targets lower-income Member States could see higher per capita emissions by 2030 than the EU average. This will make their transition to climate neutrality after 2030 more challenging: instead of gradual reduction efforts these countries will need to undertake truly drastic changes.
5. **Successful climate policies change the fiscal revenue base:** In 2021, EU Member States collected 260 billion euros in energy taxes, equivalent to 1.76 percent of EU GDP and 4.32 percent of total government revenues[9]. These taxes are collected on the sale and consumption of fossil fuels and electricity; largely oil (>80 percent), followed by

7 Such as Bioenergy with CCS (BECCS) or Direct Air Capture and Storage of Carbon (DACCS).
8 Öko-Institut and Agora Energiewende (2020).
9 Eurostat (2023).

electricity, and gas[10]. As the EU economy reduces its reliance on fossil fuels, these tax revenues will decrease. This could raise fiscal challenges. We estimate that the projected decline in energy taxes could offset positive revenue effects of EU carbon pricing already in the 2030s, even when considering rising CO_2 prices.[11] This suggests that governments must explore new forms of fiscal revenues to ensure adequate funding for the transition.

6. **Citizens are more directly impacted by EU climate measures:** The bulk of greenhouse gas emissions reductions since 1990 were achieved in the power and industry sectors, requiring relatively little behavioural change of citizens. By contrast, the necessary decarbonisation of the transport and building sectors in the coming decades will require households and businesses to invest into electric heat pumps or electric vehicles that have higher up-front costs compared to their fossil alternatives. Many house owners will need to undertake some energy efficiency renovation or may need to decide whether to connect to a district heating system or not. The switch to electric vehicles comes with changing habits of charging. Households that continue to use fossil fuel cars and heat appliances will see increasing fuel costs due to carbon pricing. Overall, vulnerable and low-income households will require some financial support to ensure the affordability of low-emission heating and mobility options, such as heat pumps or electric vehicles. Likewise, further efforts are needed to better define, monitor, and tackle food poverty to ensure that all consumers can have access to healthy and sustainable diets.
7. **Improving the climate performance of the agri-food system and forestry is a key challenge:** The agricultural sector is currently the largest greenhouse gas emitting sector without a dedicated climate target or measures to reliably reduce sector-specific emissions. With climate neutrality approaching, agriculture will need a coherent set of incentives to support its climate change mitigation potential. The design of such a framework raises many questions. More comprehensive carbon pricing will be needed, for example through inclusion in emission trading, which could open a pathway for effective emission reductions while using revenues to support the just transformation of the sector. Another aspect is how to design incentives for land-based carbon removals so they can provide viable earning opportunities in forestry and agriculture, while maintaining climate integrity. Moreover, an effective climate governance framework will need to be accompanied by a policy mix that also supports other sustainability dimensions, such as biodiversity and the adaptation to climate change.
8. **Clean technologies will need to scale at breakneck pace, while the downsizing of fossil fuel infrastructure begins:** In the 2030s, the energy sector enters a period of 'mid-transition'. The deployment of clean technologies (e.g. wind, solar, electric vehicles, batteries and heat pumps) will further accelerate but still be insufficient to meet all energy and mobility services consumers demand. Meanwhile, incumbent fossil industries and infrastructures will face the challenge of adapting to a net-zero future or exiting the market. As a result, carbon-based infrastructure will begin to shrink under regulatory and competitive pressure, risking rising prices and potentially the disruption of some fossil fuel-based products and services. Proper foreward planning will be essential to successfully manage this transformation.
9. **The role of adaptation to the changing climate will become more prominent:** In the post-2030 period, climate and energy policymaking in the EU is poised for a profound shift, driven by the escalating visibility and tangibility of the impacts of a changing climate. Even if we were to halt all emissions today, some degree of climate change is already locked in, and the impacts of a changing climate are set to increase further before the world reaches climate neutrality. Adaptation to a changing climate will become more prominent and integral to strategies for mitigating greenhouse gas emissions. This is particularly the case in the land-use sectors, where climate adaptation

10 European Commission (2020b).
11 Agora Energiewende (2024 forthcoming).

will become a precondition for climate change mitigation especially in forestry. However, the thinking together of mitigation and adaptation will also become relevant for building renovations or infrastructure planning.

10. **The energy transition and climate change will begin to (re)shape geopolitics:** The transition from fossil fuels to clean technologies such as renewables and electric vehicles will alter the global economy, not least because of resulting changes in the structure of international trade and capital flows. Oil and gas producing countries will likely experience declining demand, while the world economy will see increased trade in renewable energy, clean technologies (e.g. electric vehicles), critical minerals and the intermediate goods and industrial equipment needed to produce or refine them. However, since countries producing fossil fuels are generally not the same as those producing clean technology, and renewable energy is available in all countries, the different trends are unlikely to compensate each other[12]. These changes in trade patterns could result in political tensions as fossil fuel producers aim to safeguard shares of declining markets. Recent political developments, such as the EU Carbon Border Adjustment Mechanism and the US Inflation Reduction Act, have also put a spotlight on the cross-border impacts of climate policy and the increasingly competitive global race for leadership in markets for clean technologies. Meanwhile, the increase in human suffering and economic damage from climate change-related events risks diverting attention and resources away from collaborative global efforts to reduce greenhouse gas emissions. Striking a delicate balance between addressing immediate impacts and fostering international cooperation will be paramount for EU policymakers in the post-2030 period.

12 International Monetary Fund (2023).

2 Priorities for the next EU work programme on climate and energy

The remaining part of this paper sets out 20 policy initiatives that the next European Commission should consider for its work programme on climate and energy policy. We cluster the proposed initiatives as follows:

- → Fostering public support and active engagement
- → Greening Europe's industrial base while strengthening competitiveness and resilience in strategic clean technology
- → Scaling clean power and net-zero infrastructure
- → Scaling climate investments while preserving the sustainability of public debt and a functioning single market
- → Closing policy gaps
- → Adapting to a changing geopolitical landscape

Fostering public support and active engagement

The impacts of the climate crisis will increasingly affect the livelihoods of Europeans. A rapid transition to a climate-neutral economy is the only way to stop impacts from growing to a level that could overwhelm societies and economies. The transition will change the way we heat our homes, the cars we drive, the skillsets that secure employment, some landscapes, and partially how we eat. Broad public support of the necessary shifts and the active engagement of citizens is essential for the success of the transition.

The push-back against recent climate policy initiatives, for example against the proposed shift to climate-neutral heating systems, has shown that public support and active engagement must be won for climate policy as much as for any other policy initiative that directly affects the lives of citizens. Clean technologies and sustainable practices can be expensive, posing a financial barrier for some individuals and businesses. They can also lead to concerns about social justice and equity where climate policies disproportionately affect certain socio-economic groups. Rural areas face different challenges and priorities compared to urban centres, creating a potential rural-urban divide in the support for climate policies that is beginning to manifest at the ballot box. Moreover, the spread of misinformation and disinformation can distort public perceptions and fuel resistance to climate policies. The following policy initiatives would address these challenges.

Initiative 1: Make clean heating and cooling affordable and accessible

Besides enhancing home comfort, investments into heat pumps and building renovation play a crucial role in mitigating price volatility and energy poverty, as made evident during the recent energy crisis. But while private investments in heat pumps and building renovation have surged in recent years, the high upfront costs and prolonged payback periods of such investments too often remain a major obstacle.

Challenges include limited credit availability, high interest rates, and unfavourable electricity to fossil fuel price spreads, often deterring consumers. Additionally, COVID-19 disruptions and labour shortages have hindered access to affordable heat pumps and renovation services, and highlighted that building sector supply chains must scale considerably for the EU to deliver on its climate and energy targets. These economic and market barriers mean that many households and small businesses still risk being locked into dirtier fossil technologies, only years ahead of the introduction of a new EU emissions trading system for buildings and transport. Additional policies are needed to make clean heating and cooling affordable and accessible, in particular to low-income and vulnerable households.

The incoming European Commission should present the announced Heat Pump Action Plan without further delay and make affordable heating and cooling a core element of the next work programme. Key priorities include the following elements (i) rebalancing the price ratio of fossil fuels vs electricity; (ii) providing targeted support for the transition to clean heating to low-income households; (iii) providing access to low-interest loans to all households and fostering innovative finance and business models. The EU should also consider setting a new 'clean heat' standard, analogous to CO_2 standards for cars and trucks and similar to the UK Clean Heat Market Mechanism, compelling fossil boiler manufacturers to sell a rising minimum share of heat pumps. This obligation could be aligned with the EU's REPowerEU heat pump target and the EPBD goal of a complete phase-out of fossil fuel boilers by 2040 and would help scale clean heating supply chains in line with the EU's climate and energy security goals.

Initiative 2: Provide affordable electric and shared mobility solutions

The decarbonisation of transport in Europe enters its most important phase yet. While the general policy measures have already been put in place – notably the Effort Sharing Regulation (ESR), ETS 2, CO_2 targets for cars, vans, busses and (soon) trucks as well as regulation on charging infrastructure – during the upcoming five years, everything will be put to the test. The success or failure of meeting these targets will show if we are indeed on the path to Paris when it comes to transport emissions in Europe – or not. One of the key challenges for the next Commission is in making the transport transformation in Europe a success. This essentially means safeguarding the successful implementation of the above-mentioned laws, staying the course during their upcoming reviews, and initiating a much closer cooperation with Member States to ensure they provide the necessary infrastructure, as well as affordable options for people to switch to electric cars or to public transport, especially as ETS 2 is about to enter into force.

The incoming European Commission should (i) use the planned review of the cars CO_2 regulation to strengthen the 2030 CO_2-target for passenger cars and introduce yearly targets to make it easier to meet the important 2035 phase-out of combustion engine cars; (ii) create a scoreboard for Member States' car taxation policies; and (iii) propose EU-wide minimum supply standards for public transport, which consider the varying conditions across Member States in terms of population density and geography. For rail, the European Commission should work to (iv) develop a future vision for a trans-European passenger rail network with many regular and direct connections between major European cities, including night connections linked in an integrated synchronized timetable. As first steps to realise this vision, the Commission should ensure the implementation of the "Action Plan to boost long-distance and cross-border passenger rail", with a focus on strengthening international train connections, especially night trains; (v) ensure adequate funding from and of the Connecting Europe Facility (CEF) for rail projects and (vi) adopt a multi-modal digital mobility services regulation.

Initiative 3: Initiate a European Rural Deal to support sustainable prosperity

Rural areas are essential for achieving Europe's sustainability objectives and are, in principle, well-placed to benefit from a net-zero economy. However, currently rural communities often consider the green transition as a threat. This is, in part, due to the insufficient attention given to the specific needs of many rural areas. Dedicated action is required to enable citizens and businesses in rural areas to reap the benefits of a net-zero economy. To strengthen the land-use sectors, farmers, forest owners, and other rural entrepreneurs need access to new value chains and the capacity to respond to emerging market demands. Rural communities ought to derive greater benefits from the transition to renewable energies and infrastructure development should support rural areas remaining attractive living environments. This includes expanding access to social services, digital networks, and clean mobility options.

The incoming European Commission should launch a 'European Rural Deal', designed as a transformative and co-created initiative that puts political focus on expanding rural opportunities from the transition to climate neutrality. This initiative should among others: (i) coordinate a mix of measures to stimulate future-oriented rural economic clusters and value chains, including to incentivise the efficient use of scarce land resources within the bioeconomy; (ii) facilitate the entry of new participants into rural economies and provide support for the acquisition of relevant skills; (iii) mobilise investments into key infrastructures; (iv) reward farmers and forest owners for the delivery of public goods through a reoriented Common Agricultural Policy (CAP) and other policies; (v) assist EU regions in ensuring that rural communities benefit from the transition to renewable energies, including ensuring that Member States fully implement the provisions in the revised EU Renewable Energy Directive regarding the direct and indirect participation of local communities in renewable energy projects.

Initiative 4: Combat misinformation about the climate crisis and available solutions

There is scientific consensus on human activities as main driver of the climate crisis and broad agreement on available solutions and their costs. However, the scientific nature of the crisis and the technical nature of most solutions is a challenge for democratic debates. A growing number of citizens inform themselves mainly through online social platforms such as Facebook, X (formerly Twitter), TikTok, YouTube or online search engines. These platforms and search engines give an outsized impact to individuals or organisations that systematically spread false or misleading information about the climate crisis or available solutions. Widely shared climate misinformation erodes the foundation for well-informed democratic decisions on climate policies that live up to the urgency of the crisis we are in. The new EU Digital Services Act obliges online service providers of Very Large Online Platforms (VLOPs) and of widely used search engines to take effective measures to avoid that their services are used to manipulate a democratic discourse or electoral processes.

Given the urgency of addressing the climate crisis, the incoming European Commission should make misinformation about the climate crisis and available solutions an implementation priority of the Digital Services Act. Specifically, governments and the European Commission should (i) support interested scientific institutions and civil society groups to rapidly develop capacity for monitoring and fact-checking climate misinformation available online; (ii) support the development of algorithms and AI tools that help to identify efforts to spread climate misinformation; (iii) designate "trusted flaggers" of climate misinformation, (iv) contract a study on how providers of large online platforms and search engines could identify, analyse, assess and mitigate risks from climate misinformation, (v) develop a best practice manual on addressing climate misinformation as well as targeted training modules for content moderators of online platforms and search engines, (vi) announce that efforts to combat climate misinformation will be a focus area when auditing the compliance of providers of VLOPs and search engines with the Digital Services Act.

Greening Europe's industrial base while strengthening competitiveness and resilience in strategic clean technology

Europe faces pivotal challenges in sustaining and fortifying its industrial base amid the transition to climate neutrality. While China's manufacturing dominance poses a competitive threat, it also offers opportunities for affordable investments and accelerated decarbonisation. A strategic approach involves attracting investments from leading clean technology suppliers, including China, with conditions that foster technology transfer and cooperation. Social conditionality, transparent frameworks and safeguards, such as the Carbon Border Adjustment Mechanism (CBAM), must accompany these collaborations to ensure fair practices. Europe's policies should discern between genuine unfair practices and sector-specific challenges, avoiding punitive measures that hinder early adopters or correct inherent competitiveness issues. Navigating this delicate balance is essential for fostering global cooperation in sustainable development while safeguarding Europe's industrial strength. The following policy initiatives would help strike an appropriate balance.

Initiative 5: Prioritise direct electrification of industrial heat to enhance resilience and advance decarbonisation

EU industry remains heavily dependent on imported fossil gas for around 40 percent of its energy needs. To fix this, mass electrification of industrial heat is essential, even if it is not a panacea. Hydrogen, carbon capture and storage (CCS) and biomass all come with intrinsic factors that make them more costly than direct electrification in the long run: less energy efficient, more capex intensive, and subject to high scarcity in a decarbonised economy. Prioritisation of direct electrification of industrial heat is relevant for the EU's domestic energy resilience, for reshoring strategic manufacturing and especially for processing of critical raw materials, and advance decarbonisation.

The incoming European Commission should develop an 'EU Industrial Direct Electrification Action Plan' that includes the following elements: (i) introduce an Industrial Electrification Technologies Alliance, building on the Heat Pump Accelerator expected to be proposed under the Heat Pump Action Plan; (ii) drive the market for heat pump and e-boiler deployment by setting clear phase-out dates for the use of fossil fuels in low- and medium-temperature industrial heat applications (e.g. 2035 < 100 degrees Celsius, 2037 < 200 degrees Celsius and 2040 <500 degrees Celsius); (iii) incorporate industrial direct electrification technologies into EU clean-tech innovation funding; (iv) prioritise and give planning certainty for the expansion of distribution grids for industries opting for direct electrification solutions; (v) clarify state aid rules on industrial power cost advantages for "strategic net-zero investments" in EU manufacturing; (vi) require Member States to develop industrial heat plans as part of their NECPs.

Initiative 6: Leverage the single market to drive cleantech manufacturing investment at home and diversify global value chains for key, green materials

The multilateral, rules-based global order, on which Europe has relied for decades, is being challenged. The resulting risks force the EU to make fundamental choices in terms of domestic (industrial) investments into its militarily and economically most relevant value chains and strategic net-zero technologies. Strengthening European industrial resilience and competitiveness is partly, but not only, a matter of reshoring a share of certain sensitive activities to the EU. It is also about diversification of suppliers and incentivising green global value chains. Indeed, Europe's energy transition will contribute more to mitigating the climate crisis and securing the resilience of its supply chains, if green standards set by the EU lead to a greening of industrial value chains beyond Europe's borders.

The incoming European Commission should (i) develop the missing economic incentives and, if subsidies are not affordable, trade controls, needed to achieve the minimum domestic production targets of the Net Zero Industry and Critical Raw Materials Acts; (ii) attempt to (constructively) renegotiate trade and investment relationships with China and the US in specific value chains to reduce politically unsustainable imbalances, e.g. via the adoption of voluntary export restrictions; (iii) de-risk foreign direct investment in cleantech and critical raw materials production in strategic partner countries for specific value chains (on condition of priority trade access).

Initiative 7: Scale up lead markets for climate-friendly materials and technologies

In Europe the manufacture of clean basic materials still costs more than using conventional technologies. Subsidies – although sometimes essential – will only go so far in creating a robust business case for investing. For cleantech manufacturing, implementation of the Fit for 55 package will spur some demand, but potentially not enough to justify investments in additional domestic production capacity. The acceleration and scaling of lead markets for climate-friendly materials and technologies through policy can be an effective way to overcome these initial barriers to investment. While the EU has made some tentative steps into this direction, its efforts so far are small scale or risk taking a long time to come to fruition.

The incoming European Commission should (i) ensure effective implementation of the embodied carbon requirements for new buildings under Art 7 of the Energy Performance for Buildings Directive to drive demand for climate-friendly building materials; (ii) develop robust embodied carbon reporting standards for non-building products that are material intensive, such as new vehicles, infrastructure, packaging, heavy equipment and machinery; (iii) introduce requirements to continuously increase the share of near-zero emissions materials in new vehicle and other large equipment sales; (iv) require governments to set ambitious and effective green public procurement requirements for basic materials like steel and concrete in construction; (v) develop private buyers alliances of European companies to scale demand for green basic materials and intermediate products; (vi) engage with the OECD "Climate Club" to create a green buyers alliance of nations; (vii) sign narrow foreign investment facilitation deals in specific value chains, fostering strategic clean industry partnerships for clean products and materials.

Initiative 8: Mainstream circular economy incentives and technology funding in EU industrial policy

The EU has done more to promote a circular economy than is commonly mentioned. But the circular economy agenda is still rarely at the forefront of industrial or climate policy-making and largely focused on waste management, leaving a critical gap in other areas. While current EU policies place a strong focus on plastics, textiles and packaging, significantly more focus is needed on construction materials, maintaining clean scrap flows for steel and aluminium, critical raw materials, as well as investing and disseminating best available technology for recycling, collection, sorting of metals and plastics. More generally, EU circular economy policies need to be more closely aligned with the EU's broader industrial resilience and decarbonisation strategies.

The incoming European Commission should: (i) mainstream advanced circularity and material efficiency technologies in EU funding instruments; (ii) reform the way the EU counts its plastic waste statistics to account for Europe's "missing plastics"; (iii) establish minimum recycled content requirements in key technologies (e.g. cars, e-drive motors, building components, machinery and equipment, strategic tech like solar PV); (iv) extend carbon pricing under the ETS to waste incineration (with safeguards); (v) introduce a minimum materials contribution (charge) to pay for domestic critical raw materials refining subsidies; (vi) consider stricter export limitations for secondary materials; (vii) finalise the legal framework for battery recycling.

Scaling clean power and net-zero infrastructure

Renewable electricity generated by solar PV and onshore and offshore wind will be at the heart of Europe's climate-neutral power system, with renewable electricity reaching a share of around 70 percent of the power mix by 2030 and 80–95 percent in a climate neutral power system, depending on the scenario. This means a tripling in the speed of yearly installed new renewable power capacity from today to 2035, compared to the 2010–2020 decade. Security of power supply is achieved – depending on geography – through a smart mix of short-, medium-, and long-term storage technologies combined with back-up generating capacity fired by climate-neutral fuels, such as renewable hydrogen; and according to some national plans also nuclear electricity. Renewables are also a main lever to strengthen Europe's energy security and to compete in the global race for clean technology leadership.

The Fit for 55 package provides clarity on the EU's goal and deployment pathway for renewables until 2030. However, delivering on this ambition will be challenging. EU countries currently do not plan for a sufficient increase in the share of renewable energy by 2030 and a range of risks could result in delays or cost overruns of renewable power projects. Furthermore, renewable power projects will compete with fossil energy sources for years to come. As long as EU countries have not yet devised robust strategies for phasing down fossil energy use or for replacing fossil with non-fossil energy carriers, purely market-based investments into renewable projects remain difficult. In addition, most of Europe currently lacks long-term infrastructure development plans that are based on robust net-zero scenarios. The following policy initiatives would address these challenges.

Initiative 9: Use all means to de-risk and accelerate renewables investments

Renewable energy projects are capital intensive and therefore particularly vulnerable to risk. Inflation, rising interest rates, supply chain risks, limited land availability, delays in permitting or grid connections directly translate into higher investment costs. The political outlook suggests that volatility of (cost-) factors may become a permanent feature of Europe's 'mid-transition' that should see a rapid scaling of renewables alongside a gradually shrinking fossil-based energy system.

The EU has adopted several laws and strategies to address these concerns: The revised Renewable Energy Directive sets targets for the scaling of renewable energies and minimum standards for the designation of suitable land, for accelerated permitting and grid connection. EU energy market rules oblige regulators and system operators to enable the power system integration of an increasing share of renewable electricity. The EU Solar Energy Strategy of May 2022 and the EU Wind Power Action Plan of October 2023 seek to accelerate deployment of these critical technologies. Finally, the forthcoming EU Net Zero Industry Act will recognise solar photovoltaic, and onshore and offshore wind as strategic net-zero technologies and the newly adopted Critical Raw Materials Act should improve access to raw and refined materials used for producing renewable energy technologies.

Given the central role of rapidly scaling renewable power production in all energy transition scenarios and for enhancing Europe's energy security, the incoming European Commission should use all means to de-risk and accelerate renewables investments in Europe. Specifically, it should (i) closely track effective implementation of the new EU Renewable Energy Directive, in particular planned contributions of EU countries to achieving the binding EU target and steps to accelerate permitting for solar PV and wind energy projects; (ii) work with governments, regional authorities, the European Investment Bank and public banks of EU countries to fast-track and broaden access to financing at favourable conditions to renewable energy projects, also to enable communities and smaller companies to become involved; (iii) work with respective Council Presidencies to organise at least once per Presidency a ministerial-level exchange on the status and outlook of renewable power/energy deployment in the Union (newly deployed capacity, planned capacity, best practices in overcoming barriers to the scaling of renewables); (iv) use its authority under the EU Governance Regulation to oblige EU countries to pay into the EU renewable energy finance mechanism to ensure sufficient renewable energy capacity is being built in line with the binding EU target; (v) ensure that EU countries that consider significant contributions of nuclear power and CCS to achieve a climate-neutral power sector undertake some contingency planning to reduce risks to security of supply or decarbonisation objectives in case these projects are delayed due to technical difficulties or cost overruns; (vi) revise the guarantee of origin regime of electricity as well as related green public procurement guidance to provide rigid and up-to-date standards for green power, green products and green services.

Initiative 10: Develop an EU framework for net-zero compatible energy infrastructure

The energy transition from fossil fuels to an energy system largely powered by wind and solar will change the type and form of the energy we consume and the way it is delivered. Significant expansion of the electricity transmission and distribution infrastructure, a build-up of hydrogen transmission infrastructure, CO_2 pipelines and the decommissioning or repurposing of fossil gas infrastructure in the coming years is needed to deliver renewable electricity and gases to consumers. At regional and local level, heat grids need to be developed or expanded and charging infrastructure, including for heavy duty vehicles, needs to be deployed. Developing infrastructure in an efficient and resilient way requires a much more integrated approach to energy system planning. Different types of energy infrastructure can no longer be treated in isolation. While the need for more integrative planning and regulatory oversight has been recognized in the new Gas and Hydrogen Package, the reforms do not go far enough.

The incoming European Commission should (i) revisit the 2020 energy system integration strategy and develop the blueprint of a 'Net Zero Infrastructure Plan' for the EU for 2050; (ii) consider establishing an independent public EU entity for transmission modelling and planning with a net-zero energy infrastructure mandate; (iii) propose a new governance for the integrated planning of electricity, gas and hydrogen infrastructure at local, national and EU level. Europe's integrated infrastructure planning should include net-zero infrastructure target plans for 2050 with interim plans every five years; (iv) base infrastructure funding in the next EU budget on actual investment needs that are consistent with a net-zero infrastructure perspective; (v) ensure that existing energy infrastructure is used more efficiently, for example, through dynamic grid tariffs.

Scaling climate investments while preserving the sustainability of public debt and a functioning single market

To meet the European Union's 2030 climate target, investments into clean energy, energy efficiency, and net-zero compatible infrastructure need to accelerate across Europe. The bulk of investments will come from private sources. However, public funding plays an important role in de-risking, incentivising or complementing private investments. We estimate that Member States must cover a public green spending gap in the range of 1–2 percent GDP per year to meet the RePowerEU and EU climate ambitions in 2022–2027.

EU-level funding is essential to complement public funding from national budgets, especially for lower-income and fiscally constrained EU countries. During the 2021–2027 budgetary period, the EU's Multiannual Financial Framework (MFF), the Recovery and Resilience Facility (RRF), and funds financed through the EU Emissions Trading System (Innovation Fund, Modernisation Fund, and Social Climate Fund) make billions of euros available for climate investment.

Discussions on a new EU budget for 2028–2034 will start early in the new mandate and take place in a challenging setting: national climate investment needs remain high, financial support from the 750 billion euro RRF ends in 2026, the next EU budget will need to include some repayment of EU debt generated during the crisis, several EU countries have acquired levels of debt beyond the limits foreseen under the EU fiscal pact, while increased defence spending is widely seen as an urgent priority with Russia's war against Ukraine going into its third year. EU climate funding at the scale required can only be imagined if EU funds across all budget lines are more closely aligned with climate investment needs and potentially strengthened by the addition of some new dedicated fiscal revenues. At the same time, EU countries need to anticipate gradually declining revenues from taxing fossil fuels as the EU advances towards climate neutrality.

A more constrained EU budget for 2028–2034 will also increase concerns about the balance between EU and national level spending and tensions in the EU Single Market. If necessary investments into clean energy infrastructure or support to the EU manufacturing of clean technologies rely almost entirely on the availability of national funding, then wealthier Member States will be able to support such investments, while others may not. Effects of national climate subsidies on the Single Market are mostly discussed in the context of EU State Aid rules and will see a difficult balancing act between climate objectives and objectives of undistorted markets and competition*.

* This dynamic was already witnessed under the temporary crisis framework for COVID-19, where of the total €672bn subsidies, more than 53% of approved state aid was for Germany (9% of its annual GDP), followed by 24% for France (6% of its GDP), and 7% for Italy (3% of its GDP).

Initiative 11: Enhance EU climate spending while keeping a sound financial base

Looming large investment needs, fiscal constraints and geopolitical challenges call for more EU-level funding of climate action. The EU's climate funding framework has been built up piecemeal, mostly by mainstreaming climate investment into financial instruments created for other purposes. Despite the progress made, the long-term framework lacks the size and coherence to properly support EU

countries to reach climate neutrality by 2050. One major improvement came from the establishment of the RRF, that currently provides 40 percent of the EU grants available across different instruments to support the decarbonisation of Member States' energy systems. However, the RRF will be discontinued in 2027 and the Social Climate Fund will only fill part of this funding gap. It thus seems imperative to reform the EU's approach to climate funding when developing the EU's multi-annual budget (MFF) for 2028–2034.

The EU needs to effectively reallocate and increase available funding for climate action. The incoming European Commission should (i) establish a process to better coordinate climate investment across different MFF programmes and off-budget funds, aligning funding allocation more closely with sectoral and local investment needs; (ii) propose the establishment of a new climate fund to fill the gap left by the RRF and to support the implementation of the Net Zero Industry Act, complementing the ETS-based funds. This new fund should build on the outcome-based governance approach of the RRF and aim to incorporate over time the ETS-based Social Climate Fund and the Modernisation Fund to reduce fragmentation. The new fund should have annual funding capacity of around 0.2 percent of EU GDP and operate for ten years.

Initiative 12: Address fiscal risks in the transition to climate neutrality

The transition to climate neutrality requires significant green public spending, exceeding 1 percent of GDP annually in the EU. Climate neutrality continent-wide will not be reached unless all EU countries achieve net-zero emissions. The reformed EU Fiscal Pact does not include an exemption for long-term green investments ("green golden rule"), but severely limits the future fiscal space of countries like Italy, Spain, Greece, Portugal or Belgium that now have to either cut public spending or increase taxes. Judging from past experience, it is likely that these countries will prioritise short-term public spending needs over long-term investments into climate action. This suggests that carbon pricing will be even more essential to foster cost-effective abatement and to generate revenues that governments can use to invest in energy infrastructures and support private green investment. Carbon revenues have the potential to reach 0.8 percent of the EU GDP in the 2030s, but they will be offset by declining revenues from fossil fuel taxation (higher than 2 percent of GDP in some Member States) already in the mid-2030s.[13]

Against this background, governments will need to find additional revenue sources to finance their climate spending. Closing this funding gap will be particularly challenging for EU countries with high debt levels or lower GDP per capita.

The fiscal implications of the transition towards climate neutrality must be managed with structured monitoring and higher co-financing at EU level. The incoming European Commission should ensure that (i) the fiscal implications of the green transition are addressed in national budget plans and in the Debt Sustainability Analysis methodology used for the new EU Economic Governance framework; (ii) propose additional sources of revenues to compensate for these declines, such as road charging schemes and further ETS scope expansion; (iii) propose the increase in EU funding for climate action (cf. Initiative 11), as taking over a significant part of the public spending needs at EU level could help mitigate these national fiscal risks.

13 Agora Energiewende (2024 forthcoming).

Initiative 13: Design a quicker and more demanding post-crisis state aid framework

The term ‚state aid' denotes financial assistance provided by EU governments to companies that is subject to approval by the European Commission to ensure fair competition and safeguard the internal market. Rules on state aid can block or enable investments and thus shape how markets will evolve. Recent revisions of EU State Aid Guidelines have expanded support for clean technology investments, while restricting support to fossil fuel-related projects. However, due to the COVID-19 pandemic and the energy crisis, much of the more recent state aid provided by Member States has been approved via special temporary state aid frameworks that have represented an unprecedented loosening of the rules, including for clean technology deployment and manufacturing (e.g. batteries, solar panels) and fossil fuel price support. Several challenges remain with regards to the existing EU state aid framework, including the expiration of key provisions of the temporary framework, bottlenecks in state aid approvals for clean technology, overly permissive rules with regards to support for fossil infrastructure and overly narrow fossil fuel phase-out provisions.

The incoming European Commission should: (i) create a long-term framework for government support to increase EU manufacturing for strategic net-zero technologies, (ii) increase maximum aid limits for cleantech manufacturing support in view of security of supply considerations and the need to achieve economies of scale; (iii) facilitate the approval of "net-zero strategic projects" through a revision of the General Block Exemptions Regulation and by accelerating decisions on their compability with state aid disciplines; (iv) revisit the current practice of exempting public support to gas, electricity and hydrogen grids from state aid scrutiny because an integrated perspective on energy infrastructure means there is competition between investments into infrastructures for different energy carriers; (v) increase state aid conditionality for fossil gas-related investments; and (vi) extend state aid rules that support the transition away from fossil fuels.

Closing policy gaps

Under the European Green Deal the EU has significantly raised its climate ambition and adopted climate-relevant legislation at a scale, ambition and intensity that is unprecedented both for Europe and globally, making the EU a global leader on climate action. In the last four years, 80 legislative procedures relating to the European Green Deal have been completed or are close to adoption, related to all sectors and greenhouse gases. Implementing these new laws on the ground will be the central task and challenge of EU countries in the next policy cycle. Despite this impressive feat, some important issues have not been sufficiently addressed, leaving significant policy gaps that should be closed during the next policy cycle. The following policy initiatives would address these gaps.

Initiative 14: Put fair food environments at the heart of an integrated EU food policy

Current food consumption patterns in Europe are drivers of climate change and biodiversity loss and adversely affect human health. The high consumption of animal-based food results in high per-capita land demand and associated environmental impacts. No country in the EU is currently on track to halt and reverse obesity, resulting in significant economic losses and burdening public health systems. There is clear evidence that both nutritional and environmental objectives can be met through the adoption of more sustainable diets. Fair food environments that enable consumers to shift towards more plant-rich consumption patterns would yield significant co-benefits for individuals and society. Examples include the implementation of price incentives, providing consumer information along food value chains and adopting sustainable procurement practices in public canteens. However, Europe still lacks a cohesive, inclusive, and solutions-oriented food policy capable of seizing this opportunity.

The incoming European Commission should propose an EU framework for the advancement of a sustainable European food system, aimed at providing orientation for food businesses, driving innovation and empowering consumers. The policy should (i) articulate common objectives for food system policies at both EU and national levels; (ii) establish an EU platform to accelerate the development of national food strategies and policies to create fair food environments; and (iii) include an initiative to tackle food poverty by expanding access to healthy and sustainable diets across the EU.

Initiative 15: Steer limited biomass supplies into priority uses for the transition

Recent studies have shown a substantial gap between the sustainable biomass supply potential in the EU and the EU's accumulated sectoral demand scenarios to meet climate neutrality by 2050. Biomass will be encountering demand from many new sides – bioenergy, bioeconomy, biomaterials (industry feedstocks and construction materials) and finally also for carbon removals (BECCS). Meanwhile, the supply of this biomass is increasingly being impacted by climate change, and its production and extraction can have negative impacts on biodiversity, the condition of ecosystems, and their capacity to sequester carbon dioxide from the atmosphere. This growing "sustainability and availability gap" between future biomass demand and supply has yet to be fully recognised by stakeholders and EU policymakers. An integrated regulatory approach is needed that bases decisions on a more complete view of future biomass demand, while triangulating various policy objectives and ensuring that scarce land and soil are used in the most efficient way.

The debate around the new 2040 climate target should be used to fundamentally rethink the role of biomass within EU climate and energy policy. To this end, the EU should develop a long-term biomass and land use roadmap by 2025/2026, in advance of the new legislative package for the post-2030 climate and energy policy framework. This roadmap should be used to (i) identify sustainable biomass supply and demand potentials underpinned by full system modelling and a detailed science-based impact assessment, (ii) identify policies that can help steer limited biomass supplies into priority uses for the transition to climate neutrality, (iii) assess the impact of existing support policies for bioenergy on the EU's ability to achieve its 2040 and 2050 climate goals, and (iv) make proposals for realigning the EU's regulation of biomass with the achievement of climate neutrality. Based on the outcome of this roadmap process, EU and national ambitions for bioenergy should be adapted, including in future NECPs for the period 2030–2040.

Initiative 16: Establish an EU framework for scaling carbon removals

The EU Green Deal includes various measures that advance the deployment of carbon removals, including a net-removal target for the land-use sector, a proposed voluntary carbon removal certification framework, a CO_2 injection capacity target in the Net Zero Industry Act and EU Innovation Fund financing. However, the EU needs to do more to ensure that carbon removals help deliver on climate neutrality. The sink capacity of European forests and soils has reduced significantly in the last years and many of the carbon removal technologies are uncompetitive and untested at scale. A robust „no-regret" framework is needed to rapidly scale carbon removals, including both technical removals such as bioenergy with CCS and direct air capture, as well as natural removals in forests and through agro-forestry. This scaling must be accompanied by a robust sustainability governance to avoid unsustainable biomass use, delayed phase-out of fossil fuels, and insufficient prioritisation of emissions reductions over offsetting.

The incoming European Commission should (i) propose a robust certification framework for carbon removals; (ii) set ambitious and achievable targets for carbon removals, as well as an explicit minimum greenhouse gas emissions reduction target; (iii) develop regulatory incentives for certified carbon removals, potentially through the issuance of certificates managed by a European Carbon Central Bank to ensure environmental integrity; (iv) provide targeted funding for novel carbon removal technologies (for example through the EU Innovation Fund), potentially financed through the frontloading of ETS revenues; (v) develop a robust CO_2 infrastructure governance to ensure fair and prioritised access to CO_2 transport infrastructure and storage sites and regulate long-term management and liability risks.

Initiative 17: Maintain momentum on international shipping and aviation

Aviation and shipping account for only 2 percent and 4 percent of the EU's total greenhouse gas emissions, respectively. However, both the number of air passengers and volume of international maritime trade have increased considerably and fast over the last three decades leading to significant growth in greenhouse gas emissions. Though emissions from both sectors saw big emissions reductions in 2020 due to COVID-19 restrictions, by summer 2023 emissions had rebounded to pre-pandemic levels and demand for aviation and shipping is expected to continue to grow. Against this background, the EU has adopted major new policies aimed at reducing emissions from planes and ships as part of the Fit for 55 package. However, important gaps remain to be closed that should be tackled in the next EU policy cycle, in particular with regards to the coverage of international flights and non-CO_2 emissions from international transport in the EU ETS, as well as energy taxation for aviation and marine fuels.

The incoming European Commission should: (i) include international transport in the EU 2040 climate target and maintain EU leadership on international transport emissions instead of waiting on the UN aviation and shipping bodies ICAO and IMO; (ii) strengthen the application of the EU ETS, especially byincluding international flights and non-CO_2 emissions from aviation under its scope; (iii) take further action to minimise non-CO_2 emissions from aviation, such as introducing a European clean kerosene standard to regulate the fuel quality of aviation fuels; (iv) further strengthen ReFuelEU Aviation and ReFuelEU Maritime initiatives, especially by strengthening sub-targets for e-fuels; and (vi) introduce minimum taxation of jet and marine fuels by closing the Energy Taxation Directive at EU level, or alternatively through bilateral agreements between Member States.

Initiative 18: Prepare for the fossil fuel phase-out

The decision, drawing conclusions from the first Global Stocktake as, agreed at the UN COP28 climate summit, officially addresses the need to stop burning fossil fuels and calls on parties to transition away from fossil fuels in energy systems. It represents the first formal recognition in UN climate negotiations that achieving climate neutrality and delivering on the Paris Agreement temperature goal means no more burning of unabated fossil fuels. No oil, no coal, no fossil gas. Fossil-fuel phase-out discussions are already underway at EU and national level and have made significant progress since the launch of the EU Green Deal. However, the EU has yet to formally commit and plan for a full transition away from fossil fuels, has failed to put an end to fossil fuel subsidies and has insufficient safeguards to shield against the risk of overbuilding Liquified Natural Gas (LNG) supply infrastructure and establishing long-term contracts for fossil fuels.

To advance the EU's commitment to phasing out fossil fuels: (i) the upcoming revision of the EU Climate Law should be used to establish an EU target for ending the use of fossil fuels and establishing an obligation to phase-out fossil fuel subsidies in national and EU spending; (ii) the EU should develop a comprehensive fossil-fuel phase-out strategy outlining milestones toward this goal, reviewing the just transition framework for affected industries and assessing the need to regulate existing assets to prevent sudden disruptions; (iii) establish a regulatory framework for decommissioning existing gas infrastructure; (iv) integrate fossil fuel phase-out into all future national plans, including the revised NECPs in 2029 and National Building Renovation Plans in 2026; (v) take regulatory measures to assess LNG supply infrastructure sufficiency and prohibit the conclusion of long-term LNG contracts beyond 2049; and (vi), set increasingly stringent methane performance requirements under the Methane Regulation for residual fossil fuels imported between 2030 and 2050.

Initiative 19: Fill the regulatory gaps around low-carbon gases

Renewable gases, in particular renewable hydrogen, will play an important role in achieving net-zero emissions in some end uses, such as chemical feedstocks, steel production or high-temperature process heat. However, renewable hydrogen is currently expensive and non-existent at scale. The EU has taken several steps to support the deployment of renewable gases; most importantly it has set sub-targets for Renewable Fuels of Non-Biological Origin under the Renewable Energy Directive and adopted the ReFuelEU Aviation Initiative. However, several policy gaps should be closed to ensure that the upscaling of renewable gases remains in line with Europe's climate targets. This includes revising downward the current unrealistically high 2030 targets for renewable hydrogen and biomethane to focus deployment efforts on a feasible pathway. Furthermore, there is a risk that the rapidly increasing demand for renewable gases that are not available at the scale needed is met with more carbon-intensive alternatives which would lead to increased greenhouse gas emissions.

The incoming European Commission should (i) set realistic and cost-efficient 2030 and 2040 targets for renewable gases as contribution to climate neutrality in Europe based on a proper impact assessment; (ii) propose strict sustainability criteria for 'low-carbon' gases under the new EU Gas Directive to ensure that fossil-based hydrogen is by 2030 verifiably 'near-zero emissions' across its life cycle; (iii) comprehensively address leakage of biomethane under the Methane Regulation so that increased biomethane production does not increase emissions; (iv) introduce a new methane fee on EU imports of fossil oil and gas that will generate revenues for climate action and incentivise fossil fuel producers to implement best practices to avoid methane leakage in line with the 'polluter pays' principle.

Adapting to a changing geopolitical landscape

The EU stands at a pivotal moment for its external trade relationships on energy, shaped by a changing geopolitical landscape. Russia's invasion of Ukraine has not only led to a war at the EU's doorstep but has triggered a domestic energy crisis. Conflict in the Middle East is introducing volatility to global energy markets, disrupting crucial trade routes. Political turbulence in the US risks further altering the transatlantic relationship, as the EU becomes increasingly dependent on the US for LNG. This confluence of events takes place against the backdrop of an eroding rules-based multilateral trading order.

Meanwhile the ongoing energy transition from fossil fuels to clean technologies necessitates a reassessment of energy security. The EU's response to the sudden disruption in supplies of fossil fuels from Russia was reactive and immensely costly. The EU needs a more forward-looking approach, shifting from temporary quick fixes to more gradual structural measures, such as investments in renewables such as wind and solar and energy savings such as heat pumps and building renovations, to permanently reduce fossil fuel demand and mitigate volatility. As the EU transitions from fossil fuels to renewables, new external trade dependencies will also emerge, for hydrogen, hydrogen derivatives and materials. Securely managing these dependencies will require establishing robust new trade partnerships.

Initiative 20: Set a geopolitical strategy for Europe's transition to climate neutrality

The EU's external energy strategy of May 2022 reflects the urgencies of the fossil fuel supply crisis in Europe that followed Russia's full-scale war against Ukraine. It includes several short-term elements, including on diversifying the EU's gas supply that have been taken up through concrete initiatives. It also includes priorities that should be reconsidered, particularly as regards anticipated volumes of imports of renewable hydrogen with mounting evidence that assumptions on costs, availability and technical feasibility were much too optimistic. Furthermore, the current external energy strategy does not reflect final agreements under the Fit for 55 package, the Critical Raw Materials Act or the Net Zero Industry Act.

The incoming European Commission should undertake a comprehensive update of the EU's external energy strategy based on a comprehensive consultation with international partners, the private sector and civil society. The updated strategy should set out (i) a modern, forward-looking definition of 'energy security' that builds on the central role of renewable energies and clean technologies for Europe's transition to climate neutrality; (ii) a consistent approach to Europe's external energy relations that reflects the EU's security and sovereignty interests; (iii) show how Europe will seek to balance between industrial development and open international trade; (iv) articulate opportunities of Europe's energy transition for our international partners, for example through green lead markets; (v) set priorities on energy security and clean energy transition in Europe's neighbourhood, and (vi) reflect Europe's cooperative, partnership-driven approach to addressing the climate crisis in its neighbourhood and worldwide.

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About Agora Energiewende
Agora Energiewende develops scientifically sound, politically feasible ways to ensure the success of the energy transition – in Germany, Europe and the rest of the world. The organisation works independently of economic and partisan interests. Its only commitment is to climate action.

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Note on image source (stump picture): Effects of climate change on the forests in Rhineland-Palatinate, Germany. The tree pictured is 141 years old. The coloured growth rings represent the average annual temperatures in Rhineland-Palatinate from 1881, year the tree was planted, to 2020. Blue means it was a cool year and red a warm year. The long-term temperature average increased by 1.6 °C over the period, from 8.1 °C in 1881 to 9.7 °C in 2020. Trees planted today will grow under completely different conditions in the future.

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