

Raising European Climate Ambition for 2040

A CLG Europe
position paper

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We Mean Business Coalition

The We Mean Business Coalition is a non-profit coalition working with the world's most influential businesses to take action on climate change. The Coalition comprises seven non-profit organisations: BSR, CDP, Ceres, CLG Europe, Climate Group, The B Team and WBCSD. Together, the Coalition catalyses business and policy action to halve emissions by 2030 and accelerate an inclusive transition to a net zero economy by 2050.

Authors

This report has been prepared by Sanna Markkanen, Anum Sheikh, Romain Pardo, Aoife Blanchard, Kirsten McNamee and Ursula Woodburn, with support from Katherine Quinn, Harry Greenfield, and Isabelle Thomas.

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1. Why the EU needs to set an adequate 2040 target

The EU is in the process of finalising its policy framework to support the implementation of its 2030 greenhouse gas emissions (GHG) reduction target. As this process draws towards an end, the EU is already in the starting blocks to establish its target for 2040. Under the Climate Law, the European Commission has the legal obligation of presenting this target at the latest six months after the first global stocktake of the Paris Agreement, by June 2024.

The pathway for the next decade and long-term objective to achieve climate neutrality are becoming clearer. The EU, therefore, needs to set a target for 2040 that constitutes an adequate, science based, and proportionate response to the climate, nature, and energy crises. Climate breakdown is no longer a distant threat; its impact is felt here and now. Record-breaking levels of heat-trapping greenhouse gases have caused planetary level changes in the land, the sea and the atmosphere¹ which are now being felt by communities across the globe at every level. Devastating floods, droughts and raging wildfires have caused human deaths and disruptions worth billions of dollars. July 2023 was the hottest month recorded in human history by a significant margin² and debilitating heatwaves across large swathes of Europe, the Americas, Africa and Asia served as a daily reminder of the immediacy of the action required.

The 2040 target should contribute to establishing a clear direction of travel for a just transition towards a climate neutral economy within the EU by 2050 with beneficial outcomes for climate, people, and nature. It is an opportunity to accelerate the decarbonisation of the economy and the clean energy transition, enhance the bloc's industrial competitiveness and resilience to climate change, and halt and reverse nature loss.

There is a growing consensus amongst economists, businesses and scientists that the green transition generates financial and economic benefits, which can be maximised by frontloading action. The 2040 target should provide a vision for the future of the European economy, enabling it to tap into these benefits and increase the EU's resilience to climate, ecological, financial and health risks associated with climate change in the long term. An ambitious 2040 target would also indicate the EU's intention to continue to lead internationally and encourage other countries to set ambitious targets.

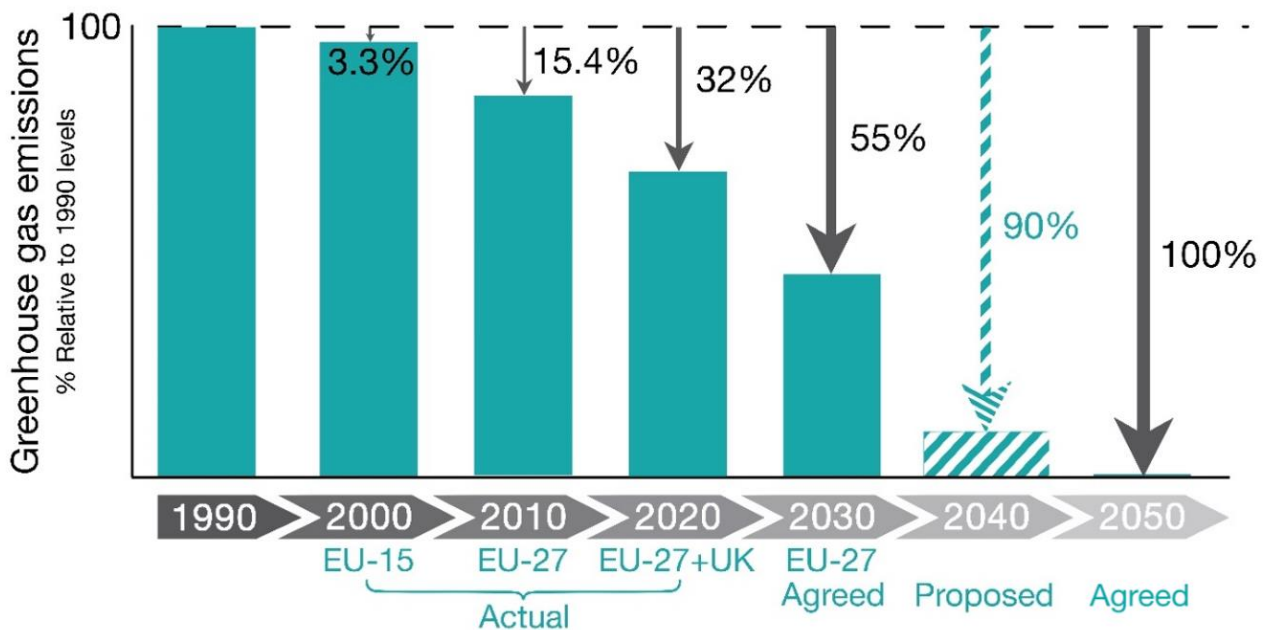
Working with leading businesses, CLG Europe has been a long-term proponent of setting climate targets and enabling frameworks to encourage business to take action to decarbonise their emissions and value chains in a way that benefits the economy and society. For example, CLG Europe was one of the first business groups to advocate for a 2030 greenhouse gas emissions reduction target of at least 55% by 2030 prior to the Commission's proposal in 2019.³ Once again, we consider the 2040 target debate as an opportunity for the EU to send a clear signal to businesses that climate action will remain at the heart of the EU's political agenda for the next two decades, thereby providing them with the long-term predictability they need to invest in the transition. Businesses are ready to play a key role in translating climate targets into concrete action on the ground, understanding that action now will improve their profitability and financial viability in the future. As the achievement of the 2040 target strongly depends on the successful implementation of the Fit for 55 Package, policies will need to create the enabling conditions to encourage early action, adoption of existing low carbon technologies and innovation.

2. Why we are calling on the EU to set a target of at least 90%

CLG Europe calls on the EU to set a 2040 GHG emissions reduction target of at least 90% net reduction in greenhouse gas emissions compared to 1990 levels, with no more than 8-10% coming from carbon removals. This target represents a level of ambition aligned with the objective of the Paris Agreement to strive to limit global warming to 1.5°C degrees. It is based on analysis and quantitative assessments conducted by the European Scientific Advisory Board on Climate Change (ESABCC)⁴ and modelling by organisations such as Climact⁵ and Agora Energiewende,⁶ which suggest that a 2040 target between 90 and 95% (compared to 1990 levels) could be economically, technologically, and socially feasible. Furthermore, setting a robust target will also allow decision-makers and planners to align socio-economic considerations with those of sustainability. This will ensure that any economic or social benefits that will accrue from early climate action, such as having a competitive advantage in climate neutral materials and technologies, reducing stranded assets and creating jobs, are properly harnessed.

In addition to this net target, we also call on the EU to set a target for nature-based carbon removals and a target for technological removals to improve transparency and accountability by making the assumed carbon removal reliance explicit (see more information in guiding principle 7).

Figure 1: EU's greenhouse gas emissions reduction trajectory 1990-2050^{7, 8, 9}



A target of at least 90% reductions by 2040 will reflect the urgency and benefits of near-term action, enabling steep emission reductions before 2040. Most assessments find that emissions reductions need to accelerate rapidly in the 2020s and 2030s to put the EU on the path to achieving climate neutrality by 2050, and to leave enough carbon budget for the 2040s to tackle the last remaining emissions from sectors that are especially difficult to decarbonise.

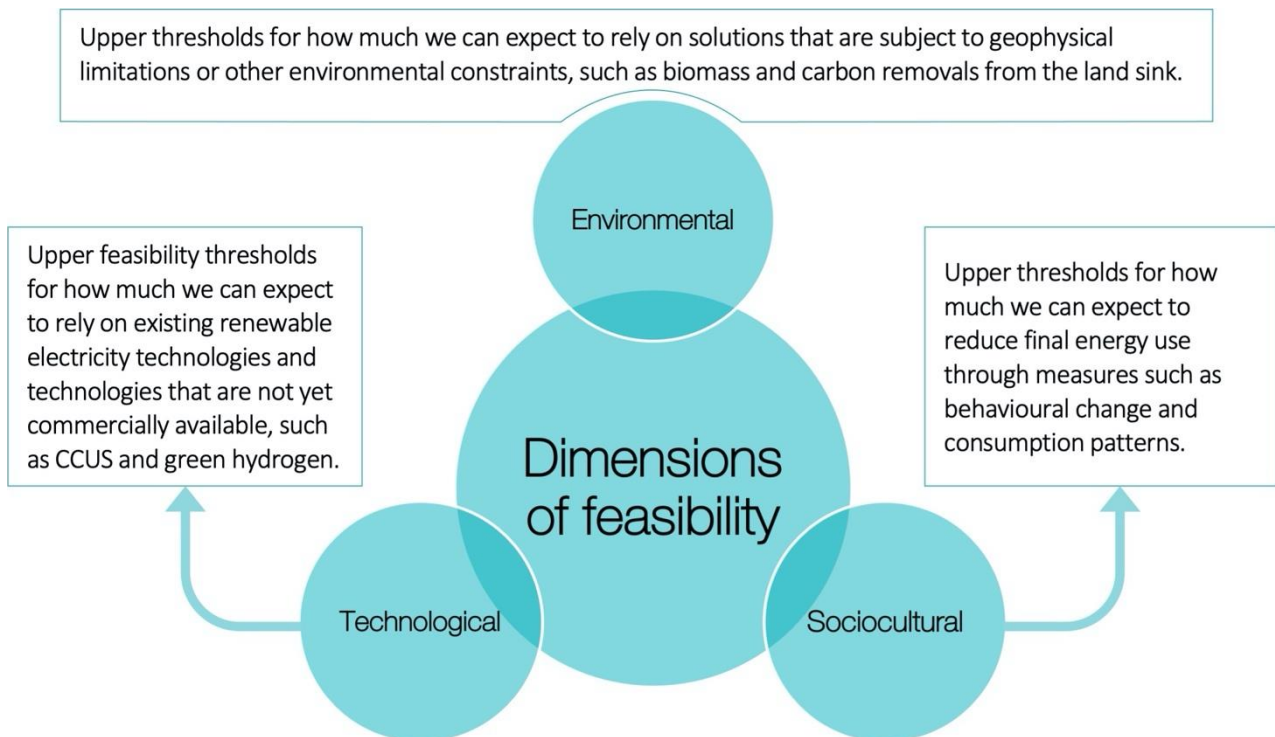
While the adoption of many low carbon technologies requires extensive capital investment, the climate related damages and externalities of delaying action will likely be far greater. Early adopters will play an important role as enablers of the transition, accelerating a more widespread roll out.

Early investment to accelerate the adoption of low carbon technologies, including energy efficiency improvements, would have multiple knock-on benefits through a virtuous cycle of improving performance, reducing costs, and improving feasibility^{10, 11, 12, 13}. These investments would also create new jobs, improve health and well-being¹⁴, advance competitiveness, generate economic growth, and make low carbon technologies more accessible to less advanced economies, resulting in more rapid emissions reduction globally^{15, 16}. However, contextual factors such as lack of information, misinformation, accessibility barriers, skills shortages and higher operating costs of electric alternatives can present substantial barriers to more effective deployment of low carbon and energy saving solutions.¹⁷ These contextual conditions must, therefore, be addressed through government action to ensure that the EU's climate targets remain within reach.

Analysis by the ESABCC and modelling by other organisations^{18, 19} indicate that **reductions of around 90% by 2040 are achievable without disruptive changes or significant environmental or technological challenges** (for more detail on the ESABCC's 'iconic pathways' to at least 90% emissions reductions by 2040, see Annex 1 of this report). Deliberate demand-side management and investment and much faster deployment of existing technologies, including energy efficiency measures, would, however, remain key levers.²⁰ Faster deployment of existing technologies across all sectors of the economy could enable the EU to achieve its 2030 target and at least 90% GHG emissions reduction by 2040 if supported by targeted and well-implemented policy interventions, improved access to finance and public sector investment.^{21, 22, 23} However, continuing investment is still needed in innovation to facilitate greater circularity, improve carbon removal technologies and develop ways to decarbonise sectors where solutions are not yet available, such as heavy industry (especially cement), aviation and shipping.

Moreover, ensuring that the 2040 target considers *feasibility and fairness* is essential. Based on a systematic review of the available scientific evidence, ESABCC²⁴ has identified certain constraints on what would constitute a viable pathway to carbon neutrality. These feasibility criteria have been grouped into three broad categories: environmental risks, technological challenges, and sociocultural feasibility concerns, as shown in Figure 2. In the ESABCC analysis, the feasibility criteria are used to set upper limits for how much emissions we can reasonably expect to reduce through means that also carry risks, are subject to geophysical constraints, rely on technological advances or require behavioural change. The ESABCC analysis confirms a considerable evidence base to suggest that 90-95% emissions reduction by 2040 can be achieved without breaching these feasibility thresholds. Drawing on a detailed assessment of 36 different climate modelling scenarios, ESABCC identifies three 'iconic' pathways (demand-side focus pathway, high renewable energy pathway, mixed options pathway), each one of which utilises a different mix of primary and secondary levers to achieve at least 90% reductions by 2040 and climate neutrality by 2050. Annex 1 of this position paper summarises these 'iconic pathways'.

Figure 2: Feasibility criteria for 2040 target used by ESABCC



Another key feasibility criterion for at least a 90% reduction in emissions by 2040 is sufficient progress by 2030. All modelling scenarios that achieve or exceed 90% GHG emissions reduction by 2040 assume that the bloc will meet (or exceed) its current target of at least 55% GHG reduction (compared to 1990 levels) by 2030. Therefore, meeting the 2030 target is an essential prerequisite to achieve the proposed 2040 target. However, the EU is currently not on track to achieve its 2030 target for various reasons.²⁵ Recently agreed policies are yet to be properly implemented, there is a lack of transparency in emissions accounting and reporting, contextual conditions such as adequate financing are not yet in place, and incentives to increase social and behavioural change are currently insufficient. Therefore, urgent action is needed to put Europe on track to meet its 2030 target and accelerate the large-scale deployment of existing low-carbon technologies. This would also save the EU's carbon budget for operations where deep decarbonisation solutions are not yet available.

An approach that emphasises the urgency of reducing EU's emissions through upscaling of low carbon technology deployment across all sectors of the economy to keep the total GHG emissions as low as possible would also improve the fairness of the EU's contribution at the global level.²⁶ While the feasibility analysis of the 2040 target is a matter of mathematical calculus, its fairness is a *value judgement* based on political and economic contingencies. **A 2040 target below 90% would be inconsistent with the EU's contribution to meet 1.5°C globally**, as well as the principles of fairness and equity because the bloc has already exhausted its fair share of the global emissions budget.²⁷ Considering various principles (such as historical emissions, per capita emissions, polluter pays principle, loss and damages), ESABCC suggests that 90% emissions reduction by 2040 is the *minimum* level of ambition that is consistent with an equity-based approach.

Setting a 2040 target of at least 90% would also demonstrate EU leadership in climate policy through its willingness to invest and commit to reducing emissions and set up a blueprint for an ambitious policy


framework that other countries could use and adapt to their specific circumstances. A substantially lower target, combined with a lack of implementation of the 2030 target domestically, would indicate an insufficient level of commitment from the EU and contribute to increasing climate change risks, passing irreversible tipping points, lock-ins of emission-intensive investments and deferring necessary investments in low-emission technology, industry and jobs.

3. The guiding principles to achieve the 2040 target

The 2040 target and the policy framework to deliver it needs to accelerate the energy transition, improve the competitiveness of EU industries, drive deep decarbonisation across all sectors of the economy, be consistent with nature objectives, enhance circularity and ensure a just transition to climate neutrality by 2050. Leading companies are ready to take action to implement an ambitious 2040 target but need supportive contextual conditions and policy frameworks to enable them to do so. Predicated on the discussion surrounding the evidence-based feasibility and fairness criteria, as well as the primary levers identified in the modelling scenarios used by ESABCC and organisations such as Strategic Perspectives and Agora Energiewende, CLG Europe outlines the following guiding principles to inform the policy framework required to deliver an at least 90% target for 2040.



1. Accelerate electrification, energy efficiency and phase out fossil fuels

 Achieving at least 90% emission reduction by 2040 depends on the phasing out of fossil fuels across all sectors of the economy, accelerated electrification, decarbonisation of the power sector, and large scale roll out of energy efficiency measures. All these aspects are interconnected and need to be implemented simultaneously. For instance, energy efficiency measures and power sector decarbonisation need to accompany electrification to minimise emissions and the demand for additional infrastructure. A recent study by Agora Energiewende shows that the EU can cut its fossil gas use in half by 2030 and completely phase it out of energy systems by 2050.²⁸ This can be done by

accelerating the renewable energy roll-out and committing to reaching 100% decarbonised power systems by 2035, improving energy efficiency in buildings, and replacing fossil fuels with electricity in buildings, transport and industry.

Rapid and large-scale electrification will present both opportunities and challenges. On the one hand, reduced reliance on fossil fuel imports will improve the EU's economic and geopolitical resilience and reduce vulnerability to fossil fuel price fluctuations, which have recently contributed to high inflation in Europe. On the other hand, a high degree of electrification across sectors will lead to an overall increase in electricity demand, requiring additional generation capacity and distribution infrastructure upgrades.²⁹ Electricity consumption (as a share of total power consumption in the EU) from electric vehicles alone is expected to go up from approximately 0.03% in 2014 to around 4-5% in 2030 to approximately 9.5% in 2050.³⁰ In sectors where direct electrification is not viable, alternative energy sources such as fossil free hydrogen can play a role. However, this will further increase demand for low carbon electricity.

As all sectors, including transport, buildings and industry, electrify, increased quantities of low carbon electricity will be needed. Electrification and the expansion of intermittent renewable electricity capacity should be accompanied by investment in the upgrading and expansion of grid infrastructure. A net-zero energy system will also require a range of flexibility solutions such as improved interconnection and power pooling between countries, demand-side management, and energy storage solutions.³¹

The EU 2040 target should be accompanied by a phase-out of fossil fuel subsidies and financing by 2025 to ensure consistency between climate targets and financing instruments. As the use of fossil fuels for energy declines over time, it will be important to avoid shifting their use from energy to other uses like the production of chemicals and materials such as plastics. Rethinking and improving the design and composition of products, including by replacing fossil fuels feedstocks with alternative feedstocks, is not only essential to decarbonising their embedded and end-of-life emissions but also to the overarching process of phasing out fossil fuels from the economy.³²

2. Ensure that the costs and benefits of the transition are equitably distributed



The transition will impact all EU citizens. Policies and investments that prioritise Green Deal objectives need to be accompanied by measures to mitigate any adverse social impacts and ensure a just and fair transition towards a climate neutral European economy. It will be necessary to ensure that the costs and benefits of the transition are equitably distributed to increase social acceptance of and engagement with climate policies. Citizens will need access to adequate information regarding the benefits of climate action and how they can contribute at the household and community level to the transition.

The social and distributional impacts of the 2040 target and the policies to deliver the target should be thoroughly assessed to capture the impacts of each policy as well as potential synergies and situations where two or more policies may offset each other's impacts.³³ There is also a need for a comprehensive assessment of net employment gains, the sectoral and geographical distribution of disappearing and emerging jobs, and potential skills gaps in certain sectors. Although the net impact of the transition on jobs is likely to be positive at the EU level, new jobs may not be equally distributed across sectors or regions, and available workers may not have the right skills for emerging jobs.³⁴ Inclusive and paid reskilling, upskilling and other employment initiatives will need to be primarily targeted at employees in sectors that are contracting in size and at local authorities who are likely to lose big employers.³⁵ Furthermore, many

new jobs created will require science, technology, engineering and mathematics (STEM) skills³⁶ and employers will struggle to fill these roles unless the talent pipeline is improved. According to Eurostat, one in five European students graduated from tertiary STEM education in 2022; certain industries, such as the chemical industry, could face a labour shortage of up to 11% entirely related to STEM disciplines.³⁷ While initiatives such as ‘The European Year of Skills’ are trying to target this, more will need to be done to ensure the skills in the labour market match the new green jobs.

3. Embed the principle of competitive sustainability into the EU’s industrial strategy and climate policies



Industrial decarbonisation can improve competitiveness and present substantial economic opportunities to EU companies and economies.^{38,39} The global clean technology market is expected to grow by \$650 billion annually by 2030, and the value of ‘green industries’ to exceed US\$10 trillion by 2050.^{40,41} However, the ability of the EU industry to capitalise on these benefits depends on adequate levels of support and an enabling policy framework.

The recent Net Zero Industry Act (NZIA) should be considered a steppingstone to reduce emissions and tap into the competitiveness related benefits of technologies contributing to climate mitigation in the coming decades. As such, the EU approach to industrial decarbonisation should be more holistic and incorporate net zero technologies and materials such as near-zero emission steel and zero carbon concrete. Clear and robust standards and definitions should be established to enable net zero technologies and their material inputs to be competitive with technologies that rely on fossil fuels. Policies to create further market demand for low carbon materials and products are also important in the short-to-medium term to support the scaling up of low carbon innovation.^{42,43}

4. Deploy all available levers to rapidly increase energy efficiency and reduce embedded emissions from the buildings sector



The EU needs a more holistic approach for the built environment. New buildings will need low embedded and operational emissions, which can be achieved using near-zero emissions material inputs and architectural solutions and fittings that minimise energy consumption through high efficiency. At the same time, existing buildings will need to be retrofitted to be more energy efficient.

For existing buildings, technologies to improve energy efficiency (such as insulation, efficient lighting and double-or triple-glazed windows) and decarbonise heating (such as heat pumps) can reduce operating costs and improve comfort and indoor air quality, while reducing emissions. Many of these technologies have been available in the market for a long time, but the adoption and renovation rates have remained low or very low. So-called ‘deep’ energy efficiency retrofits are undertaken in less than 0.5% of the EU’s homes every year,⁴⁴ and approximately three quarters of space heating uses fossil fuels (such as natural gas or even coal) or electricity from non-renewable sources.⁴⁵

For the EU to meet its 2030 and 2050 targets, the annual renovation rate should be scaled up to at least 3% of the existing building stock,⁴⁶ while heat pumps could replace 86 million fossil fuel based space heating systems.⁴⁷ Although the estimates vary widely, a combination of energy efficiency and electrification of the building stock could create hundreds of thousands of new high quality jobs by 2030.^{48,49,50} However, these benefits will materialise only if sufficient investment and efforts at all levels of governance are leveraged to incentivise households to adopt these technologies and to provide training for workers to equip them with the necessary skills.

For new buildings in particular, regulations and standards over embedded CO2 emissions should be factored into the pathways to reduce emissions in the long term. This would also help create demand for low carbon materials, including materials with higher recycled content, facilitating the decarbonisation of foundation industries such as steel and cement production.^{51,52}

5. Harness circular economy and eco-design solutions for environmental and climate benefits



The EU should harness the opportunities presented by the circular economy and eco-design to tackle emissions stemming from the production of materials. Circular solutions such as circular designs that enable closed-loop recycling and allow products, materials and components to be used for longer (or to be used multiple times), as well as increased reuse and repair, can reduce the demand for raw material extraction and emissions from energy-intensive production processes.⁵³ Furthermore, using greener feedstocks (such as increasing recycled glass in glass production and reducing clinker content in cement production and fossil fuels in chemical production) can reduce both embedded and end-of-life emissions in the products themselves but also have a decarbonising impact throughout the value chain.⁵⁴

In addition to technological advances in the end-of-life treatment of products (such as disassembly and decontamination), there is a need for regulatory instruments to set clear, specific and robust standards and eco design requirements on the climate and environmental sustainability of a product, ideally in collaboration with other large economies. This will help to raise the floor on what qualifies as a 'sustainable product', cap the greenhouse gas emissions embedded in the product, and ensure better reusability and recyclability of energy intensive materials and critical raw materials.^{55, 56} It would also help to scale up markets for these products, adapt public procurement procedures, verify product claims and ensure transparency around the climate and environmental impact of a product. Regulators need to work hand-in-hand with companies to provide the right signals for consumers to acquire or lease products with minimal environmental impact. Improved circularity would also mitigate the risks associated with import dependency for materials and products required for the green transition.

6. Harness the synergies between climate and nature objectives



Leading businesses are increasingly aware that nature restoration and sustainable land use will play a key role in increasing the EU's ability to mitigate climate change through nature-based solutions. Destruction of nature is a key driver of climate change, and its restoration can help to reduce emissions. Nature based solutions can also improve resilience and adaptation to climate change. Investment, whether public or private, in nature is likely to lead to climate benefits too. The 2040 climate target should create a clear signal to businesses and national governments that nature-based initiatives are integral to the EU's climate and growth ambitions.

Emissions from the agriculture sector will need to drop significantly if the EU is to reach its greenhouse gas reduction target. Approaches such as regenerative agriculture will contribute to the decarbonisation of the economy and the protection and restoration of biodiversity and ecosystem services. Reducing the use of unnecessary fossil fuel intensive agricultural inputs can deliver environmental and economic benefits to farmers. A holistic policy framework linking multiple objectives from land use and food systems can help deliver for climate, nature and people, including rural populations, farmers and indigenous communities. Sustainable and regenerative agriculture should be rewarded both in the marketplace (including via changing patterns of consumption) and via public payments for the environmental benefits it delivers.

Food-related policies and the Common Agricultural Policy (CAP) can incentivise and de-risk the transition to low carbon, nature positive agriculture systems and the agricultural sector. Public policy can help prevent unsustainable farming practices using ambitious sectoral standards, while delivering financial support to make sustainable farming practices the new standard. Assessing instruments to unlock new investment into sustainable and regenerative agriculture, including innovative ways to reduce emissions from livestock farming, will be important.

7. Adopt a realistic and evidence-based approach to carbon removals



Carbon removals are important to reach net zero by 2050 but it is essential to prioritise emissions reductions first. Natural carbon sinks and Carbon Capture, Storage and utilisation (CCUS) technologies are needed to put the EU on the path to climate neutrality by 2050 and negative emissions thereafter. However, these should not be used to disincentivise technologically and financially viable mitigation efforts by 2040.

Some carbon removals will be necessary to achieve the 2040 target, but heavy reliance on carbon removals may be unwise because of the risks associated with any form of carbon sink (whether nature based or technological) due to unknown impacts of climate change.^{57, 58} Industrial removals with storage face challenges related to cost and scalability,⁵⁹ meaning that heavy reliance on these technologies being available at scale and at reasonable cost by 2040 is risky and could place the target in jeopardy. Natural carbon sinks should be considered as one part of a wider enabling policy framework to support nature protection and afforestation efforts to reduce biodiversity loss and support nature restoration targets.

Setting a target for net emissions reduction with a specification of the share of these reductions that can come from carbon removals is sensible due to the lack of true equivalence across emissions reductions and removals, as well as between different types of removals. This will help minimise the perceived risks associated with supporting carbon removals including temporal trade-offs and mitigation delays, excessive offsetting, and technological lock-in.⁶⁰ Concerns over the differences in durability among carbon removals, the risk of leakage, and challenges in scaling emerging technologies have also been raised. Legislation for carbon removals, clearly distinguishing them from reductions, and high-quality criteria for carbon removals, including concepts like additionality or what is classed as 'permanent' are needed.

For these reasons, we propose that the EU sets three separate targets to improve transparency and accountability by making the assumed carbon removal reliance explicit: a net target, a target for nature-based carbon removals and a target for technological removals.⁶¹ This will enable an appropriate focus on both reductions and removals to reach our climate goals. Every effort should be made to overshoot all three targets, as this would improve the fairness of EU efforts at the global scale.

8. Significantly increase EU and national budgetary allocations for climate and nature



EU funds and national budgets should be earmarked to a much bigger extent to the implementation of the EU's climate, energy transition and nature objectives. Funding instruments like the Multiannual Financial Framework (MFF), Innovation Fund, Recovery and Resilience Funds, RePowerEU, and revenues from the ETS and state aid procedures should be used to stimulate public and private sector investments in the green transition, build the necessary infrastructure and reward the transformation of the economy towards net zero and fairer societies in a way that benefits climate, people and nature. As some of these funding instruments will no longer be available in the next

decade, they should be reviewed and replaced by new funding instruments, fit to future proof investments in the transition.

Facilitating public-private partnerships (PPPs) will be crucial to deliver the necessary infrastructure needed to deliver an ambitious 2040 target. Other measures could include more flexible financing rules or incentivising VAT reductions on renewable infrastructure and technologies to reduce upfront investment costs for green transition projects. In hard-to-abate sectors such as agriculture and heavy industry, policy interventions to create demand for low carbon products and incentives for producers to invest in innovation for new products, processes and practices will be needed to make the transition financially viable for them.

9. Set a post 2030 climate and energy political framework building on the successful implementation of the Fit for 55 Package



The 2040 target presents an opportunity to set a post 2030 climate and energy political framework that builds on the successful implementation of the Fit for 55 Package and is well aligned with industry, nature and circular economy policies, including the Circular Economy Action Plan, as well as the EU's 2050 objective.

As achieving the 2030 target is essential to enabling at least 90% reductions by 2040, any gaps in the Fit for 55 package should be identified early to allow for course correction before 2030 and during the 2030s. Holistic and comprehensive policy implementation, including allocating sufficient financial resources and creating conditions for financially viable investment in climate action, is necessary to deliver the 2030 target and ensure the EU can keep its 2050 climate neutrality objective within reach.

10. Lead decarbonisation efforts globally



The EU was a frontrunner in setting an ambitious 2030 climate target and an accompanying framework for its implementation, the Fit for 55 Package. Now, the 2040 target is an opportunity for the EU to strengthen its position as a leader in the race to reduce emissions globally in the context of rising international competition for clean technologies. It must actively and urgently call for and contribute to the phase out of fossil fuels and 1.5-aligned mitigation action on a global scale. This will mean working with partners towards common goals, fostering global markets in clean technologies, business sustainability and innovation, and developing relationships to support the clean energy transition in non-EU countries.

In doing this, the EU should strive to share benefits and burdens equitably across countries and demographics. It must ensure that climate action does not increase environmentally or socially unsustainable practices or social and economic inequalities within the EU or globally. Because the EU has already exhausted its fair share of the global emissions budget, ambitious domestic emissions reductions must be complemented by measures outside the EU to achieve a fair contribution to global climate change mitigation.⁶² The EU should collaborate with non-EU countries to develop and implement standardised embodied carbon accounting and reporting mechanisms and deploy trade policy instruments alongside climate policies to create larger markets for more sustainable products and materials.⁶³ It should use climate finance, sustainable procurement practices and technology transfer as tools to support the transition to low carbon economies beyond EU borders.

4. How business practices can support an ambitious 2040 target

Businesses are already taking action to decarbonise their operations and value chains by or even before 2040 by switching to low carbon energy, transitioning to electric vehicles and developing low carbon and fossil free materials. These practices underline the private sector's willingness and efforts to support the implementation of ambitious climate targets.

Over 400 companies globally have committed to reach net-zero emissions by 2040 under the [Climate Pledge](#), including Amazon, Salesforce, GSK and Unilever.⁶⁴ Europe has the highest number of companies committed to ambitious emission reduction targets based on climate science through the Science Based Target initiative (SBTi), with 1799 companies with approved targets.⁶⁵

Over 400 companies globally are committed to source 100% renewable energy under the [RE 100](#),⁶⁶ a Climate Group led initiative, with businesses committing to sourcing 100% renewable energy for their operations. In the EU, RE100 companies reported an electricity consumption of 59,672 GWh, procuring an 85% share of renewable electricity on the single market in 2022.⁶⁷

130 companies are part of the [EV 100 initiative](#),⁶⁸ with companies acting towards transitioning their fleets to electric vehicles and installing EV charging for staff and customers by 2030. Among EV100 members, 56% of total EVs are being rolled out in the EU, representing the largest growth share of deployment in 2022. Commitments across the EU now total over 215,000 vehicles, and 30,300 are already in operation.⁶⁹

Coca-Cola Europacific Partners has a short-term target to reduce its absolute scope 1, 2 and 3 emissions by 30% by 2030 vs a 2019 baseline, and a long-term target to reach net-zero by 2040.⁷⁰ With plans to move to fully electric or hybrid company cars and vans, manufacturing sites powered by 100% renewable electricity by 2030 across all markets, and an ambition to stop using oil-based virgin plastic in its bottles, the company anticipates being able to reduce its emissions across the business by approximately 1.7 million tons CO₂e by 2030, vs 2019.

Unilever, a multinational consumer goods company, has committed to reducing its scope 1 and 2 emissions by 70% by 2025 against a 2015 baseline, to reach net zero emissions across scope 1 and 2 by 2030, and to achieve net zero across its entire value chain (scope 1, 2, and 3) by 2039.⁷¹ The steps to achieve these emissions reductions are set out in Unilever's Climate Transition Action Plan.⁷² Following the achievement of its 100% renewable grid electricity target in 2020, Unilever's operational plans focus on the transition to renewable heat sources, increasing energy efficiency, and reducing refrigeration emissions. Unilever is committed to delivering 100% EVs or hybrids in its car fleet by 2030 under EV100,⁷³ and has established a Climate and Nature Fund to invest €1 billion by 2030 into meaningful climate, nature, and resource efficiency projects.⁷⁴

Spanish multinational electricity utility company, **Iberdrola**, aims to achieve net zero emissions in all scopes by 2040, focusing on transitioning to 100% renewable energy and smart grids.⁷⁵ Spanish infrastructure and renewable energy company, **Acciona**, has also set a 2040 net zero target, which it aims to achieve by reducing greenhouse gas emissions across the supply chain, and developing projects that facilitate access to renewable energy.⁷⁶

Rockwool, a leading mineral wool manufacturing company, has set early decarbonisation goals, such as reducing one-third of its lifecycle greenhouse gas emissions by 2034.⁷⁷ **Ball Corporation**, a manufacturing

company which supplies aluminium packaging, has incorporated circularity solutions to reduce 55% of its scope 1 and 2 emissions by 2030⁷⁸, as recycled aluminium uses only 5% of the energy required by primary production.

Signify, a leading Dutch multinational lighting company, committed to becoming carbon-neutral by 2020 at COP21 in 2015. It has achieved this feat alongside reducing its CO₂ emissions by 70% between 2010 and 2020. Signify's journey to carbon neutrality wasn't easy, given its global manufacturing footprint and supply chain. However, embracing systems change, understanding its energy use across all operations, embracing renewables, and offsetting with purpose were key to its success.⁷⁹ Going beyond carbon neutrality, Signify is now focused on its 'Brighter Lives, Better World 2025' programme, which sets the new goal of doubling its positive impacts on the environment and society. According to its 2022 Annual Report, Signify is on track to double the pace of the Paris Agreement's 1.5°C scenario to achieve its goals early by the end of 2025.⁸⁰

Salesforce has set targets to reduce absolute value chain emissions 50% by the Financial Year (FY) 2031 and 90% or more by FY41.⁸¹ Over 95% of Salesforce's FY23 greenhouse gas emissions came from its supply chain. For this reason, Salesforce included supplier-related emissions in its emissions reduction goal and set a target to have suppliers representing 60% of applicable supply chain emissions set their own science-based targets (SBTs) by FY25, and the company is on track for a 90% reduction relative to business as usual by FY31. To meet this goal, Salesforce is working to include specific climate obligations in supplier contracts via its [Sustainability Exhibit](#) and tying executive compensation to the successful implementation of the Exhibit.⁸² Since 2022, 10% of executive variable pay for Executive Vice President and above at Salesforce has been determined by four ESG measures, with one of the sustainability measures focusing on increased spend with suppliers who have signed Salesforce's Sustainability Exhibit.⁸³ Salesforce also provides its suppliers with support and resources for their sustainability journeys, including dedicated support for small and diverse businesses via its [Sustainability Accelerator](#).⁸⁴

Nordic and US-based steel company **SSAB** aims to bring fossil-free steel to the market as early as 2026 and largely eliminate carbon dioxide emissions from its operations by around 2030.⁸⁵ Traditional steelmaking currently accounts for 7 - 9% of total CO₂ emissions globally but is a sector with significant emission reduction potential and existing technologies to transform the sector. SSAB's recently launched product SSAB Zero™ is a fossil carbon emission-free steel based on recycled steel and produced using fossil-free energy. SSAB Zero™ has zero fossil carbon emissions (less than 0.05 kg CO₂e emissions per kg steel in scope 1 and 2) in its operations, including purchased energy and transportation. Also, SSAB has already delivered the world's first fossil-free steel, based on HYBRIT technology developed with LKAB and Vattenfall, which replaces coal in the iron ore reduction process using 100% fossil-free hydrogen. SSAB plans to launch fossil-free steel as a commercial product in 2026. The transformation of SSAB's Nordic production alone has the potential to reduce Sweden's total CO₂ emissions by around 10% and Finland's by about 7%.

By 2030, the **VELUX Group** has set targets to achieve a 100% reduction of operational emissions (scope 1 and 2) and to reduce its carbon emissions from its value chain by 50% (scope 3). In addition, by 2041, it is expected that forest protection and restoration projects through a 20-year partnership with the World Wide Fund for Nature (WWF) will have captured at least 4.5 million tonnes of CO₂, the equivalent of all CO₂e emitted by the VELUX Group (scope 1 and 2) since it was founded in 1941. As approximately 78% of the product's carbon footprint comes from materials used, VELUX has started to establish partnerships with suppliers to reduce carbon emissions in the materials used. Working with partners in architecture and construction, VELUX also completed the construction of 'Living Places', a building project in Copenhagen, showcasing that low carbon and energy efficient housing can be built at standard market cost with the health of people in mind.⁸⁶

Annex 1: ESABCC ‘iconic pathways’ to climate neutrality

Based on the three feasibility criteria (technological, environmental and sociocultural), ESABCC analysed more than one thousand modelling scenarios. Of these, 36 scenarios complied with 1.5°C of warming and the IPCC’s estimates of the EU’s fair share of global emissions budget, and complied with most of the feasibility thresholds. For environmental and technological feasibility criteria, clear numerical thresholds were used. However, as the quantification of the socio-economic dimension of feasibility is more complicated, the ESABCC used qualitative analysis, which included evaluating each of the scenario’s synergies or trade-offs with sustainable development goals to assess their impact on wider indicators of individual and societal wellbeing.

From the 36 shortlisted scenarios, ESABCC filtered three “iconic pathways” that can serve as exemplars for what potential pathways to climate neutrality can look like and what that entails for setting a 2040 target. The first of these pathways is the **Demand-side focus pathway**, which is one of the illustrative mitigation pathways assessed in the Sixth Assessment Report (AR6) by the Intergovernmental Panel on Climate Change⁸⁷ (IPCC). This pathway combines overreaching climate policies with global alignment and achievement of the UN sustainable development goals. It has a focus on lifestyle factors (such as less resource-intensive anthropogenic processes) and features the lowest final energy demand in the three iconic pathways identified by the ESABCC.

The second iconic pathway is the **High renewable energy pathway**, which focuses heavily on increased deployment of currently available technologies to achieve high emissions reductions in the near term. The key defining characteristic is relatively high renewable energy deployment, and this scenario has the highest share of non-biomass renewable electricity in 2040 (and therefore minimises any associated environmental risks). The last of the iconic scenarios is the **Mixed options pathway**, which has the lowest net cumulative emissions of the three iconic pathways in 2030-2050. It features higher deployment of carbon removals from the land sink and a substantially higher levels of nuclear power (indicating a need to increase nuclear generation capacity from current levels), compared with the other iconic pathways.

Figure A1: ESABCC iconic pathways to at least 90% emissions reductions by 2040

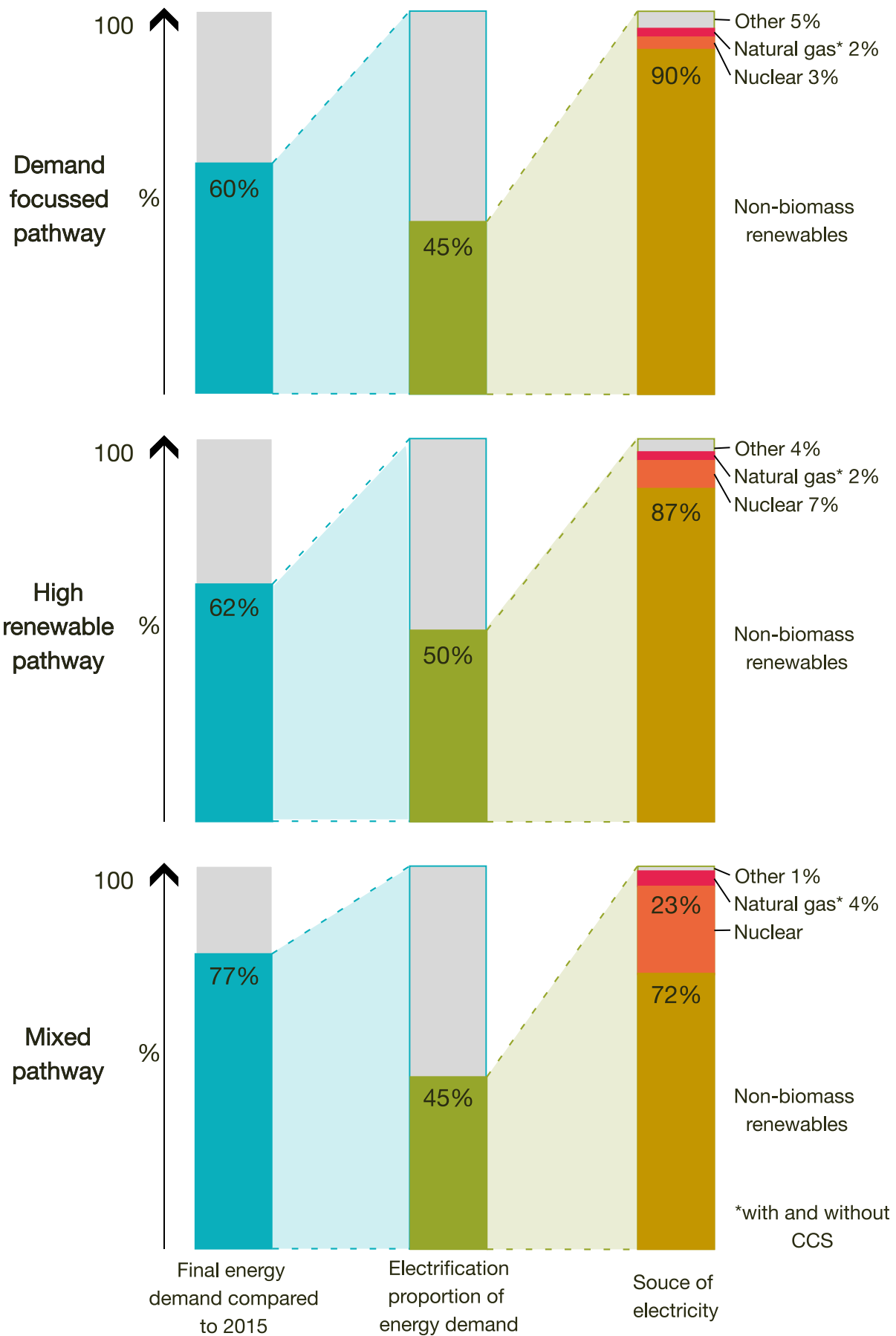
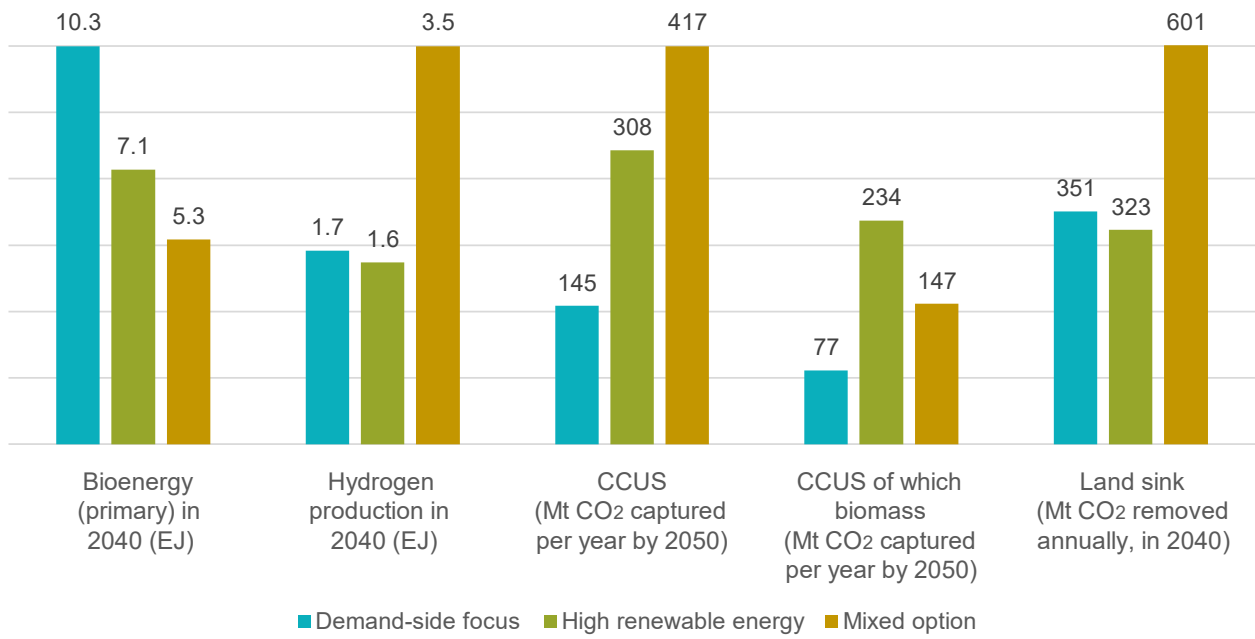


Figure A2: the role of bioenergy, hydrogen and CCUS in the iconic pathways



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- ¹ World Meteorological Organization. (2022) “State of the Global Climate in 2022”, accessed 23 August 2023. Retrieved from: <https://public.wmo.int/en/our-mandate/climate/wmo-statement-state-of-global-climate>
- ² Badshah, N. (2023, 8 August) “July was world’s hottest month on record, climate scientists confirm”, *The Guardian*. Retrieved from: [https://www.theguardian.com/environment/2023/aug/08/july-2023-worlds-hottest-month-climate-crisis-scientists-confirm#:~:text=July%20was%20world%27s%20hottest%20month%20on%20record%2C%20climate%20scientists%20confirm,-Global%20average%20temperature&text=July%20has%20been%20confirmed%20as,Climate%20Change%20Service%20\(C3S\).](https://www.theguardian.com/environment/2023/aug/08/july-2023-worlds-hottest-month-climate-crisis-scientists-confirm#:~:text=July%20was%20world%27s%20hottest%20month%20on%20record%2C%20climate%20scientists%20confirm,-Global%20average%20temperature&text=July%20has%20been%20confirmed%20as,Climate%20Change%20Service%20(C3S).)
- ³ University of Cambridge Institute for Sustainability Leadership (CISL). (2019). *Raising European climate ambition for 2030: A CLG Europe position paper*, Cambridge, UK: CLG Europe. Retrieved from: <https://www.corporateleadersgroup.com/reports-evidence-and-insights/Raising-European-climate-ambition-for-2030>
- ⁴ “Scientific Advice for the Determination of an EU-Wide 2040 Climate Target and a Greenhouse Gas Budget for 2030–2050,” *European Scientific Advisory Board on Climate Change* (European Scientific Advisory Board on Climate Change, June 15, 2023), accessed August 17, 2023. Retrieved from: <https://doi.org/10.2800/609405>.
- ⁵ “The post-2030 climate target debate starts now”, *Strategic Perspectives*, 07 June 2023. Retrieved from: <https://strategicperspectives.eu/the-post-2030-climate-target-debate-starts-now/>.
- ⁶ Agora Energiewende, *Breaking free from fossil gas*. Retrieved from: [A-EW_292_Breaking_free_WEB.pdf \(agora-energiewende.de\) \(NEEDS DATE. AUTHOR?\)](#)
- ⁷ European Commission. *Kyoto Protocol*. (2004, March 4). Retrieved from: https://ec.europa.eu/commission/presscorner/detail/en/MEMO_04_43
- ⁸ European Environment Agency. (2012, May 25) “Higher EU greenhouse gas emissions in 2010 due to economic recovery and cold winter.” Retrieved from: <https://www.eea.europa.eu/media/newsreleases/higher-eu-greenhouse-gas-emissions#:~:text=The%20long%2Dterm%20reduction%20trend,the%20Kyoto%20Protocol%20base%20year>
- ⁹ European Environment Agency. (2022, October 22) “Total greenhouse gas emission trends and projections in Europe.” Retrieved from: <https://www.eea.europa.eu/ims/total-greenhouse-gas-emission-trends#:~:text=The%20EU%20surpassed%20its%202020,target%20by%2012%20percentage%20points>
- ¹⁰ Nemet, Gregory F. *How solar energy became cheap: A model for low-carbon innovation*. Routledge, (2019).
- ¹¹ Garrido, L., Fazekas, D., Pollitt, H., Smith, A., Berg von Linde, M., McGregor, M., and Westphal, M., (2019). “Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times” - Technical Note. A New Climate Economy contributing paper. Cambridge Econometrics, Cambridge, UK. Retrieved from: <https://www.camecon.com/what/our-work/world-resources-institute-new-climate-economy-unlocking-inclusive-growth-story-21st-century/>
- ¹² Zachmann, G., Roth, A, "Learning for Decarbonisation: Start Early, Concentrate on Promising Technologies, Exploit Regional Strength and Work with Your National System. Bruegel Policy Brief October 2018." (2018). Retrieved from: https://unfccc.int/sites/default/files/resource/450_COP21%20RIPPLES_Brief_D33.pdf
- ¹³ IPCC. (2022). *Mitigation of Climate Change: Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Retrieved from: https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_FullReport.pdf

-
- ¹⁴ European Commission. (2021). Commission Recommendation (EU) 2021/1749 of 28 September 2021 on Energy Efficiency First: from principles to practice — Guidelines and examples for its implementation in decision-making in the energy sector and beyond, European Commission, accessed 23 August 2023. Retrieved from: [EUR-Lex - 32021H1749 - EN - EUR-Lex \(europa.eu\)](https://eur-lex.europa.eu/lexUriCommRec.html?uri=CELEX:32021H1749-EN)
- ¹⁵ Mountford, H., Corfee-Morlot, J., McGregor, M., Banaji, F., Bhattacharya, A., et.al. "Unlocking the inclusive growth story of the 21st century: Accelerating climate action in urgent times." (2018). Retrieved from: <https://apo.org.au/node/190651>
- ¹⁶ Copeland, H., Zarnic, Z., Cervantes, M., "Accelerating the development and diffusion of low-emissions innovations." *Background Paper for the 37th Round Table on Sustainable Development* (2018): 20-21. Retrieved from: <https://www.oecd.org/sd-roundtable/papersandpublications/Accelerating%20the%20development%20and%20diffusion%20of%20low-emissions%20innovations.pdf>
- ¹⁷ University of Cambridge Institute for Sustainability Leadership (CISL). (2022) "Context is everything: Insights and lessons for successfully delivering the European Green Deal." Retrieved from: https://www.corporateleadersgroup.com/files/cisl_-_context_is_everything_report_2022.pdf
- ¹⁸ Linda Kalcher, "The post-2030 climate target debate starts now.", *Strategic Perspectives*, 07 June 2023. Retrieved from: <https://strategicperspectives.eu/the-post-2030-climate-target-debate-starts-now/>
- ¹⁹ Agora Energiewende (2023): Breaking free from fossil gas. A new path to a climate-neutral Europe. Retrieved from: <https://www.agora-energiewende.de/en/publications/breaking-free-from-fossil-gas-1/>
- ²⁰ Meyer-Ohlendorf, N; Spasova, D; Graichen, J; Gores, S (2023): Designing the EU 2040 climate target. Ecologic Institute, Berlin. Retrieved from: <https://www.ecologic.eu/sites/default/files/publication/2023/60028-2040-Target-Overview-Report.pdf>
- ²¹ "Scientific Advice for the Determination of an EU-Wide 2040 Climate Target and a Greenhouse Gas Budget for 2030–2050," *European Scientific Advisory Board on Climate Change* (European Scientific Advisory Board on Climate Change, June 15, 2023), accessed August 17, 2023. Retrieved from: <https://doi.org/10.2800/609405>.
- ²² Linda Kalcher, "The post-2030 climate target debate starts now.", *Strategic Perspectives*, 07 June 2023. Retrieved from: <https://strategicperspectives.eu/the-post-2030-climate-target-debate-starts-now/>
- ²³ Agora Energiewende (2023): Breaking free from fossil gas. A new path to a climate-neutral Europe. Retrieved from: <https://www.agora-energiewende.de/en/publications/breaking-free-from-fossil-gas-1/>
- ²⁴ "Scientific Advice for the Determination of an EU-Wide 2040 Climate Target and a Greenhouse Gas Budget for 2030–2050," *European Scientific Advisory Board on Climate Change* (European Scientific Advisory Board on Climate Change, June 15, 2023), accessed August 17, 2023. Retrieved from: <https://doi.org/10.2800/609405>.
- ²⁵ European Court of Auditors. EU auditors see 2030 climate and energy targets at risk. (2023, June 26). Retrieved from: <https://www.eca.europa.eu/en/news/NEWS-SR-2023-18>
- ²⁶ "Scientific Advice for the Determination of an EU-Wide 2040 Climate Target and a Greenhouse Gas Budget for 2030–2050," *European Scientific Advisory Board on Climate Change* (European Scientific Advisory Board on Climate Change, June 15, 2023), accessed August 17, 2023. Retrieved from: <https://doi.org/10.2800/609405>.

- ²⁷ “Scientific Advice for the Determination of an EU-Wide 2040 Climate Target and a Greenhouse Gas Budget for 2030–2050,” *European Scientific Advisory Board on Climate Change* (European Scientific Advisory Board on Climate Change, June 15, 2023), accessed August 17, 2023. Retrieved from: <https://doi.org/10.2800/609405>.
- ²⁸ Agora Energiewende, “Europe can accelerate fossil gas phase-out with less hydrogen than planned.” Agora Energiewende, (2023, May 4). Retrieved from: <https://www.agora-energiewende.de/en/press/press-releases/europe-can-accelerate-fossil-gas-phase-out-with-less-hydrogen-than-planned/#:~:text=Europe%20can%20halve%20its%20fossil,think%20tank%20Agora%20Energiewende%20finds>
- ²⁹ European Commission. (2023, June 21) Feedback from: Strategic Perspectives. Retrieved from: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13793-EU-climate-target-for-2040/F3426684_en
- ³⁰ European Environment Agency. (2016). Electric vehicles and the energy sector – impacts on Europe’s future emissions. Retrieved from: [Electric vehicles and the energy sector - impacts on Europe's future emissions — European Environment Agency \(europa.eu\)](https://www.eea.europa.eu/en/press-releases/2016/06/electric-vehicles-and-the-energy-sector-impacts-on-europes-future-emissions)
- ³¹ University of Cambridge Institute for Sustainability Leadership (CISL). (2022). The New Power Couple: Decarbonising economies via renewable electricity and storage innovations. Cambridge, UK: CLN. Retrieved from: [cln the new power couple business briefing 2023 final.pdf \(corporateleadersgroup.com\)](https://www.clngroup.com/resources/publications/the-new-power-couple-business-briefing-2023-final.pdf)
- ³² Agora Industry. (2023). Chemicals in transition. The three pillars for transforming chemical value chains. Retrieved from: <https://www.agora-energiewende.de/en/publications/chemicals-in-transition/#:~:text=This%20project%20contributes%20to%20developing,circular%20economy%20and%20renewable%20feedstocks>.
- ³³ Foundation for European Progressive Studies (FEPS), Friedrich Ebert Stiftung, University of Cambridge Institute for Sustainability Leadership (CISL). (2023). The Path Towards a Socially Just Fit for 55 Package. Retrieved from: <https://fepeurope.eu/wp-content/uploads/2023/02/The-path-towards-a-socially-just-Fit-for-55-PS.pdf>
- ³⁴ SYSTEMIQ. SEER – systemic change that leaves no-one behind. Accessed 15 July 2023, <https://www.systemiq.earth/portfolio/seer/>
- ³⁵ University of Cambridge Institute for Sustainability Leadership (CISL). (2020). Working towards a climate neutral Europe: Jobs and skills in a changing world, UK: CLG Europe. Retrieved from: <https://www.corporateleadersgroup.com/reports-evidence-and-insights/Jobs-and-skills-in-a-changing-world>
- ³⁶ Janta, B., Kritikos, E. and Clack, T. (2023). ‘The green transition in the labour market: how to ensure equal access to green skills across education and training systems’, EENEE Analytical report. doi: 10.2766/563345. Retrieved from: https://eenee.eu/wp-content/uploads/2023/01/EENEE_AR02_Green-skills_Final-report-without-identifiers.pdf
- ³⁷ IndustriAll, “Europe needs to make its STEM strategy a reality”. IndustriAll. (2022, May 13). Retrieved from: <https://news.industriall-europe.eu/Article/744>
- ³⁸ University of Cambridge Institute for Sustainability Leadership (CISL). (2022). The Competitive Sustainability Index: New Metrics for EU Competitiveness for an Economy in Transition. Cambridge, UK: Cambridge Institute for Sustainability Leadership. Retrieved from: <https://www.cisl.cam.ac.uk/competitive-sustainability-index>
- ³⁹ Cambridge Institute for Sustainability Leadership (CISL) (2023). Market driven decarbonisation: The role of demand-led innovation in supporting emission reductions in foundation industries. Cambridge: Cambridge Institute for Sustainability Leadership (CISL). Retrieved from: <https://www.cisl.cam.ac.uk/resources/publications/market-driven-decarbonisation>

⁴⁰ International Energy Agency. (2023, January 12). “The world is entering a new age of clean technology manufacturing, and countries’ industrial strategies will be key to success.” Retrieved from: <https://www.iea.org/news/the-world-is-entering-a-new-age-of-clean-technology-manufacturing-and-countries-industrial-strategies-will-be-key-to-success>

⁴¹ Juliette Portala, “Green industries could be worth \$10.3 trln to economy by 2050 – study”, *Reuters*, (2023, January 10). Retrieved from: <https://www.reuters.com/business/sustainable-business/green-industries-could-be-worth-103-trln-economy-by-2050-study-2023-01-10/>

⁴² Cambridge Institute for Sustainability Leadership (CISL) (2023). Market driven decarbonisation: The role of demand-led innovation in supporting emission reductions in foundation industries. Cambridge: Cambridge Institute for Sustainability Leadership (CISL). Retrieved from: <https://www.cisl.cam.ac.uk/resources/publications/market-driven-decarbonisation>

⁴³ University of Cambridge Institute for Sustainability Leadership (CISL) and Agora Energiewende. (2021). Tomorrow’s markets today: Scaling up demand for climate neutral basic materials and products. CLG Europe. Retrieved from: <https://www.corporateleadersgroup.com/tomorrows-markets-today>

⁴⁴ Buildings Performance Institute Europe (BPIE) (2021). Deep Renovation: Shifting from exception to standard practice in EU Policy. Retrieved from: https://www.bpie.eu/wp-content/uploads/2021/11/BPIE_Deep-Renovation-Briefing_Final.pdf

⁴⁵ CAN Europe, “It’s time to get fossil fuels out of our homes”, CAN Europe, (2022, March 29). Retrieved from: <https://caneurope.org/its-time-to-get-fossil-fuels-out-of-our-homes/>

⁴⁶ Buildings Performance Institute Europe (BPIE) (2021). Deep Renovation: Shifting from exception to standard practice in EU Policy. Retrieved from: https://www.bpie.eu/wp-content/uploads/2021/11/BPIE_Deep-Renovation-Briefing_Final.pdf

⁴⁷ European Commission. (2023). Residential heating: heat pumps would knock down energy consumption and emissions. Retrieved from: https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/residential-heating-heat-pumps-would-knock-down-energy-consumption-and-emissions-2023-06-21_en

⁴⁸ Buildings Performance Institute Europe (BPIE) (2021). Deep Renovation: Shifting from exception to standard practice in EU Policy. Retrieved from: https://www.bpie.eu/wp-content/uploads/2021/11/BPIE_Deep-Renovation-Briefing_Final.pdf

⁴⁹ European Commission. (2023). Residential heating: heat pumps would knock down energy consumption and emissions. Retrieved from: https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/residential-heating-heat-pumps-would-knock-down-energy-consumption-and-emissions-2023-06-21_en

⁵⁰ European Commission. (2020). A Renovation Wave for Europe – greening our buildings, creating jobs, improving lives. Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1603122220757&uri=CELEX:52020DC0662>

⁵¹ Cambridge Institute for Sustainability Leadership (CISL) (2023). Market driven decarbonisation: The role of demand-led innovation in supporting emission reductions in foundation industries. Cambridge: Cambridge Institute for Sustainability Leadership (CISL). Retrieved from: <https://www.cisl.cam.ac.uk/resources/publications/market-driven-decarbonisation>

⁵² University of Cambridge Institute for Sustainability Leadership (CISL) and Agora Energiewende. (2021). Tomorrow’s markets today: Scaling up demand for climate neutral basic materials and products. CLG Europe. Retrieved from: <https://www.corporateleadersgroup.com/tomorrows-markets-today>

- ⁵³ University of Cambridge Institute for Sustainability Leadership (CISL). (2023). Circular Savings: Business perspectives on energy savings through circular practices. Cambridge, UK: CLG Europe. Retrieved from: <https://www.corporateleadersgroup.com/reports-evidence-and-insights/collections/policy-briefings/policy-briefing-circular-savings-business>
- ⁵⁴ Agora Industry. (2023). Chemicals in transition. The three pillars for transforming chemical value chains. Retrieved from: <https://www.agora-energiewende.de/en/publications/chemicals-in-transition/#:~:text=This%20project%20contributes%20to%20developing,circular%20economy%20and%20renewable%20feedstocks>
- ⁵⁵ Cambridge Institute for Sustainability Leadership (CISL) (2023). Market driven decarbonisation: The role of demand-led innovation in supporting emission reductions in foundation industries. Cambridge: Cambridge Institute for Sustainability Leadership (CISL). Retrieved from: <https://www.cisl.cam.ac.uk/resources/publications/market-driven-decarbonisation>
- ⁵⁶ University of Cambridge Institute for Sustainability Leadership (CISL) and Agora Energiewende. (2021). Tomorrow's markets today: Scaling up demand for climate neutral basic materials and products. CLG Europe. Retrieved from: <https://www.corporateleadersgroup.com/tomorrows-markets-today>
- ⁵⁷ The London School of Economics and Political Science (LSE). (2022, November 30). Not all carbon removals are created equally. Retrieved from: <https://www.lse.ac.uk/granthaminstitute/news/not-all-carbon-removals-are-created-equally/>
- ⁵⁸ Damon Matthews, H., Zickfeld, K., Dickau, M., MacIsaac, A., Mathesius, S., et al. "Temporary nature-based carbon removal can lower peak warming in a well-below 2° C scenario." *EGU General Assembly Conference Abstracts*, pp. EGU22-8836. (2022).
- ⁵⁹ European Commission, "Carbon capture, use and storage", European Commission. Accessed 28 August 2023. Retrieved from: https://climate.ec.europa.eu/eu-action/carbon-capture-use-and-storage_en
- ⁶⁰ McLaren, D.P., Tyfield, D.P., Willis, R., Szerszynski, B., Markusson, N.O., "Beyond "net-zero": a case for separate targets for emissions reduction and negative emissions." *Frontiers in Climate* 1 (2019): 4. Retrieved from: <https://www.frontiersin.org/articles/10.3389/fclim.2019.00004/full>
- ⁶¹ Tabea Dorndorf, Jens Friis Lund and Wim Carton, "Carbon removal experts support splitting "net zero" into twin targets." *Climate Home News*. (2021, May 11). Retrieved from: <https://www.climatechangenews.com/2021/05/11/carbon-removal-experts-support-splitting-net-zero-twin-targets/>
- ⁶² "Scientific Advice for the Determination of an EU-Wide 2040 Climate Target and a Greenhouse Gas Budget for 2030–2050," *European Scientific Advisory Board on Climate Change* (European Scientific Advisory Board on Climate Change, June 15, 2023), accessed August 17, 2023. Retrieved from: <https://doi.org/10.2800/609405>.
- ⁶³ University of Cambridge Institute for Sustainability Leadership (CISL) and Agora Energiewende. (2021). Tomorrow's markets today: Scaling up demand for climate neutral basic materials and products. CLG Europe. Retrieved from: https://www.corporateleadersgroup.com/files/cisl-clg-aga_tomorrows_markets_today_report_0.pdf
- ⁶⁴ The Climate Pledge. "Signatories", The Climate Pledge. (2023, August 23). Retrieved from: <https://www.theclimatepledge.com/us/en/Signatories#main-navigation>
- ⁶⁵ Science Based Targets, "Companies Taking Action", Science Based Targets. (2023, August 23) Retrieved from: <https://sciencebasedtargets.org/companies-taking-action>
- ⁶⁶ The Climate Group. RE100 Members, The Climate Group. Accessed 22 August 2023. Retrieved from: <https://www.there100.org/re100-members>

-
- ⁶⁷ The Climate Group and CDP. (2022) RE100 Annual Disclosure Report. Retrieved from: https://www.there100.org/sites/re100/files/2023-01/CDP_RE100_Report_2023%20%282%29.pdf
- ⁶⁸ The Climate Group, “EV100: Making electric transport the new normal by 2030”, The Climate Group. Accessed 22 August 2023. Retrieved from: <https://www.theclimategroup.org/ev100>
- ⁶⁹ The Climate Group. (2022). Progress and Insights Report. Retrieved from: <https://www.theclimategroup.org/our-work/press/ev100-progress-and-insights-report-2022>
- ⁷⁰ Coca-Cola European Partners. Coca-Cola European Partners sets ambition to reach Net Zero emissions across entire value chain by 2040. Accessed 6 September. Retrieved from: [Coca-Cola European Partners sets ambition to reach Net Zero emissions across entire value chain by 2040 | Coca-Cola European Partners \(cocacolaep.com\)](https://www.cocacolaep.com/news/coca-cola-european-partners-sets-ambition-to-reach-net-zero-emissions-across-entire-value-chain-by-2040)
- ⁷¹ Unilever (2021, March 21). Climate Transition Action Plan. Retrieved from: <https://www.unilever.com/files/92ui5egz/production/56a097ca6baaa654e78dfa8a820257d9a9edabf0.pdf>
- ⁷² Unilever (2021, March 21). Climate Transition Action Plan. Retrieved from: <https://www.unilever.com/files/92ui5egz/production/56a097ca6baaa654e78dfa8a820257d9a9edabf0.pdf>
- ⁷³ Unilever. (2017, September 27). Unilever commits to 100% electric vehicles by 2030. Retrieved from: <https://www.unilever.com/news/news-search/2017/unilever-commits-to-100-percent-electric-vehicles-by-2030/>
- ⁷⁴ Unilever. (2023) Unilever Climate & Nature Fund. Unilever. Accessed 22 August 2023, Retrieved from: <https://www.unilever.com/planet-and-society/unilever-climate-nature-fund/>.
- ⁷⁵ Iberdrola, “We present our accelerated Climate Transition Plan to the United Nations”, Iberdrola, (2023, April 8). Retrieved from: <https://www.iberdrola.com/press-room/news/detail/iberdrola-presents-its-accelerated-climate-transition-plan-to-the-united-nations#:~:text=Iberdrola%20has%20presented%20its%20Climate,realistic%2C%20ambitious%20and%20responsible%20line>
- ⁷⁶ Acciona, “Climate Emergency: the Big Challenge”, Acciona. Accessed 22 August 2023. Retrieved from: https://www.acciona.com/our-purpose/sustainability/climate-emergency/?_adin=01742670631
- ⁷⁷ Rockwool Group. (2022, February 09) Sustainability Report 2021. Retrieved from: <https://www.rockwool.com/en-cn/about-us/sustainability-local/decarbonisation/>
- ⁷⁸ Ball Corporation, “2030 Sustainability Report”, Ball Corporation. Accessed 22 August 2023. Retrieved from: <https://www.ball.com/sustainability/goals>
- ⁷⁹ Signify, “Achieving carbon neutrality: One company’s lessons learned”, Signify, 16 December 2020, <https://www.weforum.org/agenda/2020/12/signify-achieving-carbon-neutrality-lessons-learned/>
- ⁸⁰ Signify. (2023) Annual Report 2022. Retrieved from: <https://www.signify.com/static/2022/signify-annual-report-2022.pdf>
- ⁸¹ Salesforce. (2023) “Environment: Emissions Reductions”, Salesforce. Accessed 22 August 2023. Retrieved from: <https://stakeholderimpactreport.salesforce.com/environment/emissions-reduction>
- ⁸² Salesforce. (2023, February) Sustainability Exhibit. Retrieved from: https://www.salesforce.com/content/dam/web/en_us/www/documents/legal/sustainability-exhibit.pdf

⁸³ Lori Castillo Martinez and Suzanne DiBianca, “Driving Greater Accountability with New ESG Measures”, Salesforce, (2023, July 19). Retrieved from: <https://www.salesforce.com/news/stories/salesforce-new-esg-measures/>

⁸⁴ Salesforce, “Governance: Supply Chain Responsibility”, Salesforce. Accessed 22 August 2023. Retrieved from: <https://stakeholderimpactreport.salesforce.com/governance/supply-chain-responsibility#:~:text=In%20FY23%2C%20Salesforce%20offered%20a,were%20also%20diverse%20Downed%20businesses.>

⁸⁵ SSAB, “Not all green steel is fossil-free steel – here’s why”, SSAB. Accessed 23 August 2023. Retrieved from: <https://www.ssab.com/en/fossil-free-steel/insights/not-all-green-steel-is-fossil-free>

⁸⁶ VELUX, “Solutions for sustainable living”, VELUX. Accessed 22 August 2023. Retrieved from: <https://www.velux.com/what-we-do/sustainability>

⁸⁷ IPCC. (2023) Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 184 pp., doi: 10.59327/IPCC/AR6-9789291691647.