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# Countries are not on track to achieve the 1.5°C target

Discussions about new 2035 and 2040 climate targets have started in the European Union.

**At the last** European Council of Environment Ministers (16 October), the EU adopted a new NDC (Nationally Determined Contribution to the UNFCCC, the UN Framework Convention on Climate Change). Unfortunately the new NDC did not include a change of the headline target from the previous version submitted in December 2020. The EU's 2030 climate target is still to reduce domestic net greenhouse gas emissions by at least 55 per cent by 2030 as compared to 1990 emissions. This target does not represent the EU's fair share towards the collective goal of limiting temperature rise to 1.5°C.

More needs to be done and calls for a further revision of the target will remain.

In the meantime, discussions about new 2035 and 2040 climate targets have started. There are two reasons for that. First, the EU Climate Law foresees that the European Commission should propose a new 2040 climate target by June 2024. Preparations for that proposal have already started and the newly established European Scientific Advisory Board on Climate Change has for instance proposed that the 2040 target should be between 90 per cent and 95 per cent of net greenhouse gas emission reductions.

# Acid News

A newsletter from the Air Pollution & Climate Secretariat, the primary aim of which is to provide information on air pollution and its effects on health and the environment.

Anyone interested in these matters is invited to contact the Secretariat. All requests for information or material will be dealt with to the best of our ability. Acid News is available free of charge.

In order to fulfil the purpose of Acid News, we need information from everywhere, so if you have read or heard about something that might be of general interest, please write or send a copy to:

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## The Air Pollution and Climate Secretariat

The Secretariat has a board consisting of one representative from each of the following organisations: Friends of the Earth Sweden, Nature and Youth Sweden, the Swedish Society for Nature Conservation, and the World Wide Fund for Nature (WWF) Sweden.

The essential aim of the Secretariat is to promote awareness of the problems associated with air pollution and climate change, and thus, in part as a result of public pressure, to bring about the needed reductions in the emissions of air pollutants and greenhouse gases. The aim is to have those emissions eventually brought down to levels that man and the environment can tolerate without suffering damage.

In furtherance of these aims, the Secretariat:

- \* Keeps up observation of political trends and scientific developments.
- \* Acts as an information centre, primarily for European environmentalist organisations, but also for the media, authorities, and researchers.
- \* Produces information material.
- \* Supports environmentalist bodies in other countries in their work towards common ends.
- \* Participates in the advocacy and campaigning activities of European environmentalist organisations concerning European policy relating to air quality and climate change, as well as in meetings of the Convention on Long-range Transboundary Air Pollution and the UN Framework Convention on Climate Change.

## Editorial

**EU Member States** and the European Parliament recently agreed on the Regulation on deforestation-free products, which aims to promote the consumption of forest-friendly products and reduce the EU's impact on global deforestation and forest degradation. The Regulation covers seven commodities (cattle, cocoa, coffee, oil palm, rubber, soya and wood), as well as many derived products such as meat, leather, chocolate, fuel wood, furniture, pulp and paper, and printed books. Under the Regulation, any operator or trader who places these commodities on the EU market, or exports from it, must be able to prove that the products do not originate from recently deforested land or have contributed to forest degradation.

With these new rules the EU aims to (a) avoid that the listed products Europeans buy, use and consume contribute to deforestation and forest degradation in the EU and globally; (b) reduce carbon emissions caused by EU consumption and production by at least 32 million metric tonnes a year; and (c) address both forest degradation and deforestation driven by agricultural expansion to produce the covered commodities.

From 2025 it will be prohibited to place relevant products on the EU market, or export them from the EU, unless they are: "deforestation-free"; produced in accordance with the relevant legislation of the country of production; and covered by a due diligence statement indicating no more than a negligible risk of non-compliance.

Further, for products that contain or have been made using wood, it means they were harvested from forests without inducing forest degradation after 31 December 2020. Forest degradation is defined as "structural changes to forest cover, taking the form of the conversion of primary forest or naturally regenerating forest into plantation forest or into other wooded land and the conversion of primary forest into planted forests". This definition will be re-assessed after five years.

In particular, the inclusion of wood and the explicit reference to (and definition of) forest degradation has been a thorn in the eye of the Canadian government. In a letter to

the EU, the Canadian government has stated that the rules add "burdensome" requirements and will hurt trade between Canada and the EU. In response to the Regulation the Canadian government is working on

its own definition of forest degradation which will they hope will ensure continued access to Canadian wood and wood products for the European market.

While the European Commission is working on the adoption of a ranking system to list countries as low-, standard- or high-risk for deforestation and forest degradation, EU Member State governments will have by the end of this year to define the penalties for breaking the law and designate the national competent authorities responsible for enforcing it. These authorities must have "adequate powers, functional independence and the resources" necessary to properly perform their functions under the Regulation.

This means these authorities must have secure and stable access to the necessary resources; the powers necessary to enforce the Regulation; and must function independently. Furthermore Member States must ensure that national regulatory and institutional frameworks enable proper implementation and enforcement through effective, proportionate and dissuasive penalties; have adequate national administrative and judicial procedures in place; and ensure law enforcement procedures allow their competent authorities to independently carry out checks on operators and traders and take immediate action where products present a high risk of non-compliance.

And finally, the European Commission will consider, by mid-2024, whether to extend protection to wooded land other than forests, and by mid 2025 a review will consider whether to widen protection to other natural ecosystems, such as grasslands, peatlands and wetlands, as well as to regulate European financial institutions to prevent them from contributing to forest destruction, and to broaden the list of commodities and products covered by the law.

Wendel Trio





# Five key global 2030 targets aligned with 1.5°C

The IPCC's sixth assessment report (AR6) provides crucial information on how to tackle climate change, in particular identifying pathways that limit warming to 1.5°C with zero or limited overshoot. However, many of the pathways in the AR6 database are not fully compatible with the Paris Agreement in that they do not bring emissions to net zero in the second half of this century. Many also rely on unsustainable levels of carbon dioxide removal and/or do not factor in recent progress, such as the declining cost of renewables.

In this briefing<sup>1</sup>, we extract 24 pathways from the IPCC AR6 database that can guide the global energy transition to net zero in a sustainable way. These Paris-compatible pathways show what's needed to limit warming to 1.5°C if we don't bet on likely unfeasible levels of future carbon dioxide removal. From these we set robust 1.5°C-aligned 2030 targets, including for renewable rollout and fossil fuel decline.

Our five key global 2030 targets aligned with 1.5°C are:

1. Install at least 1.5 TW of new wind and solar capacity per year by 2030 – that's a five-fold increase from 2022 levels of 0.3 TW. Total wind and solar capacity should reach around 10 TW by the end of the decade, five times the 2 TW of capacity in 2022. This target is achievable if the recent acceleration in capacity additions is maintained. It should be seen as a floor – if electricity demand grows as quickly as in the IEA's Net Zero Emissions scenario, then solar and wind installations would need to be closer to 2 TW/yr by 2030.
2. Set a global renewables target of at least 70 per cent of electricity generation by 2030, more than doubling today's share of around 30 per cent.
3. Cut global fossil fuel production by 6 per cent each year from 2022 onwards to reduce fossil fuel use by around 40 per cent over the decade.
4. Cut global GHG emissions in half (by 48%) by 2030 compared to 2019. This is faster than the 43 per cent reduction highlighted by the IPCC and is necessary to significantly reduce dependence on carbon dioxide removal. This means reducing emissions by 8 per cent per year (2021–2030).
5. Cut methane emissions in the energy sector by 66 per cent by 2030. Methane emissions in the energy sector need to fall around twice as fast as total methane emissions, which drop by 34 per cent over the decade. The 30 per cent cut

in the Global Methane Pledge is not aligned with 1.5°C pathways.

The rapidly falling costs of wind and solar mean that carbon capture and storage (CCS) is not a cost-effective way decarbonising the power sector. Our Paris-compatible pathways show at best a marginal role for fossil CCS, which makes up only 0.1 per cent of global electricity generation in 2030.

These collective global goals are designed to mobilise action towards a safer, more liveable world. The rapid changes identified here are achievable, and with global emissions as high as ever, the need to revisit and update 2030 ambition in NDCs remains a crucial ask ahead of COP28.

Neil Grant, Claire Fyson, Bill Hare

[www.climateanalytics.org](http://www.climateanalytics.org)

1. Climate Analytics (2023). 2030 targets aligned to 1.5°C

Delivering cutting-edge science, analysis and support to accelerate climate action to limit warming below 1.5°C

<https://climateanalytics.org/publications/2030-targets-aligned-to-15c-evidence-from-the-latest-global-pathways>

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## Low energy vision for the European region

*Continued from front page*

Secondly, the EU committed at COP26 in Glasgow to communicate in 2025 a new 2035 NDC. Currently the Commission is planning to derive this 2035 NDC from the pathway towards the 2040 target described above. However this is not really in line with the spirit of what was agreed at COP26 as countries actually agreed to work with five-year timeframes for their targets, allowing sufficient flexibility to adapt targets when needed on the basis of new science and/or overall emission reduction developments.

In fact, this concept is included in the Climate Law, which was adopted before COP26 and calls for a review of the date of the next climate target in light of the outcome of the international discussions on NDC timeframes. Unfortunately, despite the decision at COP26 in November 2021, this review has not taken place. Nevertheless there are good arguments for having the debate focus on the 2035 target rather than the 2040 target.

The European Scientific Advisory Board on Climate Change published its proposal in June this year. In that proposal they advocated for net emission reductions of 90–95 per cent by 2040, relative to 1990 levels. Though at the same time, the Advisory Board acknowledged that their proposals were not aligned with even the most lenient fair shares estimate (the

per capita approach). In their proposal it is assumed that other, mainly developing countries, would have bigger restrictions on their emissions than those in place in the EU.

In a newly published briefing from AirClim, it is argued that in order for the EU to make its fair contribution to pathways that would have a decent (66%) chance of limiting temperature rise to 1.5°C a (gross) emission reduction target of 82 per cent by 2035 would be required, to be combined with a dramatic increase in the removal capacity of soils and forests, resulting in a net emission reduction target of 94 per cent.

The paper is grounded on the many assessments made by scientists and UN institutions which indicate that countries are not on track to achieve the 1.5°C target and that all countries, including those in the EU, need to do more than they are currently planning. In fact, based on the latest Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC), the world can only emit a maximum of 400 gigatonnes of CO<sub>2</sub> between 2020 and 2050 if it is to have a decent likelihood (66%) of limiting temperature rise to 1.5°C. Dividing that budget based on the EU's current and estimated future share of the world population, it is estimated that the EU's greenhouse gas budget for the period



2020 to 2050 would be a maximum of 27.5 gigatonnes of CO<sub>2</sub> equivalents.

Current EU policies, adopted under the Fit for 55 framework, would lead to EU greenhouse gas emissions of more than 50 gigatonnes, almost double the fair share budget of 27.5 gigatonnes. A drastic course correction is needed. And the longer we wait with current policies in place, the more radical the changes will need to be after 2030. The new AirClim briefing calls for an emergency package of measures which include additional efforts in the short-term and the establishment of a net emissions reduction target of 94 per cent by 2035.

Wendel Trio

<https://www.airclim.org/sites/default/files/documents/eu-climate-targets-aligned-with-paris-agreement-1.5-objective.pdf>

## Great success in London for ULEZ

During the first month of operation the number of highly polluting vehicles has already fallen by almost half, taking almost 80,000 older cars off the roads according to a progress report from the capital's transport authorities. Non-compliant vehicles – broadly petrol cars built before 2005 and diesels before 2015 – must pay 12.50 British pounds to drive in the zone. Transport for London (TfL) said that the scheme was proving “highly effective”, and that more than 95 per cent of vehicles were now compliant. For the remaining Londoners still driving non-compliant vehicles, millions of pounds of scrappage scheme support is still available.

The roll-out of the Ultra-Low-Emission Zone (ULEZ) faced opposition from parts of the media and Conservative-led councils in outer boroughs but can now celebrate a great success. The Transport for London director of strategy and policy, Christina Calderato, said: “We know that tackling London's toxic air is crucial to ensuring the health of those who live in the capital and that the greatest number of deaths attributable to air pollution occur in outer London.”

[https://www.theguardian.com/environment/2023/oct/31/ulez-expansion-london-roads-tfl-sadiq-khan?CMP=share\\_btn\\_tw](https://www.theguardian.com/environment/2023/oct/31/ulez-expansion-london-roads-tfl-sadiq-khan?CMP=share_btn_tw)



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# Crowdfunding and energy communities take centre stage

Poorer areas of the EU are exploring funding approaches such as crowdfunding and citizen-driven energy communities for the green transition.

As the European Union advances its green transition, economically disadvantaged regions are concerned that they are not a priority. The fear of being left behind in the face of capital-intensive green investments is particularly pronounced in regions of countries like Romania and Bulgaria, where GDP per capita falls below the EU average.

Dumitru Fornea, a Romanian trade unionist on the EU's Economic and Social Committee (EESC), highlighted the struggle of these regions to attract funding, a fear shared by regions in Spain, Czechia and Slovakia during a recent Euractiv event. Declining manufacturing industries like coal and steel make these regions less appealing to financial markets since they are perceived as not having "a very attractive profile", Fornea explained.

Crowdfunding is emerging as a potential solution, in which community members or workers themselves contribute to specific projects. The European Commission is currently experimenting with crowdfunding as part of its innovative financing schemes. Michele Sansoni from the European Commission's Climate, Infrastructure, and Environment Executive Agency (CINEA) emphasised the potential of crowdfunding in the clean energy transition, with Europe's LIFE programme supporting local and regional authorities with up to 1.75 million pounds for their switch to clean energies.

Despite its promise on paper, crowdfunding faces challenges in reality, Sansoni stresses.

"Maybe now is not the right time to ask [people] for money," Sansoni stated, pointing to tough economic times caused by the combination of inflation and recession in some parts of Europe. He cited a lack of interest for an EU-funded solar rooftop project aimed at supermarkets in Spain and Italy.

However, an alternative gaining attention is Energy Communities, or citizen-led green energy projects owned by the local population. These have captured the attention of regional authorities. Adrian Hiel from

Energy Cities, a network of local authorities, noted the positive impact of these setups, in which local investment contributes to community-owned green projects.

Energy Communities were introduced in EU law four years ago, but not all member states have implemented the law as intended. Poland, Sweden, Czechia and Bulgaria are cited as having poorly transposed the law, while another ten EU countries show substantial deficiencies in their transposition, according to REScoop, an association dedicated to local energy cooperatives.

There are many successful examples of Energy Communities. This is shown by the Community Power Coalition, a collective of over 50 organisations advocating for community energy across Europe, which marks its 10th anniversary with significant achievements in promoting community-controlled renewables and influencing policy changes.

Originating from a bold "People's Windmill" performance in November 2013, orchestrated by the organisations Friends of the Earth Europe, Climate Alliance, Climate Action Network Europe, Ecopower, ICLEI Europe, Energent, and REScoop.eu. The coalition has played a pivotal role in shaping Europe's energy policy landscape.

The collective push for citizen and community-controlled renewables gave great results and in 2016 the European Commission's Clean Energy for All Europeans package introduced provisions supporting community energy.

Additionally, the coalition's efforts bore fruit with the incorporation of community energy provisions in the Renewable Energy Directive (RED II) in 2018, providing communities, cooperatives and individuals the right to produce, consume, store and sell their renewable energy without undue charges or administrative barriers. The directive also defined Citizen Energy Communities and Renewable Energy Communities as distinct organisational entities.

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Now boasting over 50 member organisations across 20 European countries, the coalition has played a vital role in the increasing uptake of community energy projects, with approximately 9,000 energy communities currently in operation across the EU.

During the event, the coalition launched its manifesto, titled "Empower and Accelerate Energy Communities for a Democratic, Resilient, and Affordable Future". Looking ahead to the 2024 European elections, the manifesto outlines key demands for the full transposition and implementation of community energy provisions from the Clean Energy Package across EU member states. These demands stress the need for adequate financial support, inclusion in National Energy and Climate Plans (NECPs), and empowerment of municipalities as crucial allies.

Emilia Samuelsson

Based on

Kurmayer 2023 EURACTIV "Poorer EU regions look to citizens to finance the green transition" 16th November 2023 <https://www.euractiv.com/section/energy-environment/news/poorer-eu-regions-look-to-citizens-to-finance-the-green-transition/>

Friends of the Earth Europe. "A decade of empowerment: Celebrating 10 years of advancing community energy" 30th October 2023.

<https://friendsoftheearth.eu/news/a-decade-of-empowerment-celebrating-10-years-of-advancing-community-energy/>



# Green governance innovation curbs climate impact from public canteens

In 2022 Aarhus introduced an internal climate tax. In the first year, it resulted in a 40 per cent reduction of beef consumption and a 12 per cent overall decrease in food-related emissions.



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**The city of Aarhus, Denmark,** has found a simple and effective route towards greener public consumption by introducing an internal climate tax. The initiative targets product categories with a high climate impact, including certain food products.

“It all started with a political proposition brought to the city council in late 2021. The proposal by Socialistisk Folkeparti (the Green Left) was to factor in the carbon footprint when considering public expenditure. It was accepted in January 2022, and it came back to our table to figure out how,” says Jeppe Deleuran, who works as an economist in Aarhus main office and was part of the team that designed the new tax.

Jeppe and his colleagues evaluated the overall climate impact of a range of foods, before deciding which ones to target. The most anticipated is meat from ruminants. Before this climate tax was introduced, beef accounted for only 1.7 per cent of

the total food purchases, though it was responsible for a significant 26 per cent of food-related emissions.

Juice and lemonades were chosen as the second group of foods to target. While these beverages do not have the highest individual carbon emissions, the sheer volumes consumed made them the third-largest category for emissions. Preventing dehydration among the residents in nursing homes was the motive for much of the consumption. But in conversations with the staff, it became clear that a large percentage of the drinks were wasted. A full glass was served, but only sipped at and the rest was poured down the sink. So, it seemed reasonable that juice consumption could be reduced without significantly affecting the well-being of the elderly.

The city council had decided to set the tax at 1000 Danish kroner per ton of CO<sub>2</sub>, with a plan to gradually increase this

to 1500 Danish kroner per ton by 2030. When a chef at a nursing home accesses the municipality’s portal to place an order, an extra 32 Danish kroner per kilogram is added to the price of beef and an extra 1.6 Danish krone is added per liter of apple juice.

The large increase in the price of beef has been proven effective. One year after the introduction of the internal climate tax, CO<sub>2</sub> emissions from beef had fallen by a staggering 40 per cent, corresponding to a 12 per cent overall decrease in food-related emissions.

“The large reduction was unexpected for us, we didn’t think it would be that much,” says Rasmus Lillelund Lovring, who was also part of the team that developed the tax.

More expected was that the lower price increase on drinks would have a correspondingly lower effect, a reduction of about 7 per cent. It contributed to a total emission reduction of 25 tonnes of CO<sub>2</sub>.



One might imagine that there are legal obstacles that could prevent municipalities from introducing measures like this. Rasmus explains: “The trick that makes it legal is that it is an internal climate tax, so the money stays in the municipality, and that is quite important”.

The revenue is not only circulated within the municipality but is repaid to the same sector, or in the case of nursing homes to the same unit. This means the only cost for the measure is administration, which Jeppe summarises as “not a big deal”.

The risk of increased administration was otherwise what aroused the greatest concern, when planning for the tax. There were also some worries from the kitchens whether they would have to go full vegetarian. But

as Jeppe explains, “Communication is really a key word, after a lot of communication within the organization, there was not very much resistance”.

The swift implementation and outstanding results are also due to previous efforts.

Back in 2019 the city council adopted a target to reduce food-related greenhouse gas emissions by 25 per cent by 2025. This was followed by training of kitchen staff in how to make climate-friendly meals. Rasmus stresses the significance of education: “You need to ensure that the staff have the required skills. And then you can push them to use their skills through these economic incentives; you cannot just do one, you must do both, otherwise there would be a lot of frustration.”

As expected, beef has been replaced by food from several different categories: “We see an increase in pork and chicken, as well as vegetarian alternatives.”

“The main thing to take

away from this is that economic incentives work,” says Jeppe when reflecting on what policymakers in general can learn from this initiative. He emphasises the importance of “a price signal when you take action”, in contrast to a fee that is paid later. Rasmus adds: “It is also important that this price signal, the economic incentive, is large enough.”

Aarhus city is now in a process of evaluating the tool. Everything indicates that the internal tax will remain and that the planned increases by 2030 will be implemented. But there is also a discussion about whether a tax can reach a level where it is no longer useful. Rasmus comments: “How much lower we can go on beef? Maybe we are at some kind of end goal for beef, but we will see as time goes on, as we get more data, and we can analyse it.”

Kajsa Pira

This article will be part of a report on sustainable food system policy, which will be published in the beginning of next year.

- ✦ Beef emits 18 times as much CO<sub>2</sub> as lentils.
- ✦ One kilogram of minced beef emits 32.5 kilograms of CO<sub>2</sub>.
- ✦ A kilo of red lentils emits 1.8 kilos of CO<sub>2</sub>.
- ✦ One kilogram of chicken breast emits 3.44 kilos of CO<sub>2</sub>.
- ✦ A kilo of cheese emits 7.7 kilos of CO<sub>2</sub>.

Source: Concitos Climate Database

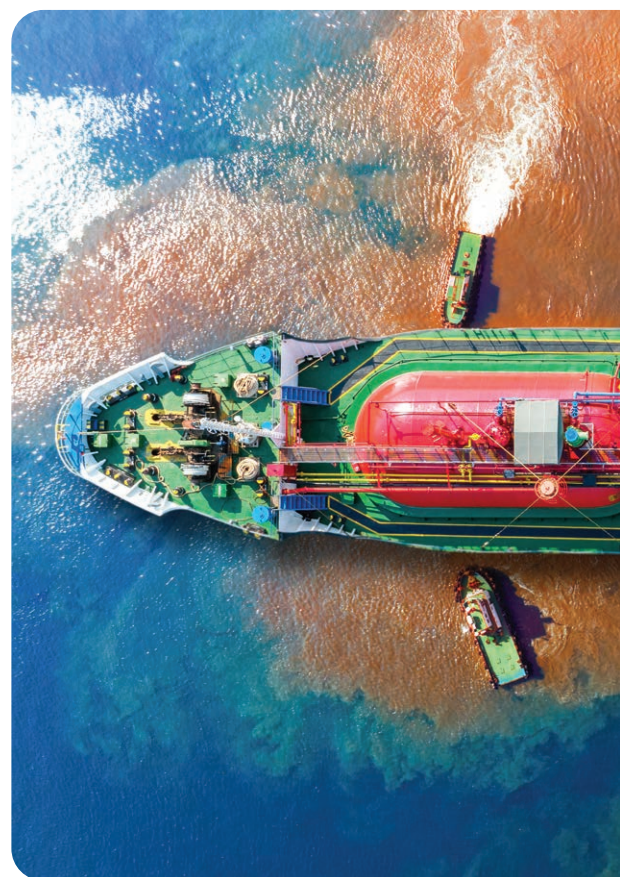
## Environmental effects of in-situ oil burning studied

Researchers at the Hellenic Centre for Marine Research at Crete, Greece, have installed an ambitious experimental infrastructure to study the effects of in-situ oil burning in the marine environment. Oil burning is sometimes used to mitigate large oil spills, but whereas this method is relatively fast, it comes with risks associated with contaminants that arise from pollution released into the air. The infrastructure consists of experimental units called mesocosms, which are large enclosures that can contain part of the natural environment (in this case water off the Cretan coast, which also contains the plankton community). In these mesocosms, the researchers have installed containers where the oil can be burned, as well as a device that collects the soot that arises from the burning. Effects of the soot on aquatic life can then be studied by depositing the soot into the water in the mesocosms via artificial rain. This infrastructure consequently allows both the study of residues from the burning oil and the effects of soot. In experiments that have focused on the microbial plankton community, the researchers have found marked and rapid shifts in the microbial communities of the contaminated mesocosms. These shifts include higher bacterial activity, including increased activity of hydrocarbonoclastic bacteria that are known to degrade hydrocarbon compounds. Results from this research was recently presented at the Third International Symposium on Aquatic Mesocosm-Based Research, and details on the methods and results can be found in the links below.

This study has received funding from the AQUACOSM-plus project of the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871081.

Sources: <https://meetingorganizer.copernicus.org/EGU2020/EGU2020-14807.html>

Researchgate November 2023, <http://dx.doi.org/10.13140/RG.2.2.11856.69127>



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# Car-free city improves health

Car-free cities is an opportunity to reduce the health burden in cities. Society need to keep their eyes on the goal and make science-based decisions to get there.

**Urban areas carry** a large burden of respiratory diseases due to air pollution and high population densities. Moreover, car-dominated cities often lack opportunities to walk or bike, which reduces opportunities for physical activity that are fundamentally important for healthy lungs. Stricter EU air quality guidelines can push urban transformations to improve the respiratory health of citizens. This can include more public spaces for walking

emotion can bias the process of arguing and reasoning, and even overwhelm objective information. The introduction of urban changes potentially raises issues that are deeply emotional for many people and are often linked to personal values. Disagreement based on emotion or value typically cannot be resolved, since how we feel about an issue is also a personal matter. According to a psychological theory known as dual process, thinking has two

impact on air quality, and whether there are sufficient support mechanisms for those who may be affected but lack the financial means to replace their vehicles.

Oslo is in the process of implementing arguably the most ambitious car-free project in Europe to date. Announced in 2015, Bilfritt Byliv, or 'Car-Free City Life', is considered to be the largest car-free city centre in Europe. The scheme has included the large-scale removal of public parking



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and cycling combined with measures to reduce air pollution (e.g., low-traffic neighbourhoods, superblocks, 15-minute cities and car-free cities).

In a recent report on respiratory health in *The Lancet*, Prof. Nieuwenhuijsen comments: "Often the problem is the absence of a shared vision of a better city, no clear rational such as better respiratory health, and pathways to get there. Too often citizens think that restrictions and costs are imposed by a city council to pester them. We need more co-creation and engagement to create and implement a vision of a sustainable, liveable and healthy city."

The topic of opposition to cleaner cities is also raised by a psychologist in *The Conversation* and he says that we need to understand and move past the pestering online comments or criminal damage to Low-Emission-Zone cameras in London. This can be done by understanding that

modes: system 1 (quick and emotional) and system 2 (measured and analytical). System 2 disagreement is based (more or less) on facts, which can be independently established. So, two parties should be able to agree on the relevant facts to reach a resolution. The problem arises with controversial decisions, people with extreme views are often more confident and therefore more likely to publicly comment in public debates. As a result, arguments based on values or emotions might be more visible than those that are based on facts or logic, leading to increasing polarization in public discourse. Value- and emotion-based discussion can be valuable in morality-based decision making. But many psychologists believe that individuals and society could benefit from more deliberative and fact-based thinking when dealing with controversial matters. A fact-based approach on restrictions for cars should focus on questions such as the

spaces, the closure of streets to cars, and measures to improve the quality of urban life. One lesson learnt was to implement physical measures (e.g., public seating, greenery) at the same time as more contentious changes (e.g., removal of parking), to highlight the benefits more immediately.

Ebba Malmqvist

*The Lancet*, October 2023, [https://doi.org/10.1016/S2213-2600\(23\)00329-6](https://doi.org/10.1016/S2213-2600(23)00329-6)

*Erkenntnis* October 2022. <https://doi.org/10.1007/s10670-022-00616-9>

*The Conversation*, 11 October 2023, <https://the-conversation.com/expanding-londons-ulez-has-sparked-fractional-debate-psychologists-explain-how-it-can-be-de-escalated-213781>

IIIEE Theses 2019:39, <https://lup.lub.lu.se/luur/download?func=downloadFile&recordId=8996627&fileId=8996628>



# Ban fossil industry funding in medical research

Leading experts are asking medical researchers to ban financial interference between research individuals and institutions and the fossil fuel industry.

**A study on** this topic has found that fossil-funded centres are more favourable in their reports towards natural gas than renewable energy, while centres less dependent on fossil funding show the reverse pattern, with a more neutral attitude towards gas, instead favouring solar and hydro power. Individual examples include: medical toxicologists working with a consulting firm with close ties to the gas stove industry who author peer-reviewed manuscripts and give public testimony proclaiming the safety of gas stoves and discrediting their link to asthma; esteemed scientists, members of official scientific committees, conducting controversial medical studies designed by car manufacturers to demonstrate the safety of diesel exhaust as part of a marketing strategy to cheat on diesel pollution (“diesel-gate”). Moreover, fossil fuel companies donated or pledged over 600,000,000 US dollars to 27 universities in the United States alone aiming to shift their focus towards industry-friendly solutions such as carbon capture or bio-

mass fuels which may contribute to the well-documented “funding effect” affecting scientists working on the health impacts of climate change. To close the circle, universities and institutions often invest financially in fossil fuel companies, making their interests in the survival of this industry less than theoretical.

When the detrimental role of tobacco on health became known, scientific societies actively worked to avoid undue industry influence on research into these subjects. A carefully planned marketing strategy by cigarette manufacturers included spreading doubt about scientific evidence and employing scientists to publicly deny any harmful effects. When these strategies came to light, respiratory societies responded promptly: the European Respiratory Society (ERS) banned membership and publications from those who had “been full, or part-time, employees of, or paid consultants to, or those with any real or perceived, direct or indirect links to the tobacco industry” and the American Thoracic Society (ATS) banned any research funded by tobacco entities from its journals and conferences and any persons with ties to tobacco manufacturing from any role in the society or its activities. These restrictions have recently been tightened and reaffirmed. Recent evidence showed that the fossil fuel industry has implemented the same techniques as the tobacco industry. Considering the causal link

between respiratory disease/mortality and fossil fuel-driven climate change, it seems paramount to ensure that fossil fuel interests are not tainting research. The authors propose actions at various levels:

- Individuals should have to report their previous ties to the fossil fuel industry, divest their investment portfolios, push for their employing institutions to refuse funding and to divest from fossil fuel enterprises, and disengage from all current ties with the industry.
- Institutions should pledge to stop all funding from the industry, divest their investments and regularly inform of their progress towards these goals.
- Respiratory societies should ban fossil fuel industry-derived funding and profit, as is the case with the tobacco industry, by forbidding publication by fossil fuel industry-funded individuals and institutions and supporting divestment.

Ebba Malmqvist

American Journal of Respiratory and Critical Care Medicine, 5 October 2023 <https://doi.org/10.1164/rccm.202308-1410VP>

Nature Climate Change 10 November 2022, <https://doi.org/10.1038/s41558-022-01521-3>



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# India reaches record levels of dirty air ... again

A mix of factors, including vehicular, agricultural and industrial emissions, dust and weather patterns, make Delhi the world's most polluted capital. The levels are especially bad during periods of biomass burning for heat and burning of crop residues combined with meteorological factors such as low wind speed that traps the pollutants in the lower atmosphere. Delhi's air quality has remained in the "very poor" category for several days, with areas such as Jahangirpuri in the "hazardous"

category, with the season's highest AQI at 566. This year's October Air Quality Indexes are higher than the two previous years due to lack of rain and lack of effective mitigation measures. The air did not clear in November with levels after Diwali, breaching 900 on the morning of Monday 13th of November. In the India Gate area in the heart of the city, the AQI level stood at 999.

For a week starting on 13 November, Delhi will implement restrictions on

vehicles. The 'odd-even rule' means that between 8 a.m. and 8 p.m., only vehicles with number plates ending in odd numbers can drive on odd-numbered dates, and only those with number plates ending in even numbers can drive on even dates. But the effectiveness has been discussed as the often more polluting motorcycles are exempt from the rules, and people drive before 8 am and after 8 pm to avoid the ban. In 2021, the government installed a smog tower in Delhi's main business district, intended to reduce pollution using air filters. But Vinayak Sinha, an atmospheric chemist is sceptic of their impact. "They shouldn't be used at all," he says. "Air filters work in confined spaces indoors, but "if you talk of the open atmosphere, there is no way that any smog tower in the world is actually able to clean it", he says.

Karthik Ganesan, a policy researcher in New Delhi says that governments at all levels need to make clean air a priority the whole year — by, for example, improving public transport and waste collection, and ensuring that people have access to clean fuel for cooking and heating.

<https://aqicn.org/city/delhi>

<https://www.nature.com/articles/d41586-023-03517-1>



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## Development funders should clear the air

A new report from the Clean Air Fund analyses how much funding from international development funders goes to projects aimed at reducing air pollution. The study included funding from multilateral development banks, bilateral development agencies and governments providing funding to low- and middle-income countries in the form of concessional and non-concessional loans, as well as grants, but did not include funding provided by the countries' own national and sub-national government budgets. The report shows that only 1 per cent of international development funding (2.5 billion US dollars per year) and 2 per cent of international public climate finance (1.66 billion US dollars per year) during 2015–2021 went to air quality projects. 86 per cent of the total funding for air quality was concentrated in China, Philippines, Bangladesh, Mongolia and Pakistan.

During 2019, 11.9 billion US dollars of international development funding went to projects for the extraction and production of oil and gas, threatening the clean air cause and the delivery of global climate goals. In 2021, international development funding for outdoor air quality projects (\$2.3 billion) for the first time exceeded funding for fossil fuel-prolonging projects (\$1.5 billion). During COP26, a commitment was made to phase down coal-fired power. Since then, 34 countries and 5 public finance institutions have agreed to stop international public finance for fossil fuels by the end of 2022. This is good news for both clean air and climate change impact. If this downward trend continues, governments at COP28 need to agree on clear strategies for phasing out fossil fuels completely and transitioning to cleaner energy sources. Air pollution, on average, reduces life expectancy by 2.2

years globally, but nine out of 10 deaths attributable to outdoor air pollution are in low- and middle-income countries (LMICs). Air pollution has considerable negative impacts on economic growth and development, through workplace absence, reduced productivity, and health costs. Many studies have shown how, in low-income countries, development gains since 1990 have been diminished by the damage caused by increased air pollution exposure. The report concludes that for every 1,000 US dollars spent by a development funder, just 7 US dollars was spent on tackling outdoor air pollution, while there is evidence that 1 US dollar spent on air pollution control can yield 30 US dollars in economic benefits.

The State of Global Air Quality Funding 2023, 28 September 2023, <https://www.cleanair-fund.org/resource/state-of-global-air-quality-funding-2023/>



# South leads the way in incorporating air pollution in NDCs

The Global Climate and Health Alliance has developed a scorecard to assess how well air pollution considerations are integrated in the nationally determined contributions (NDC) plans. The Clean Air NDC Scorecard also examines whether countries recognise the health impacts of air pollution, or if they prioritise action to improve air quality. The results from the scorecards show that countries in the global south lead the way in reflecting air pollution in their national climate plans. All but one of the 15 countries scoring at least 8/15 were low- or middle-income countries (Colombia and Mali with 12 points, Côte d'Ivoire, Nigeria, Pakistan and Togo with 10 points; Ghana with 9 points; and Albania, Bangladesh, Cambodia, El Salvador, Honduras, Moldova and Sierra Leone with 9 points; alongside Chile as the one high-income country in the top 15, with 10 points). Among the G20 countries, Canada and China lead the way in integrating air quality in their national climate plans.

The lowest scorers are Australia, Brazil, the European Union, India, and COP28 hosts, the United Arab Emirates. Indonesia and Saudi Arabia are lowest on the scorecard with 1 and 0 points respectively. The top ten per capita emitters (Qatar, Bahrain, Brunei Darussalam, Trinidad and Tobago, Kuwait, United Arab Emirates, Mongolia, Oman, Australia, Saudi Arabia) scored an average of just 2.4/15 points. Many of the largest emitters are major fossil fuel producers and it could be indicative of a lack of interest in connecting the phasing out of fossil fuels with clean air and its potential health benefits. Meanwhile, the top ten total emitters (China, United States, India, European Union, Russian Federation, Brazil, Indonesia, Japan, Iran, Saudi Arabia) also scored little better, with an average of 2.7/15 points.

<https://climateandhealthalliance.org/initiatives/clean-air-ndc-scorecard/>

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## Less acid rain led to biological recovery

At the end of the twentieth century acidification was a serious problem in Europe, thanks to international cooperation. The success of the Air Convention led to dramatic decreases in sulphur dioxide which has improved chemical conditions in freshwaters and a biological recovery of acid-sensitive organisms. In the 1980's in Europe levels of sulphur dioxide were high and led to acid deposition (colloquially referred to as acid rain). This acid rain in turn led to acidification of rivers and lakes, which elevated hydrogen and aluminium ion concentrations. The toxic effects of hydrogen and aluminium ions are major drivers of the loss of acid-sensitive organisms.

The UNECE Convention on Long-range Transboundary Air Pollution (LRTAP Convention), established in 1979, reduced air pollution using an effect-based approach, which was proven to be very successful for reducing sulphur dioxide. The reduced pollution has resulted in improved chemical conditions in freshwaters, as indicated by increasing pH, and a reduction in the concentration of other components,

such as labile aluminium, sulphate and, to a lesser degree, nitrate. This chemical recovery is a precondition for biological recovery, i.e., the return of acid-sensitive organisms. In a new report, the biological recovery in lakes and rivers from the Czech Republic, Germany, Italy, Norway, Sweden, Switzerland and UK was studied. Sites clearly impacted by chemical factors other than air pollution (i.e. sites that were limed or were located close to mines or in deeply weathered soils) were excluded from the analyses of overall trends.

The research found that 47 per cent of all included rivers (21 sites over the period 1994–2018) and 35 per cent of all lakes (34 sites over the period 2000 to 2018) showed significant increases in species richness. Correlations between species diversity and water chemical components (acid neutralising capacity, pH and sulphate levels) were found, supporting the thesis that biological responses were

related to chemical recovery. The report shows the usefulness of long-term biological monitoring data and demonstrates the effectiveness of international cooperation under the Air Convention.

<https://niva.brage.unit.no/niva-xmlui/handle/11250/3081617>





# Targeting two pollutants at a single stroke

Farming contributes to both ammonia and methane emissions. A recent guidance document maps the synergies and trade-offs in mitigating these two gases.

**The Taskforce on Reactive Nitrogen** has recently unveiled a policy brief and guidance document, titled “Co-mitigation of Methane and Ammonia Emissions from Agricultural Sources”. This document is set to be presented at the upcoming meeting of the executive body of the Convention on Long-Range Transboundary Air Pollution in December, aiming for adoption as an official document of the convention.

The rationale behind the document is grounded in the observation that the lion's share of ammonia emissions and about half of anthropogenic methane emissions in the region covered by the convention<sup>1</sup> emanate from agricultural activities. The objective? To unravel the effects of mitigation measures on both gases and explore potential interactions. While some measures show synergistic benefits, a call for further optimisation of practices echoes through the document to minimise trade-offs in mitigating these two gases.

Agricultural ammonia emissions predominantly result from livestock manure management and nitrogen fertiliser use, whereas methane emissions predominantly stem from enteric fermentation in ruminants. Rice production also contributes to both methane and ammonia emissions, albeit representing a small fraction of the overall emissions in the region.

Optimisation of animal diets and nutrient management is considered the

category of measures that exhibits the most significant synergies between the mitigation of the two gases.

This includes ensuring good animal health, which enhances feed use efficiency at both the individual animal and herd levels, contributing to the mitigation of ammonia and methane emissions at the production system level. Improved feed efficiency means reduced

share of carbon and nitrogen metabolism being directed toward growth or milk production rather than animal maintenance. However, the document cautions about potential risks to animal health associated with increased productivity.

Some strategies for mitigating enteric methane emissions focus on specific feeds or feed additives. For instance, the addition of 3-Nitrooxypropanol (3-NOP) to cattle diets has shown a significant reduction in enteric methane emissions without compromising production. But the efficacy of 3-NOP decreases when not fed frequently,

which is not possible during grazing. This supplement is currently only registered for dairy use, and its effects on ammonia emissions are considered negligible.

The addition of other compounds, such as fats or nitrate to cattle diets has shown lesser reductions in enteric methane. The document emphasises the need for proper dietary formulation, since adding fat may increase methane from manure storage, and adding nitrate may elevate ammonia emissions by increasing the nitrogen content of excreta.

The second most relevant category for synergies, identified in the document, is manure treatment and storage. Methane emissions from manure storage are a result of microbial decomposition under anaerobic or low-oxygen conditions. Ammonia, on the other hand, forms when urease enzymes catalyse the hydrolysis of urea. An interesting point of distinction is that while ammonia flux depends on the manure surface/gas layer interface, methane production occurs within the bulk of the manure.

Various forms of manure coverage are



emissions associated with growing feed crops, while higher feed use efficiency results in less nitrogen in manure storage and decreased emissions during application.

Higher productivity in ruminant livestock is another strategy for lowering enteric methane and ammonia emissions per unit of product. This is due to a larger



the most widely used methods for mitigating ammonia emissions from storage. It is common to cover the slurry storage with semi-porous materials that favour the growth of methane-oxidising microbes, which convert methane into carbon dioxide and water. However, it is vital to avoid the development of gaps in the cover, as they can compromise the effectiveness of these measures.

Another option is to enclose the slurry storage with an impervious cover. This approach may potentially increase slurry temperature and consequently methane emissions. However, a gas-tight cover opens up the possibility of flaring or biofilters to convert methane to carbon dioxide.

Over the past decade, acidification of slurry has gained popularity as a method to mitigate ammonia emissions. Since acidification has also demonstrated effectiveness in reducing methane emissions, it should be seen as a win-win technology. The acid dosage required for methane reduction is,

however, lower than the typical amount used for ammonia mitigation.

Utilising animal manure in biogas production through anaerobic digestion is a popular practice, which effectively reduces methane emissions, provided that the generated methane is efficiently collected and utilised for energy or industrial purposes. In this process organic nitrogen is converted into ammonium, which enhances its efficiency for crop fertilisation.

However, the increased ammonium concentration and pH in the biogas digestate may also lead to elevated ammonia emissions during storage and field application. This in turn can be mitigated by coverage, acidification, and low-emission application technology.

Measures related to animal housing are the third most relevant area for synergies. For instance, frequent flushing of slurry from animal housing reduces methane emissions in colder climates, with an anticipated reduction in ammonia emissions. The cooling of slurry in animal housing, a recognised method to

reduce ammonia emissions, also exhibits positive impacts on methane emissions.

The document emphasises the holistic consideration of the entire chain of farm operations, cautioning against fixating on one measure. Preventing ammonia and methane emissions from manure in animal housing retains more nitrogen and carbon. However, without mitigation practices, emissions may still occur during storage or application. This holistic approach underscores the need for comprehensive strategies to effectively address the complex interplay of factors contributing to ammonia and methane emissions in farming.

Kajsa Pira

1. All European countries, North America (Canada and United States), Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan).

The not yet adopted version of “Co-mitigation of methane and ammonia emissions from agricultural sources: policy brief and guidance” can be found here: [https://unece.org/sites/default/files/2023-06/ECE\\_EB\\_AIR\\_WG.5\\_2023\\_5\\_%28E%29.pdf](https://unece.org/sites/default/files/2023-06/ECE_EB_AIR_WG.5_2023_5_%28E%29.pdf)

## Mitigation and adaptation measures for the Himalayan region

The Himalayan region is facing an urgent environmental crisis that demands immediate action concludes a new policy briefing<sup>1</sup> by Climate Action Network South Asia. The estimated cost of climate mitigation and adaptation in the six Himalayan countries is staggering, with 1,085 billion needed for mitigation and 270 billion US dollars for adaptation.

Regional experts have been calling for global support and collaboration to increase the resilience of the region, and a broad regional framework of cooperation that identifies specific opportunities for engagement would be a positive step forward.

The Himalayan region is home to one of the most dynamic and complex mountain systems in the world, which is extremely vulnerable to global warming. Although uncertainties about the rate and magnitude of climate change prevail, there is no question that climate change is already changing the ecological and socioeconomic landscape in the Himalayan region, particularly in relation to water. It is imperative to revisit and redesign research agendas, development policies, and management and conservation practices,

and develop appropriate technologies to mitigate carbon emissions. Adaptation and mitigation measures can create opportunities as well as offset the dangers of a warming planet, but they must be identified and adopted ahead of, rather than in reaction to, dangerous trends. Policies should be “adaptation friendly”. The private sector and citizens in the mountains must share responsibility for mitigating carbon emissions, as elsewhere.

The urgency of environmental issues in the Himalayan region is further underscored by disasters such as recent floods in Pakistan and the 2017/18 floods in Nepal and India, which resulted in hundreds of deaths, as well as ongoing problems such as air pollution, erratic rainfall, heatwaves, and environmental degradation. To improve environmental governance in the region, four opportunities should be explored:

1. Strengthening the interface between science, policy and practice;
2. Strengthening institutional capacity to implement new policies;
3. Scaling up community-based environmental management systems by creating more enabling regulatory frameworks

and appropriate local institutional arrangements; and

4. Strengthening transboundary cooperation among the Himalayan countries. By prioritising these opportunities, the region can move towards a more sustainable and resilient future.

Sanjay Vashist

Climate Action Network, South Asia  
(CANSAs)

[www.cansouthasia.net](http://www.cansouthasia.net)

<sup>1</sup><https://cansouthasia.net/climate-change-a-himalayan-odyssey/>

<https://www.airclim.org/sites/default/files/documents/climate-change-in-the-himalaya-report-2023.pdf>



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# 2023 from the corals' perspective: heatwaves and backlashes

Mass bleaching of corals have become a global phenomenon. Among the best-known coral reefs is the Great Barrier Reef in Australia, which has suffered from mass bleaching events for more than two decades. But mass bleaching events have increasingly turned more widespread over the globe, including also reefs in the northern hemisphere.

In 2023, there have been reports on mass bleaching in, for instance, Central America, North America and the Caribbean. Confirmed events included reefs in Panama, Colombia, El Salvador, Costa Rica, Mexico, and Florida, as well as the Bahamas and Cuba alongside with several other Caribbean countries<sup>1</sup>.

In Florida, the bleaching started already in mid-July, with temperatures that were not only extremely high (32°C), but also occurred unusually early in the year. Towards the end of July, a monitoring buoy in Manatee in the Florida Keys measured an ocean water temperature of more than 38°C! In the same time period, the reports on signs of coral bleaching from Central America, South America and the Caribbean also started to unfold. Overall, the global surface ocean temperatures reached record high values during this year's northern hemisphere summer.

Reef-building corals live in symbiosis with microscopic algae that provide nutrition to the corals through their photosynthetic activity. These algae also provide the beautiful coloration of the corals.

Andrew Baker, a marine biology and ecology professor at the University of Miami, who was cited in the Guardian<sup>2</sup> explained: "Unfortunately, that sort of

special superpower that they have, which is this partnership with the algae, is also their Achilles heel, because the algae are very heat sensitive. And what happens when the corals get too hot is the algae, instead of producing food for the coral host, end up producing toxins and these toxins trigger a response out of the coral that causes the coral to try to get rid of the symbionts, the algae, as quickly as possible." Hence, when exposed to prolonged heat, the corals lose both their coloration (they bleach) and the symbionts that provide them with nutrition.

Whereas corals take up only about 0.1 per cent of the ocean floor, they are the home of about a quarter of all marine species<sup>1</sup>. Many of the reef-building corals discussed here optimally prefer temperatures between 22 and 29°C<sup>2</sup>. Prolonged time-periods with heatwaves such as the ones described above are naturally very bad news.

Globally – and in consequence – there is a large number of alarming records on declining coral reefs. For instance, compared to the late 1970s, the Florida Keys' healthy coral cover has declined with 90 per cent<sup>2</sup>. Another example comes from Dr Lorenzo Álvarez-Filip, a coral scientist at the National Autonomous University of Mexico, who is monitoring bleaching of

corals at Puerto Morelos near Cancún. In 2023, he noted that corals started to bleach already in early June, which reportedly least three months earlier than had been observed previously. Cited in an article in the Guardian<sup>1</sup>, he said: "We have reports of bleaching from here to Belize – that's [more than] 400km".

Rising water temperatures are not the only reason to the dramatic decline of coral reefs, since ocean acidification, pollution, overfishing, storms and disease act in parallel. However, rising temperatures are impossible to fend off.

Alongside with firstly the high temperatures as such, and secondly their earlier occurrence, there is also a great risk stemming from the increased frequency of heatwaves. It is not impossible for coral reefs to recover from bleaching events, but they remain vulnerable and less functional for years. Frequent heatwaves reduce the recovery time, or as Dr Sean Connolly, of the Smithsonian Tropical Research Institute, explained to the Guardian: "We are seeing a world where these kinds of temperature extremes are happening so frequently that it's going to become increasingly hard for reefs to recover in the time periods in between"<sup>1</sup>.

The challenges in terms of reef-recovery



were recently evidenced following an annual survey of corals in the Great Barrier Reef, which has suffered from four mass bleaching events in the past seven years. A period of recovery, with three years of relatively healthy conditions, was found to have been paused due to bleaching, attacks by starfish, and disease. Dr Mike Emslie from the Australian Institute of Marine Science commented on this backlash to the Guardian and concluded that "...even less-severe bleaching events are enough to cause a pause in coral cover"<sup>3</sup>, hence highlighting the problems associated with reduced resilience of coral reefs following previous bleaching events, and with new events unfolding before the reefs have regained strength.

With heatwaves becoming both more common and setting off earlier, attempts to rescue corals increasingly include the

collection of key genotypes of corals from their natural nurseries and relocating them into land-based holding systems in order to preserve the species and their genotypes, as well as to allow for restoration efforts. For instance, several such projects are ongoing in Florida. Phanor Montoya-Maya from the Coral Restoration Foundation (CRF) described to the Guardian that such efforts "...are potentially the last lifeline" and continued that "Given the severity of this event, our immediate focus is on the rescue mission at hand. We are concentrating on preserving and protecting as much of the genetic diversity of our reefs as possible"<sup>2</sup>.

Montoya-Maya's statements were echoed by CRF's chief executive Scott Winters: "There is still time to intervene, but our window for action is rapidly closing. To save coral reefs, we must mitigate the

effects of climate change, preserve the corals and coral reefs that we have, and engage in restoration to rebuild remnant populations and their genetic diversity so that coral reefs can evolve to meet changing climate conditions".

Marko Reinikainen

This article is a compilation based on interpretations of the sources below. Possible misinterpretations are the sole responsibility of the author of this article.

<sup>1</sup><https://www.theguardian.com/environment/2023/aug/11/coral-bleaching-central-america>

<sup>2</sup><https://www.theguardian.com/environment/2023/aug/04/florida-coral-bleached-ocean-heat>

<sup>3</sup><https://www.theguardian.com/environment/2023/aug/09/recovery-of-great-barrier-reef-stalls-as-scientists-point-to-bleaching-disease-and-starfish-attacks>

## The risks of offshore carbon capture and storage

A new report by the Center for International Environmental Law<sup>1</sup> explores the risks associated with sub-seabed carbon dioxide storage and reveals the global increase in proposals to pool CO<sub>2</sub> waste in offshore hubs.

The world's oceans are already struggling from the impacts of climate change and the damage of polluting offshore oil and gas installations. Instead of addressing these stressors by phasing out fossil fuels, big polluters are compounding them by turning the seabed into a storage site for their CO<sub>2</sub> waste. CIEL's report found:

- Unprecedented growth of offshore CCS: As of mid-2023, over fifty new offshore CCS projects have been announced worldwide, potentially leading to more than a 200-fold increase in annual CO<sub>2</sub> injection beneath the seabed.
- Serious feasibility and safety concerns: Many proposed projects seek to pool CO<sub>2</sub> from multiple sources in subsea storage hubs, an untested approach. Until now, global experience with offshore CCS is very limited, based on just two projects in Norway. Both of those projects encountered unpredicted problems, highlighting the complexity and unpredictability of offshore CCS,

and raising questions about its risks.

- Covering up fossil fuel expansion: Some offshore CCS projects mask expanded fossil fuel production and use, hindering the transition to cleaner energy sources.
- Uncalculated risks: Injecting CO<sub>2</sub> under the seabed poses uncalculated risks like seismic activity and toxic brine displacement. Additionally, proposed CCS storage hubs concentrate in areas with legacy oil and gas wells, increasing the risk of CO<sub>2</sub> leakage.
- Pressure on oceans: Offshore CCS perpetuates the exploitation of our oceans, which are already in crisis from climate change and decades of oil and gas production. Leaks and other accidents could pose major hazards to sensitive marine organisms and add to the ocean acidification crisis.
- Enormous public subsidies: Offshore CCS is a costly endeavour that is heavily dependent on government subsidies. Government support for offshore CCS diverts significant public funds away from proven solutions and towards polluters.
- Legal bulwarks and gaps: Existing national and international laws can help put the brakes on risky offshore CCS projects

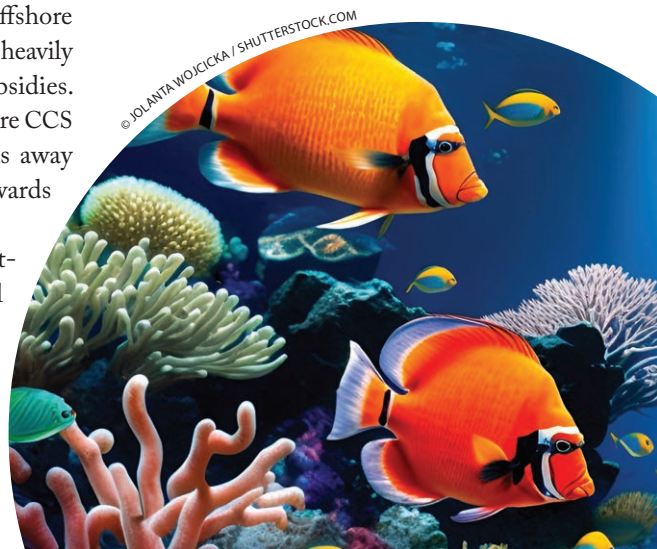
and protect the oceans, communities, and the climate. Evolving CCS-specific regulations must be strengthened to prevent harm. In many jurisdictions, there are still questions regarding who bears the long-term liability and costs for CO<sub>2</sub> storage wells.

- Decades of CCS failures: CCS projects have repeatedly fallen short of capture targets and encountered financial and technical hurdles, raising doubts about their feasibility and safety.

Lisa Tostado

Center for International Environmental Law (CIEL)

<sup>1</sup><https://www.ciel.org/reports/deep-trouble-the-risks-of-offshore-carbon-capture-and-storage-november-2023/>



# Action to triple renewable power and double energy efficiency

A rapid, sustained and concerted action is needed limit temperature rise to less than 1.5°C. A new report by IRENA, GRA, and the COP28 Presidency analyses renewable energy targets, highlights current gaps and identifies key enablers. Launched during Pre-COP, the report sets the stage for global climate summit negotiations.

The latest IPCC Assessment Report made it evidently clear that it is this decade that is vital if we are to limit temperature rise to less than 1.5°C above pre-industrial levels by the end of this century (IPCC, 2023). The energy transition has great potential to decrease GHG emissions. However, IRENA's report, World Energy Transitions Outlook 2023: 1.5°C pathway, shows that even if current pledges and plans made by national governments – including Nationally Determined Contributions (NDCs), long-term low greenhouse gas emission development strategies (LT-LEDS) and other commitments – are fully implemented, this would only reduce CO<sub>2</sub> emissions by 6 per cent by 2030 compared to 2022 levels.

Greater ambition and stronger collective action are needed now to accelerate progress, particularly in renewable energy and energy efficiency. In this context, policy makers, energy authorities, industry and civil society have an opportunity to align at COP28 to agree global targets to triple renewable power generation capacity and double the energy efficiency improvement rate by 2030.

A report by IRENA, the Global Renewables Alliance (GRA) and the COP28 Presidency consolidates high-level analysis of these targets, detailing existing shortfalls and identifying key enablers to resolve them. The report was launched on the sidelines of Pre-COP, a meeting held a month ahead of COP28 to lay the groundwork for negotiations at the global climate summit.

By 2030, the global total of installed renewable power generation capacity would need to expand more than three-fold, from 3,382 GW in 2022 to 11,174 GW, according to IRENA's 1.5°C scenario. Specifically, installed solar PV capacity would rise to more than 5,400 GW, from

1,055 GW in 2022, and wind installations would surpass 3,500 GW (3,040 GW onshore and 500 GW offshore), up from 899 GW in 2022, over the same period. See more details in Figure 2.

The solutions presented are technologically mature, cost-competitive and commercially available, and can be scaled up rapidly in most countries around the world. In fact, utility-scale solar PV and onshore wind are already the most cost-competitive sources of new electricity supply in most countries today.

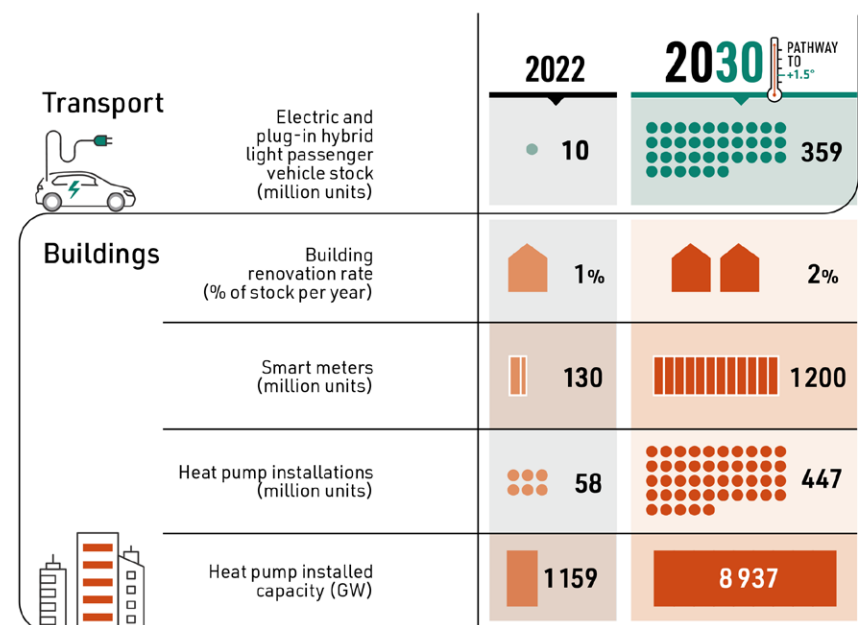
Energy efficiency in IRENA's 1.5°C scenario is mainly a result of a combination of efficient technologies in end-use sectors and extensive electrification. The electrification of end-use sectors, such as in transport and buildings, would see a rise in direct use of electricity in total final energy consumption from 22 per cent in 2020 to 29 per cent in 2030.

Technical energy efficiency improve-

ments embodied by heat pumps, more efficient appliances and electric vehicles, together with flexible, smart electrification strategies and deployment of decentralised energy, are of great importance in decarbonising end-use sectors such as buildings and transportation. For industrial sectors, continued energy efficiency improvements play an important role in keeping the overall energy consumption by industry close to unchanged in 2030 from present levels. See more details in Figure 1.

A comprehensive mix of policies is needed to achieve these targets. Aside from deployment and enabling policies, structural change is needed to ensure the transition to an energy-efficient economy and a renewables-based power system that is just and fair and provides benefits for all. The report identified five key enablers for the required scale-up in renewable power and energy efficiency, with concrete and

Figure 1. Energy intensity: Indicators in transport and buildings in 2030.



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urgent recommendations for policy makers in each area: infrastructure and system operation; policy and regulation; supply chains, skills and capacities; finance and international collaboration.

The electricity infrastructure should be expanded and modernised. There is an urgent need to boost cross-sector infrastructure planning, increase cross-border co-operation and develop regional power grids. Action is also needed to drive grid modernisation and expansion and ensure supply-side flexibility and demand-side management.

Renewable power capacity should be increased more rapidly in developing countries, given their growing electricity demand and the important role of renewables in addressing the significant

energy access deficit in these countries.

The organisational structures of power sectors must be reshaped to integrate a higher share of renewables. Procurement mechanisms must be designed in a way that strengthens value chains and trade, and industrial policies must be fit for building resilient supply chains. Education, training, re-skilling and up-skilling should be prioritised; women and under-represented groups must be empowered; and collaboration between industry, civil society, policy makers and other key stakeholders should be encouraged.

Public and private finance must rapidly be mobilised to achieve these ambitions. Annual average investment in renewable power generation must reach USD 1,300 billion by 2030, compared to 486 billion in 2022.

In the developing world, it is important to minimise investment risks and provide access to low-cost financing. The global financial architecture must be reformed to support the energy transition in the Global South. Climate-related funding from multilateral development banks must be ramped up, and public capital should be redirected from the fossil fuels sector to renewable energy.

This will require strong international collaboration. Immediate efforts are required to facilitate and contribute to multilateral initiatives that promote knowledge sharing and capacity building to deliver a just transition whilst also safeguarding nature and biodiversity. Collaboration is urgently required to foster collective action on governance, climate finance and innovation. North-South and South-South dialogues should be cultivated; groups like the G7 and G20 must mobilise support and investment; and just transition funds should be established and operationalised in emerging economies.

Accelerating progress in renewable energy deployment and energy efficiency improvement measures this decade would contribute to a cleaner energy system, improve energy security and reduce exposure – both in industry and for consumers – to the damaging risks of highly volatile fossil fuel prices. It would also improve air quality and reduce health costs; deliver universal access to clean affordable energy; and provide greater collective security and well-being.

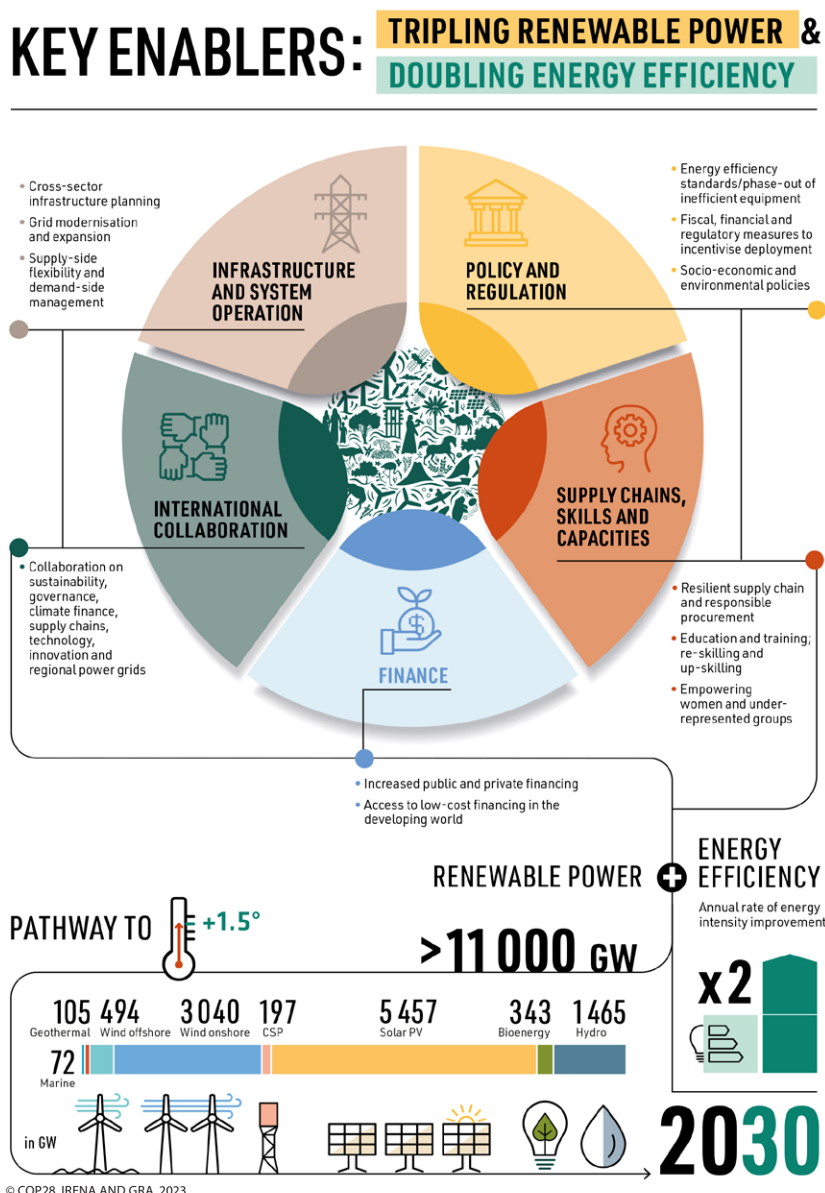
Bruce Douglas, Chief Executive Officer of the Global Renewables Alliance, states that “This is a unique ‘once in a generation’ opportunity, but we need urgent action to scale renewable energy in every region of the world. Only then can we protect the planet and secure a liveable future for all.”

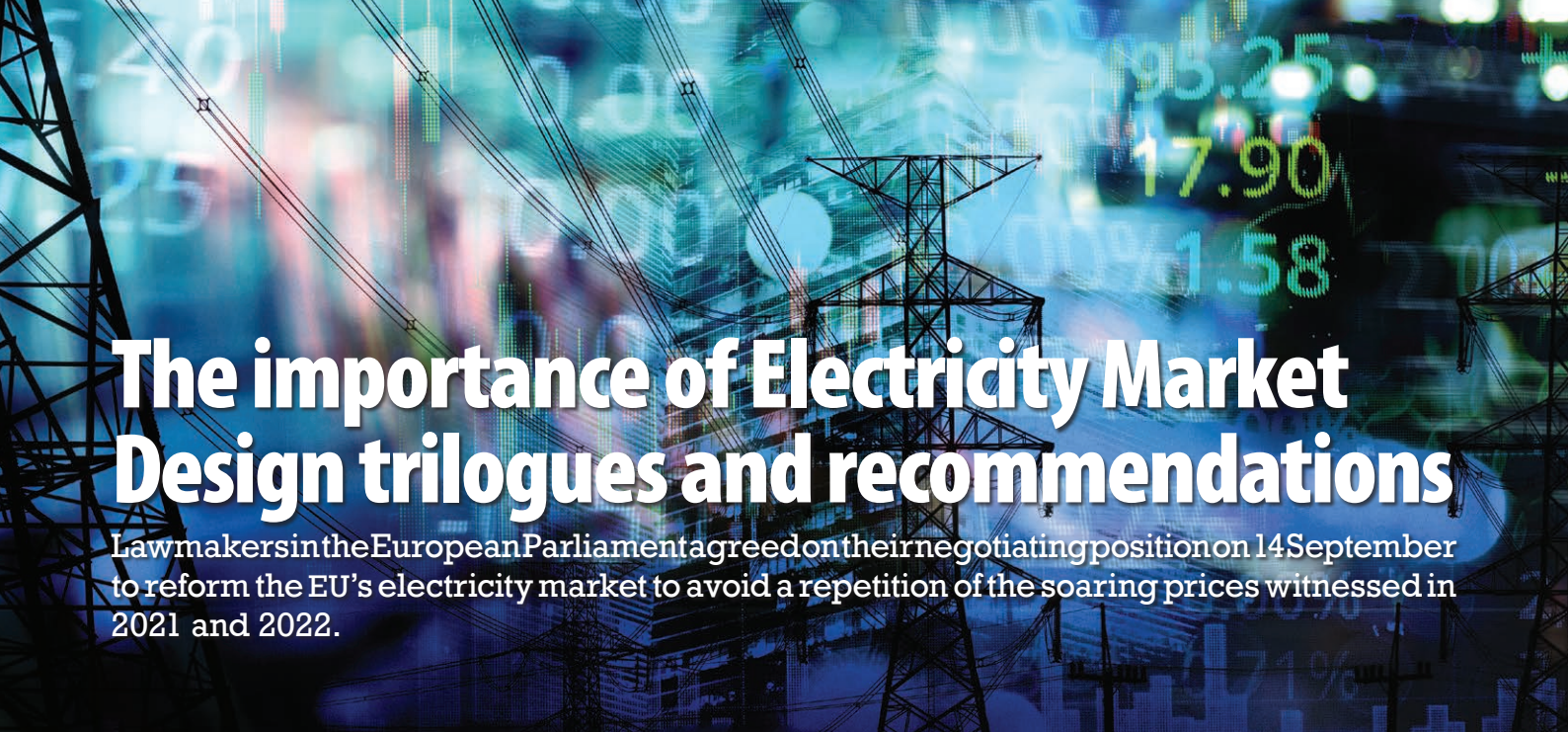
Emilia Samuelsson

Based on COP28, IRENA and GRA (2023), Tripling renewable power and doubling energy efficiency by 2030: Crucial steps towards 1.5°C, International Renewable Energy Agency, Abu Dhabi

<https://www.irena.org/Publications/2023/Oct/Tripling-renewable-power-and-doubling-energy-efficiency-by-2030>

Figure 2. Key enablers to tripling of renewable energy and doubling of energy efficiency.





# The importance of Electricity Market Design trilogues and recommendations

Lawmakers in the European Parliament agreed on their negotiating position on 14 September to reform the EU's electricity market to avoid a repetition of the soaring prices witnessed in 2021 and 2022.

**The reform, presented** by the European Commission in March this year, aims to boost consumer protection, speed up renewables' rollout and improve demand-side measures to reduce pressure on the electricity grid. Lawmakers are now ready to negotiate with EU countries, which are still attempting to find a common position.

Liberal lawmaker Morten Petersen said he was "very pleased" with the reform that the European Parliament had put together "at record-breaking speed, all the while holding together the broad compromise". Petersen said: "It's job done on our part so far, but of course tough negotiations now await with the Council."

As a component of the reform, lawmakers wanted to strengthen consumer protection against unpredictable electricity prices and ensure consumers have the right to fixed-price contracts and dynamic price contracts that are suited to different types of consumption. In addition, the draft law would also allow consumers to be pioneers of the energy transition, said the lawmaker negotiating for the Greens, Michael Bloss. "These include the right to 'energy sharing' and balcony solar, as well as the ban on power cuts," he explained. This could help boost rooftop solar as it would allow consumers to share electricity produced with their neighbours and was welcomed by the industry as "historic".

Naomi Chevillard, head of regulatory affairs at industry group SolarPower Europe commented: "We're happy to see today's outcome, and we're looking forward to the speedy progress of trilogues. Negotiators

should aim for a conclusion before the end of the year."

These trilogues are of great importance as the reform of the Electricity Market stands as the only tool capable of systematically addressing the considerable volatility in energy prices and steering towards a future energy system that is generated using more renewables and is more flexible, decentralised, fair and resilient. CAN Europe has published five vital expectations when it comes to the reform of the Electricity Market Design.

## **1. "Demand-side Flexibility" which is based on support for storage and demand-side response needs to be ramped up quickly**

Many member states have not implemented the flexibility measures that already exist under current legislation and are intended to increase implementation of the demand-side flexibility measures introduced in the 2019 Clean Energy Package. So far, slow progress has been made in letting demand-side response and storage services bid or participate in the wholesale market.

However, an assessment in 2022 indicates that for other markets there are still obstacles and that for the EU capacity mechanisms, most of the contracts (meaning financial compensation) are still awarded to coal/lignite power plants. The currently discussed revision adds new elements that aim to further promote and incentivise more storage and demand-side response by member states by: a) giving member states the possibility to lower CO<sub>2</sub>

limits that would restrict the participation of fossil gas in the capacity mechanisms, in alignment with the Climate, Energy and Environmental Aid Guidelines (CEEAG) and b) introduce the idea of flexibility needs assessment, flexibility targets, and additional remuneration.

Additionally, it is important that the flexibility needs must be examined 10 years in advance, assessed by National Regulators and validated by the European Union Agency for the Cooperation of Energy Regulators. The European Parliament has added that an assessment should be established with a climate-neutral future electricity system as an objective. However CAN proposes that this term should be expanded to a climate-neutral fully renewable-based future electricity system. CAN Europe's modelling of the PAC Scenario shows that achieving such a system by 2040 is possible. It is also important to have clear definitions of flexibility targets, restricted to mature and ready-to-deploy solutions and avoiding "non-fossil flexibility" language.

## **2. Improvement of the energy-sharing legal framework is necessary, with a focus on local solutions.**

Enhancing the legal framework for energy sharing is crucial, with a specific emphasis on local solutions. Energy sharing empowers citizens and energy communities to become prosumers by offsetting off-site generation from metered consumption. This allows individuals and groups to participate in renewable projects, gain control over bills, guard against price





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spikes, and potentially allocate surplus energy to vulnerable households. It is essential to ensure that those engaged in energy sharing contribute fairly to costs, particularly in supporting grid expenses. CAN Europe endorses the Commission's proposal to create effective rules and responsibilities for system operators to enable energy sharing, which includes the defined concept of energy sharing. It is also important to make sure that energy communities have fair conditions.

### **3. Consumer protection must be designed in a way to shield the vulnerable from price spikes while keeping the energy demand reduction incentives.**

Creating a system where people take ownership of the shift to cleaner energy, use new tech to cut bills, and actively participate in the market, all while safeguarding vulnerable consumers, is achievable. The Commission's proposal is good for this as it mandates member states to ensure that customers can have multiple electricity contracts simultaneously. Suppliers should provide both fixed-term, fixed-price contracts, and dynamic electricity price contracts, tailored to individual customer situations and needs. This choice empowers everyone to be proactive self-prosumers, enjoying affordable electricity and protection from price spikes in wholesale markets. At the same time, a ban on disconnections for vulnerable consumers, as proposed by the Parliament is also vital.

### **4. Capacity mechanisms should remain temporary.**

Capacity mechanisms serve as public subsidies to compensate capacity providers (generators, storage and DSR providers), addressing temporary gaps in power market adequacy. They are meant to ensure system reliability and resolve resource adequacy concerns. If the market alone can't achieve this, governments implement support schemes. The Electricity Regulation outlines design principles for capacity mechanisms, emphasizing their temporary, last-resort, transparent and competitive nature. It also establishes an emission limit of 550g CO<sub>2</sub>/kWh, excluding old coal power plants from support after January 2025.

Proposals from the Parliament exclude the "last resort" requirement, and the Council goes further by removing the phase-out condition for existing capacity mechanisms and eliminating their temporary nature. Both parties call for a Commission assessment of capacity mechanisms' impact on the electricity market's functioning and its evolution towards a net-zero emission system.

While supporting storage and demand-side response, relaxing these rules may distort the market and excessively favour new fossil gas-fired power plants meeting the emission limit. It is important that negotiators maintain the current provisions and the subsidy's temporary nature. To achieve a climate-neutral energy system with 100 per cent renewables, redesigning capacity mechanisms to support demand-side flexibility is essential. Gradually lowering the CO<sub>2</sub>

emission threshold should be part of this and any future electricity market reform.

### **5. No extra public subsidies for coal. Coal derogation must be removed.**

Despite no changes to the emission limit in the Commission's proposal or Parliament's stance, the Council introduced a new Article (64) allowing an extension of the 2025 emission deadline to December 2028 via a dedicated derogation. Member states can request a waiver, offering extra support to old coal power plants with one-year contracts to address adequacy gaps.

It is vital to remove this Coal Derogation from the text. This provision jeopardises the EU's climate goals, risks market distortions and undermines the shift away from fossil fuels. Keeping the Coal Derogation would also reward member states that identified resource concerns in 2019 but have not acted.

The latest ACER report shows that capacity mechanisms across the EU heavily favour fossil fuels, with 57 per cent of support going to gas and coal.

Emilia Samuelsson

Based on the Briefing CAN Europe's Top Five Expectations towards the Electricity Market Design trilogues. Available at <https://caneurope.org/electricity-market-design-emd-trilogues/>

And EURACTIV 'Job done': MEPs react to Parliament vote on electricity market reform 15 September 2023. Available at <https://www.euractiv.com/section/energy/news/job-done-meps-react-to-parliament-vote-on-electricity-market-reform/>

# Phasing out coal in the EU by 2030 at the latest

What happened to coal power amidst Europe's winter crisis of 2022/2023, and what lessons can we learn for this winter.

**The Europe Beyond Coal** campaign (BFF) has analysed the way that seven European countries (Bulgaria, Czech Republic, Germany, Greece, Hungary, Poland and Romania) responded to the fossil fuel crisis of winter 2022–23. It finds that despite many headlines trumpeting a return to coal, European coal power generation fell during the crisis-ridden cold season compared with the previous winter – yet many countries are persisting with disproportionate emergency coal measures, which, in most cases, are not necessary to meet electricity demand. A briefing published by BFF proposes a series of structural measures that offer cheaper, safer, and healthier means for countries to secure their energy supplies based around wind, solar, energy efficiency and smart consumption measures.

BFF finds that total European coal power generation was lower last winter than the previous one. The BFF study analyses country-level measures and find that in most instances they were disproportionate. This is owing to a significant drop in power demand driven by mild temperatures during the winter as well as demand-savings delivered by businesses and households, and record electricity generation from solar and wind.

The evolution of the power sector during winter 2022–23 illustrates that fossil gas and coal dependence can be rapidly reduced with a mix of actions to maintain or reduce power demand and enable fast deployment of solar and wind power. These achievements were largely the result of an acceleration in the deployment of renewables, as well as massive cuts in power and energy consumption, which led to a considerable drop in fossil gas use overall. It is particularly noteworthy that citizens in various countries (e.g. Poland, Hungary, Greece, Germany)

played a significant role in this progress by either installing renewables to cover their own electricity needs or replacing their fossil fuel-based heating systems with heat pumps.

The EU significantly overachieved its 15 per cent fossil gas consumption reduction target set in July 2022. Even member states that requested and obtained derogations to lower the reduction requirement, such as Greece, managed to significantly exceed the target (–20.9%). But Europe was also undeniably fortunate that a mild winter lowered potential energy demand.

Nonetheless, the lessons are clear: Europe has many other means to secure its energy than relying on burning more coal. It is able to deploy other measures to ensure it does not need to import Russian coal and fossil gas, nor resort to expensive fossil gas imported from elsewhere. Europe has to build more wind and solar and implement efficiency and smart consumption measures ahead of the coming winter. These structural measures are the only permanent and sustainable answer to the energy crisis.

The 2022–23 winter proved that increasing coal-fired power generation – which is a distinct threat to Europe's climate targets, public health and national economies – was, in most cases, unnecessary to meet electricity demand. With such high carbon prices further boosted following the revision of the EU ETS Directive in 2022 – reliance on coal is bound to exacerbate electricity bills in the coming years. To address this threat going forward, national decisions to prolong coal use need to be thoroughly justified. Any decision to prolong coal use in any European country should fulfil the following criteria – including those units which had their capacity limits lifted or retirement postponed since 2022:

1. A Resource Adequacy Assessment is

performed using the methodology developed by ENTSO-e and shows that the prolongation of the lifetime of coal plants is necessary to ensure security of electricity supply.

2. If coal prolongation is deemed necessary through a Resource Adequacy Assessment, then the additional coal plants that are necessary should operate under a strategic reserve scheme, i.e. they should not participate in the electricity market. This measure is necessary in order to prevent any operation of the coal plants beyond what is needed to ensure security of supply, with the aim of gaining profits from the electricity market.

Europe's power sector needs to be free from coal by 2030 and from fossil gas by 2035. These are necessary milestones towards limiting global warming to 1.5°C, to ensure predictable and affordable energy, and to decrease energy-related air pollution which will help reduce health costs. In order to get there, we need to be investing significantly more in wind and solar power, efficiency and savings, energy storage, as well as upgrading and expanding our electricity grids. The recently published BFF report, *Freedom from Fossil Fuels*, details how this can be achieved. The following section provides a summary of the report's main findings.

If we deploy the proposed package of measures described in the report and below, paired with enabling measures such as grid expansion, demand response and flexibility, we can reduce our fossil gas and coal use by 35 per cent and 44 per cent respectively by 2025, compared to 2021 levels. This is similar to the amount of fossil gas and coal that Europe imported from Russia in 2021. More than half of this reduction can be achieved based on





the transformation of the power sector.

European governments, municipalities, financial institutions, utilities and businesses, as well as citizens should deploy an extra 481 GW of solar (459 GW in the EU-27), 102 GW of new wind capacities (78 GW in the EU-27) and nearly 29 million heat pumps (24 million in the EU-27) between 2022 and 2025. This means that every day, Europe needs to install 14 wind turbines and 37 large solar plants to cover areas where they have the lowest environmental impact, such as car parks and/or degraded land. In addition, nearly 54,000 homes need to either be solarised, equipped with heat pumps or deeply renovated each day. This scale of industrial project is achievable in a continent where each day nearly 45,000 new cars are manufactured, and more than 12,000 gas boilers are installed in homes.

Despite the significant potential that wind power presents, the rate of deployment over the past ten years – stagnating at an annual rate of 12–18 GW – remained well below the 30 GW WindEurope says must be installed every year to meet the EU's 2030 renewable energy target. New wind projects have been facing growing difficulties in recent years, including long

and complex permitting processes, a lack of spatial planning, underinvestment in grids, and even governments actively hindering new investments. These hurdles have led to permitting times ranging from 30 months to 10 years in European countries. For these reasons, WindEurope foresees a cautious deployment of 26 GW annually on average in Europe.

The RE Power EU Plan aims to shorten the average permitting period across the EU (up to 1 year) and proposes that member states should give priority status to certain types of renewable energy projects and frame them as overriding public interest initiatives. While there is an urgency to accelerate the deployment of renewable energy, it must be done with the full involvement of citizens and communities while ensuring the protection of nature.

There are a number of measures that

need to be quickly embraced by national and European decision-makers in order to ensure energy security and significantly bring down coal and gas demand, while eliminating the continent's dependence on Russian fossil fuels:

1. Accelerate solar PV deployment: Cross-sectoral policies are necessary in order to secure coherent and robust deployment frameworks that remove existing barriers, including permitting, grid modernisation, workforce training, supply chain build-up and financial support – especially at the national level. These frameworks should include specific provisions to support installations by households (prioritising vulnerable households), communities, and small and medium enterprises (SMEs).
2. Urgently fix the barriers slowing down wind project deployment: National and local governments, grid operators, wind

Beyond Fossil Fuels (BFF) is a collective civil society campaign committed to ensuring all of Europe's electricity is generated from fossil-free, renewable energy by 2035. It expands and builds upon the Europe Beyond Coal campaign, and its goal of a coal-free Europe in power and heat by 2030 at the latest.

The Beyond Fossil Fuels campaign consists of over sixty partner organisations from across European civil society.

<https://beyondfossilfuels.org>

developers and utilities must come together to solve existing barriers and ensure wind (in addition to solar) is identified as a strategic priority, in particular onshore wind. This means investing in transparent, digitalised, and well-staffed planning, and faster permitting procedures, including community energy projects, without compromising biodiversity, community participation and social safeguards. Decision-makers must also develop a stable electricity market, which would in turn restore investor confidence in the European wind market. Boosting community support through shared financial benefits is equally important.

3. Maintain emergency measures to cut energy demand: Targeted, temporary emergency measures aimed at reducing energy demand for the coming two winters must be continued. In 2022, EU

governments agreed to a set of voluntary energy reduction targets: a 15 per cent reduction in fossil gas demand, which was recently extended until 31 March 2024. This should be transformed into a structural measure (to be increased gradually to achieve a 2035 fossil gas phase-out), including an obligation to reduce electricity demand by at least 5 per cent during peak hours through demand-side flexibility and energy savings. Combined with the structural measures proposed in the Freedom from Fossil Fuels report, they would reduce European hard coal demand by 44 per cent and fossil gas demand by 35 per cent, a level at which there would be no need to build more gas import infrastructure in Europe, such as gas pipelines and LNG terminals.

4. Unlock public and private finance for the

transition: Governments, banks, investors and insurers must deliver the necessary investments in the energy transition (renewable energy, efficiency in industry, building renovation etc.) that will secure deployment at an unprecedented scale. This includes funding for enabling technologies (e.g. grids, storage, demand-side flexibility, digitalisation), as well as workforce training and the expansion of the European supply chain.

Coordinating author  
Alexandru Mustață

Source: Text is from the summary and conclusions of Beyond Fossil Fuels Campaign briefing.

Link to briefing: <https://beyondfossilfuels.org/wp-content/uploads/2023/04/What-happened-to-coal-power-amidst-Europes-winter-crisis-.pdf>

## Study reveals hazards of ship emissions to the marine environment

A recent study from Chalmers University of Technology in Sweden highlights environmental risks due to the combined emissions of metals and other contaminants into the marine environment. The scientists behind the study showed that

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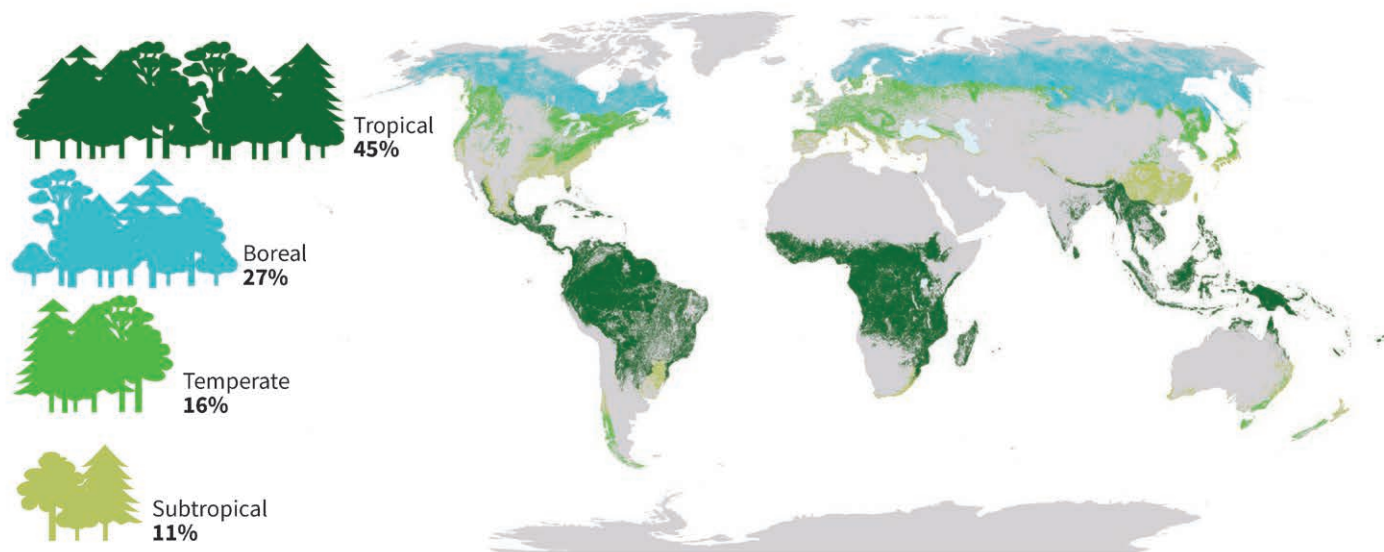
water discharged from scrubbers of ships accounts for 90 per cent of the contaminants in the four ports that were included in the study. Scrubbers are used by ships to “wash” pollutants out of the exhaust gases. Cited in a press release by Chalmers, Anna Lunde Hermansson, who is a doctoral student at the Department of Mechanics and Maritime Sciences at Chalmers, said: “The results speak for themselves. Stricter regulation of discharge water from scrubbers is crucial to reduce the deterioration of the marine environment.” Looking at the specific contaminants and their sources, the study found that more than 90 per cent of toxic metals and PAHs (polycyclic aromatic hydrocarbons) originated from scrubber discharge water, while anti-fouling paints accounted for the largest share of copper and zinc. Addressing the challenges associated with scrubbers, it is reported that the number of ships with scrubbers installed has increased since the mid-2010s. The press release refers to a study that was conducted in 2018, which showed that there were 178 ships with scrubbers operating in the Baltic Sea. The researchers estimate this number has tripled by now, and that there are about 5,000 such ships globally. This would trans-

late into around five per cent of the total fleet. Lunde Hermansson says, however that their share of the fuel consumption is much larger: “...it’s the large ships with high fuel consumption that install scrubbers, because it is more economical for them to do so. So we anticipate that they would account for somewhere around 30 per cent of total fuel consumption in shipping,” she said in the press release. It is also reported that the Swedish Agency for Marine and Water Management and the Swedish Transport Agency have proposed that the Swedish Government should prohibit the discharge of scrubber water within the Swedish archipelago. Erik Ytreberg, who is an associate professor at the Department of Mechanics and Maritime Sciences at Chalmers explained in the press release: “It’s a step in the right direction, but we would have liked to see a stronger ban that extends across larger marine areas, while we also understand the challenge for individual countries to regulate international shipping.”

Source: Press-release “Marine environment at risk due to ship emissions”, <https://news.cision.com/chalmers/r/marine-environment-at-risk-due-to-ship-emissions,c3783134>



# Northern forests and climate change project



AirClim's Northern Forests and Climate Change project aims to increase the visibility of Northern forests in the international climate debate. To enhance international action this project aims at:

- Improving the scientific basis for campaigning and advocacy on Northern forests and their protection;
- Improving international NGO coordination and work on protection of Northern forests and climate change issues, in close cooperation with Climate Action Network;
- Increasing high-level awareness & commitment among EU institutions and UN bodies on the link between Northern forests and climate change.

Under this project, Northern forests comprise all boreal as well as temperate forests in North America (US/Canada), Europe, Russia and Central Asia. These are overwhelmingly (+95%) located in developed countries (Annex 1 countries under the UN Framework Convention on Climate Change).

Until now, the forest debate under the UNFCCC has focused largely on the responsibility of developing countries to protect their forests, with developed

countries mostly promising to provide funding while underachieving on efforts to tackle forest destruction at home.

Northern forests have an important role to play in supporting indigenous peoples, protecting biodiversity and mitigating climate change as they represent over 40 per cent of the world's forest cover and hold nearly half the global carbon stock. At the same time, Northern forests represent less than 20 per cent of the global protected forest area.

There is a clear need to recognise the negative impact of so-called forest management in many of the Northern forests and a strong urge to improve protection and restoration of Northern forests given their important role in tackling climate change and protecting biodiversity while ensuring indigenous peoples' rights.

The Northern Forests and Climate Change project aims to contribute to campaigns calling for better protection of Northern forests, through:

- the publication of three studies (by Climate Analytics), on:
  - \* the impact of climate change on Northern forests;
  - \* the role of forests in mitigating climate change; and

\* how the Paris Agreement and UNFCCC rules impact the protection of northern forests;

- supporting coordination and communication amongst NGOs, scientists and indigenous peoples' organisations working on Northern forests; and
- setting up an advocacy campaign aiming to increase the visibility of (Northern) forests in the climate debate in the run up to what will likely be a forest-focused Climate Summit (COP30) in Belem, Brazil in November 2025.

Wendel Trio

This project is supported by the Swedish Postcode Foundation.

<https://www.airclim.org/northern-forests-and-climate-change>



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	forest area (%)	carbon stock (%)	protected forests (%)
World	100.00	100.00	100.00
Europe (incl. Russia)	25.06	25.98	7.31
North America	18.55	22.05	11.61
Europe+North America	43.61	48.03	18.92

# Armenia is a lightly forested country with rich biodiversity

According to the last forest inventory of 1993, forest land makes up 459,900 ha, of which over 73 per cent or 334,100 ha is covered with forest. Overall, the inventory showed forest coverage of 11.2 percent for the country. However, the inventory was done before the economic turmoil of the 1990s and there have been notable changes in the forest cover since then. International organisations have made more recent estimates of the forest cover in the country and they have given much lower estimates – approximately 7–8 per cent.

Today 62 per cent of the forest cover is found in the northeast (Tavush, Lori provinces), 36 per cent in the southeast (Syunik, Vayoc Dzor province), and only 2 per cent in the central region of the country (Aragatsotn, Gegharkunik provinces).

Armenia is described as having six distinct landscape zones: desert, semi-desert, steppe, forest, subalpine, and alpine regions. Armenia is located at the junction of the biogeographic zones of the Lesser Caucasus and the Iranian and Mediterranean zones, and exhibits both a great range of altitudinal variation (from 375 m to the 4,095 m peak of Mt. Aragats) and a diversity of climatic zones. Together this has resulted in a diversity of landscapes and ecological communities with a distinct flora and fauna, including many regionally endemic, relict and rare species. While encompassing only five percent of the Caucasus area, Armenia incorporates nearly every type of vegetation ecosystem found in the southern Caucasus, reflecting the great altitudinal variation and consequent



contrast of distinct ecosystems within limited areas.

The forest lands of Armenia are characterized by rich natural resources and biodiversity. In these lands 274 types of native trees and shrubs can be found, of which 25 are endemic and 31 relict species. The main forest-bearing species are beech, oak, eastern hornbeam and pine.

Nazeli Vardanyan

<https://www.airclim.org/northern-forests-and-climate-change>



## Harmful Energy Charter Treaty plans expansion

The remaining participants in the Energy Charter Treaty are seeking to broaden its scope by bringing in more members of “petroleum-exporting countries”, as disclosed in notes from the recent Energy Charter Treaty Conference held on 20 November.

The Energy Charter Treaty (ECT) is an investment treaty involving 50 nations that enables foreign companies to sue governments through the investor-state dispute settlement (ISDS) mechanism, known as “corporate courts”. With potentially billions at stake, the ECT has already made at least 158 claims, making it the most litigated ISDS agreement.

According to notes from the recent ECT Conference: “In line with CONEXO policy objectives, the Secretariat has reached out to the Organisation of Petroleum Exporting Countries (OPEC), and, in view of exploring

potential cooperation, a technical meeting between both organisations was organised in June 2023”.

CONEXO, which stands for “Consolidation-Expansion-Outreach”, represents the ECT’s strategy for securing new member accessions. Presently, there are 56 signatories and contracting parties to the Energy Charter Treaty. However, the European Commission’s consideration of a coordinated EU withdrawal earlier this year poses a challenge to the treaty’s continuity.

Although the expansion policy was put on hold pending agreement on the modernisation process, reform proposals were for the third time removed from the conference agenda. The latest notes emphasise a 2024 priority: “lifting of the pause on accession, regardless of the modernization of the Treaty conclusions”.

The UK had set a November deadline

to exit the treaty if modernisation was not agreed. As the deadline has passed, pressure mounts for the UK to withdraw from the treaty, especially with COP28 approaching. The All Party Parliamentary Group (APPG) on the Environment last week also added its voice to these calls in a published briefing.

Earlier this month, leaked documents revealed a Jersey-based oil-refining company is suing the EU, Germany and Denmark under the ECT for at least 95 million pounds over the imposition of a windfall tax.

Reference: Global Justice Now. (2023, 22nd November). Energy Charter Treaty: Plans for Expansion Revealed in Recently Posted Notes. Retrieved from <https://www.globaljustice.org.uk/news/energy-charter-treaty-plans-for-expansion-revealed-in-recently-posted-notes/>

And the official Notes from the ENERGY CHARTER SECRETARIAT are found here: <https://www.energycharter.org/fileadmin/DocumentsMedia/CCDECS/2023/CCDEC202321.pdf>



# Flora and fauna of the Siberian forest

The most important factor influencing plants and wildlife distribution is climate. At the northern limit of tree distribution in the forest tundra of Siberia the mean annual soil temperature is  $-1$  to  $-3^{\circ}\text{C}$ . Around a hundred days a year have air temperatures above  $+5^{\circ}\text{C}$ , and only 57–70 days are above  $+10^{\circ}\text{C}$ . At the northern limit of distribution, trees grow in scattered groves on gentle southern slopes. Such forests grow on poor shallow soils that are low in humus, producing low-density forests. In the western Siberia such forests are composed of four tree species: Scotch pine (*Pinus silvestris* L.), Siberian spruce (*Picea sibirica* Ledeb.), Siberian [cedar] pine (*Pinus sibirica* Du Tour), and Siberian larch (*Larix sibirica* Led.). In eastern Siberia and the Russian Far East there is Daurian larch (*Larix dahurica* Led.). Among deciduous trees a few species of birch (*Betula* spp.) and aspen (*Populus tremula* L.) are common. Few rare plant species are found in the north of western Siberia (only one is listed in the Red Data Book – arctic paintbrush (*Castilleja arctica* Krey et. Serg.)). Up to 80 per cent of all forests are old-growth. As we move

southward, the stands become denser and taller. The productivity also goes up. The forest composition remains essentially the same. The southern part of the northern taiga subzone is dominated by Scotch pine in Western Siberia, Siberian larch in Central Siberia, and mostly Daurian larch in Eastern Siberia.

The middle taiga typically has forests of spruce, Siberian pine and fir interspersed with secondary groves of birch and aspen. Pine forests are found in wetlands. The southern taiga has very diverse forests. They are more productive (up to  $500\text{ m}^3$  per ha), and their composition is more diverse. Another aspect of the southern taiga is a lower proportion of wetlands. Soils in the area are fertile, well suited for agricultural production on cleared sites. Forest steppe is a separate natural zone. Some of it was artificially created by humans. Forest groves in this zone alternate with hay meadows and pastures, as well as with crops. In some cases, the productivity of such forest islands remains quite high ( $500\text{ m}^3$  per ha and more), usually these are Scotch pine forests. In other cases, due to increased aridity, pro-



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ductivity somewhat declines. Plant diversity here equals that of the southern taiga.

Most rare species are found among the best studied groups of animals, such as mammals and birds. Birds have the most species among the vertebrates. Avifauna increases from 145–160 species in forest tundra to 215–224 species in southern taiga.

Andrey Laletin

<https://www.airclim.org/northern-forests-and-climate-change>

## Lack of ambition for farming in national climate plans

In a recent report titled “Much Ado About Nothing”, the European Environmental Bureau (EEB) evaluates nine draft updated National Energy and Climate Plans (NECPs), revealing a lack of ambitious measures and long-term strategies for tackling greenhouse gas emissions from the farming sector. Despite the sector’s significant contribution to climate change, most member states have so far refrained from setting specific emissions reduction targets or implementing well-designed policies.

The report emphasises the need to address the direct sources of greenhouse gas emissions, including the overuse of synthetic fertilisers, intensive farming practices, and peatland degradation.

Only the Netherlands are proposing substantial measures to reduce animal numbers.

Efforts to address emissions from excessive fertiliser use primarily focus on efficiency improvements and techno-fixes, which are believed to deliver insufficient emission reductions. The EEB would rather see the promotion of agroecological practices to restore soil fertility and reduce dependency on fertilisers.

Furthermore, the updated draft NECPs of member states are criticised for falling short of the necessary ambition to effectively tackle emissions from farming on drained peatlands. The EEB report highlights the imperative need for more robust and comprehensive strategies to meet climate targets in the agricultural sector across the European Union.

EEB, October 2023, “Much ado about nothing? An assessment of nine updated draft national energy and climate plans”, <https://eeb.org/wp-content/uploads/2023/10/An-assessment-of-9-updated-draft-National-Energy-and-Climate-Plans-NECP-2.pdf>



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# Forests are especially valuable natural resources in Georgia

They occupy about 40 per cent of the territory of the country and have exceptional importance at the national, regional, and global levels. 95–98 per cent of the Georgian forests have natural origin. 60 per cent of the forest belongs to the Black Sea and 40 per cent to the Caspian Sea basins. 97 per cent of the forest is represented by mountain forests. More than 70 per cent of forests are located 1000 meters above sea level and 80 per cent on slopes of more than 200.

Their composition, structure, growth, development and other characteristics determine a rich biological diversity – up to 400 tree and shrub species grow in Georgian forests. The large number of endemic timber tree species points at the high diversity of dendroflora. Among endemic species 61 species are endemic to Georgia and 43 are endemic to the Caucasus.

Georgian forests not only conserve the unique biological diversity of Georgia, but ensure continuous delivery of vital direct

and indirect benefits and resources to the population. This in turn facilitates the functioning of the fields of economy, the growth of human welfare, poverty elimination and creates a favourable environment for the sustainable development of the country.

Forests are required to meet different demands of the national economy and the population. Forest resources are crucial for carrying out social-environmental functions e.g. water regulation, soil protection, climate regulation, recreational, resort, sanitary-hygienic, aesthetic and other useful functions having great significance for the country. Clean water supply for the major part of the Georgian population depends on forests. Forests regulate water quality and mitigate the risk of flooding and flash flooding by regulating the run-off of precipitation. They help to prevent soil erosion. They mitigate the risk and impacts of landslides, avalanches and mudflows. The mentioned regulatory functions are very important for the development of hydro energy (since healthy forests decrease the amounts of river sediments and thus protect water reservoirs from filling) and agriculture (erosion control, pest control, pollination of agricultural crops, etc.). Georgia's forests provide timber for industrial and household use, as well as non-timber resources including medicinal plants. Forestry activities and processing of forest resources can generate

significant value and work possibilities, and thus increase incomes and prosperity of the rural population.

Georgia's forest plays a crucial role in greenhouse gas balance. The socio-economic situation in the country after gaining independence has had an extremely negative impact on the forestry sector and has had a direct impact on forests, leading to a significant reduction in their carbon dioxide absorption potential. Nevertheless, the National Greenhouse Gas Inventory Report of Georgia (1990–2017) shows that forests are a significant absorber of greenhouse gases and can make a significant contribution to climate change mitigation under consistent measures.

The concept of the National Forest of Georgia states that climate change will significantly affect the forests of Georgia. Doing nothing or reacting too late will put forests at risk of catastrophic degradation. This will lead to a decrease in the quality of forest products and forest service. It should be said that in the two important forest areas of the country, Borjomi and Chkhokhatauri, the accumulation of carbon dioxide has decreased by 16 and 7.3 tons per hectare, respectively, over the last 30 years.

Rusudan Simonidze and Merab Sharabidze  
"Green regions"

<https://www.airclim.org/northern-forests-and-climate-change>



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## Natural Climate Solutions must embrace multiple perspectives

To limit global warming to well below 2°C, immediate emissions reductions must be coupled with active removal of greenhouse gases from the atmosphere. "Natural Climate Solutions" (NCS) achieve atmospheric CO<sub>2</sub> reduction through the conservation, restoration, or altered management of natural ecosystems, with enormous potential to deliver "win-win-win" outcomes for climate, nature and society. Yet the supply of high-quality NCS projects does not meet market demand, and projects already underway often fail to deliver their promised benefits, due to a complex set of interacting ecological, social, and financial constraints. How can these cross-sectoral challenges be surmounted? Here we draw from expert elicitation surveys and workshops with professionals across the ecological, sociological, and economic sciences, evaluating differing perspectives on NCS, and suggesting how these might be integrated to address urgent environmental challenges. We demonstrate that funders' perceptions of operational,

political, and regulatory risk strongly shape the kinds of NCS projects that are implemented, and the locations where they occur. Because of this, greenhouse gas removal through NCS may fall far short of technical potential. Moreover, socioecological co-benefits of NCS are unlikely to be realized unless the local communities engaged with these projects are granted ownership over implementation and outcomes.

Source:

Frontiers, Abstract of PERSPECTIVE article Carbon Dioxide Removal, Volume 5-2023 | <https://doi.org/10.3389/fclim.2023.1216175>

<https://www.frontiersin.org/articles/10.3389/fclim.2023.1216175/full>



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## At what temperature would melting become irreversible?

One of the biggest contributors to the increasing speed of sea level rise of 3.4 millimetres a year is the Greenland ice cap, which is 3 kilometres thick and has the potential to raise sea levels by 7 metres if it all melted. Scientists have been working out at what temperature Greenland's melting would become irreversible. The threshold, according to a new study presented in Nature, is between 1.7°C and 2.3°C above pre-industrial levels. As current projections predict that global temperatures are set to rise by up to 3°C this century, the world is perilously close to the tipping point. Against that, the researchers point out that by the time we would get back down to 1.5°C, sea levels would already be 2 or 3 metres higher than now.

<https://www.theguardian.com/news/2023/oct/27/at-what-threshold-is-greenland-ice-caps-melting-irreversible>



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## Denmark's action plan for plant-based foods

The Danish government has recently launched the world's first national action plan for plant-based foods. This comprehensive initiative, spanning the entire plant-based value chain from farm to table, aims to underscore Denmark's leadership in green foods on a global scale. Stemming from the 2021 Agreement on Green Transformation of Danish Agriculture, the action plan is the result of a dedicated year and a half of collaborative efforts.

Expressing his enthusiasm, Food Minister Jacob Jensen declared: "It is with great pleasure and not least pride that I, on behalf of the Danish government, can today present the action plan for plant-based foods. A more plant-rich diet, aligned with the Official Dietary Guidelines, undoubtedly contributes significantly to reducing our climate footprint."

The action plan introduces a series of initiatives, including grant programmes, start-up consultation, the development of plant-based education, and efforts to attract investments.

Jensen also expressed his intent to prioritise plant-based food production as a European policy focus during Denmark's six-month presidency in the second half of 2025.

In response to global interest among policymakers, the Danish agriculture ministry is now translating the 35-page document into English. This move aligns with the growing recognition that the plant-based food market is poised for steady global expansion.

Sources:

Ministry of Food, Agriculture and Fisheries of Denmark, press release, 12 October 2023

<https://fvm.dk/nyheder/nyhed/nyhed/foedevareministeren-har-netop-lancereret-verdens-foerste-handlingsplan-for-plantebaserede-foedeverer>



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### Airdim publications over the last three years

- ▷ No further discussion needed
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- ▷ 1.5°C Pathways for the Council of Europe: accelerating climate action to deliver the Paris Agreement
- ▷ Failing to achieve 1.5°C puts a huge economic burden on our (grand)children
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- ▷ The EU too must revisit its 2030 climate pledge (NDC) as -55% is not compatible with 1.5°C
- ▷ Making the EU ETS and ESR legislation compatible with the Paris Agreement
- ▷ Counting the numbers: EU carbon budget not compatible with 1.5°C target
- ▷ Temperature overshoot – The concept of temporarily going beyond 1.5°C
- ▷ Why the EU must strengthen its climate target
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- ▷ Strengthening EU climate policies
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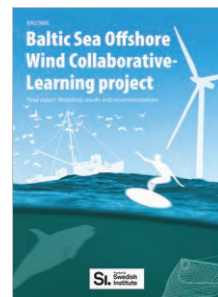
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- ▷ Climate and Health - a summary of knowledge
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## Recent publications from the Secretariat

Reports can be downloaded in PDF format from [www.airclim.org](http://www.airclim.org)



**Baltic Sea Offshore Wind Collaborative-Learning project.** (September 2023). By Emilia Samuelsson, Katarzyna Matuszczak, Krista Pētersons, Richard Henahan & Vaiva Ramanauskienė.



**Fossil-free electricity 2021** (March, 2023). By Fredrik Lundberg. Global EU status and trends.



**1.5°C Pathways for the Council of Europe: accelerating climate action to deliver the Paris Agreement** (September 2022). By Aman Majid et al.



**No further discussion needed. The agreed global goal is to limit temperature rise to 1.5°C.** (March 2023). By Wendel Trio.



**Emissions trading system for road transport and buildings in the policy mix for achieving climate neutrality in the EU.** (December 2022). By Dr. Felix Chr. Matthes, Jakob Graichen.



**Policy implications of Europe's dwindling carbon budget** (September 2022). By Wendel Trio. Defining 1.5°C compatible CO<sub>2</sub> targets for a range of European countries.



**Air pollution in Europe and children's health** (May 2023). Emilie Stroh.



**Failing to achieve 1.5°C puts a huge economic burden on our (grand)children** (September, 2022). By Wendel Trio. Costs of action and inaction for several EU scenarios.

## Coming events

**CLRTAP Executive Body, Forty-third session.** Geneva Switzerland, 11–14 December 2023, Information: <https://unece.org/info/events/unece-meetings-and-events/air-pollution>

**Together for cleaner air in Ethiopia.** Addis Ababa, 18–20 December Information: <https://www.eat.lth.se/english/together-for-cleaner-air-in-ethiopia/>

**Environment Council.** Brussels, Belgium, 18 December 2023. Information: <https://www.consilium.europa.eu/en/meetings/env/2023/12/18/>

**Energy Council.** Brussels, Belgium, 19 December 2023. Information: <https://www.consilium.europa.eu/en/meetings/tte/2023/12/19/>

**International day of clean energy.** 26 January 2024.

**World wetland day.** 2 February 2024. Information: <https://www.un.org/en/observances/world-wetlands-day>

**9th International Nitrogen Conference.** New Delhi, India, 5–8 February 2024. Information: <https://www.n2024.org/>

**Energy Council.** Brussels, Belgium, 4 March 2024. Information: <https://www.consilium.europa.eu/en/meetings/tte/2024/03/04/>

**European Ocean Days.** Brussels, Belgium, 4–8 March 2024. Information: [https://oceans-and-fisheries.ec.europa.eu/news/mark-your-calendars-week-ocean-events-4-8-march-2024-2023-11-29\\_en](https://oceans-and-fisheries.ec.europa.eu/news/mark-your-calendars-week-ocean-events-4-8-march-2024-2023-11-29_en)

**IMO Marine Environment Protection Committee.** London, UK, 18–21 March 2024. Information: <https://www.imo.org/>

**International day of forests.** 21 March 2024. Information: <https://www.un.org/en/observances/forests-and-trees-day>

**Environment Council.** Brussels, Belgium, 25 March 2024. Information: <https://www.consilium.europa.eu/en/meetings/env/2024/03/25/>

**Energy Council.** Brussels, Belgium, 30 May 2024. Information: <https://www.consilium.europa.eu/en/meetings/tte/2024/05/30/>

**European elections.** In all EU member states, 6–9 June 2024. Information: <https://elections.europa.eu/>

**Environment Council.** Luxembourg, 17 June 2024. Information: <https://www.consilium.europa.eu/en/meetings/env/2024/06/17/>

**The international N Workshop.** Aarhus, Denmark. 17–21 June 2024. Information: <https://conferences.au.dk/nworkshop>

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