

Air quality still a major health risk for Europeans

The Covid lockdown led to reduced pollution from traffic in 2020. Nevertheless, 96 per cent of Europeans were exposed to harmful levels of PM_{2.5}.

► Page 5

Will FuelEU Maritime deliver on climate?

Policymakers should introduce dedicated quotas and incentives to boost demand for hydrogen-based shipping fuels.

► Page 6

Implications of attack on Ukrainian nuclear plant

Russian military attacks on Ukrainian power plants were the first real example of an event that was always considered a theoretical scenario.

► Page 14

On track to limit global warming to below 2°C?

A recent Nature article had the headline that current countries' pledges to reduce greenhouse gas emissions may limit global temperature rise to just below 2°C.

► Page 18

Fossil advertising – halfway towards a ban

A campaign that is calling for a ban on fossil advertising at EU level is well underway.

► Page 22

Planning for a green recovery

While the war is still ongoing, the Ukrainian environmental movement has already started to plan for how sustainability can be integrated in the rebuilding of their country.

► Page 24



© LARS-ERIK HÅKANSSON

IED review may bring justice to affected citizens

The proposal for the review of the Industrial Emissions Directive (IED) reveals several improvements, but there are also serious flaws when it comes to reporting and adapting to climate targets.

On 5 April, the European Commission presented its proposal to amend the Industrial Emissions Directive. There are some significant steps in the right direction. Two of the most important are that human health impacts are acknowledged, and that the polluter-pays principle is strengthened. There are also improvements in access to justice for the public and civil society, including a compensation right for citizens. Sanctions have also been

strengthened. Bellinda Bartolucci, lawyer at ClientEarth welcomes this in particular:

“Thousands of people live in the impact radius of industrial installations all over Europe, and to date have been powerless to push back or claim reparations for the harm they suffer if these installations break the law. That’s changed now – the new compensation right in the revised IED is a revelatory solution. We should be see-

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:

Air Pollution & Climate Secretariat

Första Långgatan 18, 413 28 Göteborg, Sweden

Tel: +46 31 711 45 15

E-mail: info@airclim.org

Internet: www.airclim.org

Editor: Kajsa Pira

Assistant editors: Emilia Samuelsson, Ebba Malmqvist, Marko Reinikainen & Reinhold Pape

Printed by Trydells Tryckeri, Laholm, Sweden.
ISSN 0281-5087.

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

Spring has arrived in Sweden and the trees are bursting into leaf. But these are also worrying times, as India and Pakistan suffer unprecedented heatwaves, many of us are breathing harmful air, and war is an ever-present cloud.

At times like this it is easy to feel despair and forget the beauty of spring. But it is at such times that we not only need to hold onto our

visions – to achieve the 1.5-degree goal and clean air for all – but also need narratives that show it is possible.

In the latest IPCC report the narrative of Shared Socioeconomic Pathways (SSPs) shows us what we need to do to achieve the goal of 1.5 degrees. The 1.5-degree goal narrative is called the Sustainability narrative and requires the world to shift gradually, but pervasively, toward a more sustainable path, emphasising more inclusive development that respects environmental boundaries and the management of global commons. We shift focus from an emphasis on economic growth toward a broader emphasis on human well-being and are driven by an increasing commitment to achieving sustainable development goals. The narrative guides us in the direction we need to take to reach the 1.5-degree goal, but it also paints a storyline of better overall environmental quality, human equity, and wellbeing.

Is the work of narratives something that we can adapt for our air quality goals?

The revision of the EU ambient air quality directive is underway and will decide if EU citizens will have the right to clean air in the future. AirClim will push for air quality limits that are in line with the recommendations of the World Health Organization. As you can read in the article on page X, almost all EU residents today are forced to breathe air that is considered harmful. It impacts on our whole lives, from increased risk of being born prematurely, to a life of asthma attacks, cardio-respiratory diseases, cognitive decline, and premature death.

Part of the revision process is the Impact

Assessment, which investigates the societal costs of setting different air quality limits and whether they are achievable given different narratives. In the latest stakeholder meeting we were presented with a few nar-

ratives (scenarios) for our future. The most ambitious was called the Maximum Feasible Scenario, which sounds like a very ambitious narrative, coupled

with a societal transformation of putting health before profit. Unfortunately, the term “maximum feasible” is defined very narrowly, mainly based on already existing technical solutions, and in 10 to 30 years from now it still assumes solid fuels are used to heat homes, cars still run on combustion engines, and fossil fuel is used to produce energy. It ignores the possibility of reducing emissions through lifestyle changes, such as eating less meat and a modal shift to cycling and public transport. Nor does it include policy measures such as low-emission zones, congestion charges, scrappage schemes for old stoves and cars, which must be seen as fully feasible. The end result of the “maximum feasible” narrative shows that it will be hard to reach WHO air quality guidelines, and this could unfortunately be used as an argument not to attempt to strive for this ambition.

I think we need to paint a more inclusive narrative of what we can do. Let our ambition of clean air for all guide us. Let's learn from climate science and instead use back-casting scenarios to guide us in what is needed to reach the WHO air quality guidelines. My guess is it would be a narrative that will lead us towards fewer cars in cities and more bikes and public transport. Where old cars are scrapped, and materials are reused to build electric cars for those necessary car trips. A world where our homes are insulated and use heat pumps driven by renewables, and where renewables have led to new jobs. This storyline will end with us reaching our goal of clean air for all.

Ebba Malmqvist

“we need to paint a more inclusive narrative of what we can do”

AirClim

► IED-review may bring justice ...

Continued from front page

ing more of this in the next generation of EU laws.”

The proposal also includes other polluting sectors previously not included, such as cattle, and a lowering of the threshold for livestock units. Under current legislation, about 20,000 farms with pigs and poultry are subject to a permitting regime. If the proposal is passed that number will increase to 185,000, which corresponds to 13% of the EU's largest livestock farms. The Commission says that they are responsible for 60% of the EU livestock emissions of ammonia and 43% of methane. Another improvement in the agricultural sector is that Best Available Technique (BAT) will also apply to the spreading of agricultural waste (such as manure).

Some major shortcomings in the IED are listed by various NGOs in Europe. One serious remark is that the proposal has not been aligned with EU climate legislation. Article 9 (1) would need to be deleted to live up to Europe's growth strategy to ensure a climate-neutral, clean, and circular economy by 2050. The new geopolitical and energy market reality requires faster implementation of the clean energy transition to reduce Europe's energy dependence on unreliable suppliers and volatile fossil fuels and live up to its goal of decarbonisation.

The Annex V, which lists technical requirements for large combustion plants, is currently also seen as outdated by civil society stakeholders and would need to be amended to achieve EU climate ambitions. The IED should be amended in order to meet the ambition of phasing out coal combustion by 2027 at the latest and fossil gas combustion by 2035.

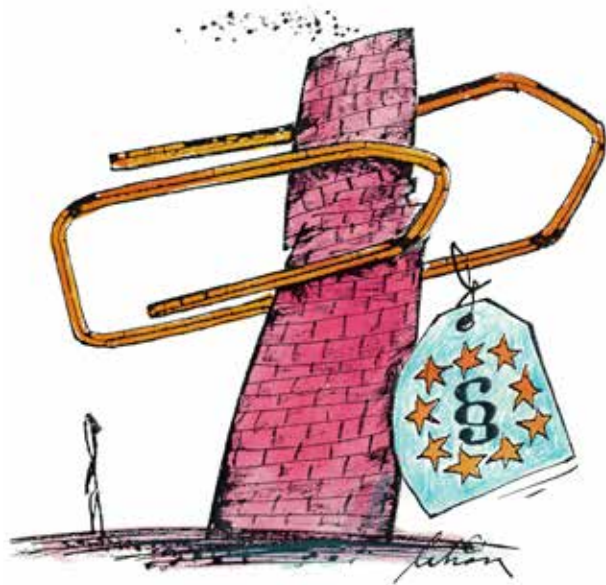
Furthermore, IED needs to move beyond the scope and mindset of the nineties, when pollution was mainly tackled using end-of-pipe solutions, instead of incentivising system change. For example, for energy industries, the scope includes sub-activities from highly polluting (fossil-based) energy industries, including thermal combustion plants above a certain thermal capacity threshold. Instead, the directive could have

defined the BAT for producing the end product, which in this case is energy (electricity, heat, or mechanical energy). At the end of the day, it is the energy or steel that we will use and if there are smarter ways to produce it without externalities, such as pollution, this should be what we strive for. It might no longer be competitive, acceptable, nor economically sound, to promote incremental improvements at the end-of-pipe level only, when a faster and deeper transition in production methods is required. This transition also requires a more efficient strategy for the polluter-pays principle. Currently, the European Environment Agency estimates the costs of air pollution from industrial activities in Europe at over 400 billion euro, while the European Court of Auditors recently confirmed that just 3% of industrial pollution is taxed.

Bringing in a lifecycle perspective for production, such as including upstream activities for oil and gas, is currently still lacking in the IED proposal. The massive electrification programme underway in the EU to reduce the use of internal combustion engines will require batteries and it is positive that the extraction and treatment of non-energy minerals has been included, such as the manufacture of lithium-ion batteries with a capacity exceeding 3.5 GWh per year. However, it is unclear why this was raised from the initial 2.5 GWh per year at the last moment.

Civil society also highlighted that it is time for the reporting of the environmental impact of industry in the Pollutant Release and Transfer Register (“the E-PRTR Regulation”) to join the digital age, which would allow for faster reporting and access to information. Under the current situation, reporting of data has lagged by about two years. Jozse Roth from EEB believes that “better IT tools at EU level could strengthen progress tracking and benchmarking on environmental performance”.

The IED is an important EU instrument for preventing pollution at source



and could have the potential for the EU to live up to its Zero Pollution Ambition. Installations regulated by the IED account for about 20% of the EU's overall emissions into the air, around 20%, into water and approximately 40% of greenhouse gas (GHG) emissions.

The 2020 evaluation of the IED concluded that it was generally effective in preventing emissions into air, water, and soil and by promoting the use of best available techniques (BAT). However, it had made limited contributions to decarbonisation and a circular economy. Another issue found in the 2020 evaluation was the varying levels of ambition for implementation across member states, preventing the IED from delivering on its objectives to create a level playing field among member states and for the population to breathe clean air. The IED failed to deliver on its goal to support the polluter-pays principle, according to the European Court of Auditors. The EU also had to review the IED to live up to its European Green Deal objectives of reaching carbon neutrality, increased energy efficiency, a non-toxic environment, a circular economy and the 2030 Agenda for Sustainable Development and its Sustainable Development Goals.

Ebba Malmqvist & Kajsa Pira

Link to IED proposal: https://ec.europa.eu/environment/publications/proposal-revision-industrial-emissions-directive_en

Link to NGO comments:

<https://caneurope.org/joint-civil-society-statement-on-the-revision-of-eu-ied-and-e-prtr/>

<https://eeb.org/new-eu-laws-on-industrial-pollution-not-fit-for-zero-pollution-ambition/>

The untapped potential of rooftop solar power

A new report produced by CAN Europe and its member organisations focusing on rooftop solar PV on residential buildings (for both individual and collective self-consumption) shows that there are still significant barriers at national level which impede a higher uptake of rooftop solar PV, and many member states still lack the right regulatory framework and enabling environment. Rooftop solar PV installations have enormous potential and can be built out quickly, enabling households to shift from being mere consumers of energy to “self-generators” putting the control of electricity production back in their hands and making them active participants in the renewable energy transition. A European Joint Research Centre (JRC) analysis shows that rooftop PV in the EU could

potentially produce 680 TWh of solar electricity annually (representing 24.4% of electricity consumption). Furthermore, investments in the solar sector generate the most jobs per million euros of capital investment and can be implemented in a short timeframe, in particular on rooftops. On top of enormous benefits for households from lower energy bills to clean and affordable energy, PV systems on rooftops do not compete with land use, and their integration into the electricity system is relatively easy due to their proximity to the point of consumption.

Source: CAN Europe press release, 16 May 2022, <https://caneurope.org/rooftop-solar-pv-comparison-report/>

Rooftop PV could deliver almost a quarter of EU electricity consumption.



© RENE NOTENBOMER / SHUTTERSTOCK.COM

The EU's Fit for 55 proposals are not fit for 1.5

AirClim has published several climate policy briefings which demand that the EU must increase its climate ambition. “The EU's Fit for 55 proposals are not fit for 1.5. If the EU really wants to contribute to implementing the Paris Agreement it needs to increase ambition in each piece of legislation that is part of the EU climate legislation,” says Wendel Trio, author of the briefings. Climate Action Network Europe demands that

“the EU needs during 2022 to increase the ambition of the Fit for 55 package in line with limiting global temperature increase to 1.5°C and move away from false solutions like more fossil fuels and nuclear”. Trio argues that “the current EU carbon budget is not compatible with the 1.5°C target. Current EU climate policy proposals would lead to the EU consuming 10% of all carbon emissions the world can still emit while keeping a decent chance to stay below 1.5°C of warming. But the EU only represents around 5% of the world's population. Is this climate justice?” Trio asks. “The EU's main pieces of climate legislation, the ETS and the ESR, must and can be substantially improved to meet the 1.5°C objective of the Paris Agreement. Adjusting the reduction pathways to actual current emission levels would already have a strong impact.” According to Ulriikka Arnio from CAN Europe: “the revision of the

EU Land and Forestry regulation during 2022 is a chance to mitigate both climate and biodiversity crises. EU forests, peatlands and natural ecosystems need to be protected and restored”. A joint statement on these issues from the environmental movement was published recently.

“The EU too must revisit its 2030 climate pledge (NDC) as -55% is not compatible with 1.5°C”: <https://www.airclim.org/sites/default/files/documents/23-airclim-briefing-eu-too-must-revisit-2030-climate-pledge.pdf>

“Counting the numbers: EU carbon budget not compatible with 1.5°C target”: <https://www.airclim.org/sites/default/files/documents/21-airclim-briefing-counting-numbers-eu.pdf>

“Making the EU ETS and ESR legislation compatible with the Paris Agreement” <https://www.airclim.org/sites/default/files/documents/22-airclim-briefing-ets-esr-under-carbon-budget.pdf>

“Joint NGO statement: Protecting nature and fighting climate change must go hand in hand” <https://caneurope.org/content/uploads/2022/05/Joint-NGO-statement-Protecting-nature-and-fighting-climate-change-must-go-hand-in-hand.pdf>



The EU is taking a big chunk of what is left of the global carbon budget.

© ALEXANDER_DG / SHUTTERSTOCK.COM

Air quality still a major health risk for Europeans

The Covid lockdown led to reduced pollution from traffic in 2020. Nevertheless, 96 per cent of Europeans were exposed to harmful levels of fine particulate matter (PM_{2.5}).

The European Environmental Agency (EEA) has published data on the state of air in 2020 and how the population in Europe has been affected by air quality. 2020 was a year in which everyone was affected by the Covid-19 pandemic and most countries implemented lockdown measures to minimise the spread of the disease. One indirect effect of the lockdown measures was a reduction in air pollutants from some sectors, mainly related to transport (road, shipping, and aviation), although some reduction in industrial activities also decreased emissions. Other sectors such as agriculture remained unchanged and there was a small increase in domestic heating as people spent more time at home. The largest effect was seen

in nitrogen dioxide levels (NO₂) in major cities in France, Spain, and Italy during the first lockdown in spring 2020.

Nevertheless, most of the urban population in the EU was exposed to harmful air pollutants, for example 96% of the urban EU population was exposed to fine particulate matter (PM_{2.5}) concentrations above the 2021 WHO guideline of 5 µg/m³. In contrast, only 1% of the urban population was exposed to PM_{2.5} levels above current EU policy, highlighting the discrepancy between current EU policy objectives and the scientific evidence on when health effects occur. No PM_{2.5} data was reported from some EU countries (Cyprus, Latvia, Slovenia) and there is a large variation in the number of PM_{2.5} monitoring stations by country,

for example Denmark only reported from one station.

NO₂ levels were generally below current EU policy with exceedances at 1% of the stations, and all exceedances were at traffic stations. Once again there is a large discrepancy between limits under EU policy and those recommended by WHO, with the latter resulting in exceedances at 73% of the stations.

For ozone, levels were generally reduced, probably due to lower levels of ozone precursors from traffic emissions, but they were still high in some Mediterranean countries and central Europe.

Sources:

ETC-HE Report 2022/3

<https://www.eionet.europa.eu/etc-he/products/etc-he-products/etc-he-reports/etc-he-report-2022-3-status-report-of-air-quality-in-europe-for-year-2021-using-validated-and-up-to-date-data>

Briefing EU Air quality status

<https://www.eea.europa.eu/publications/status-of-air-quality-in-Europe-2022/europes-air-quality-status-2022>

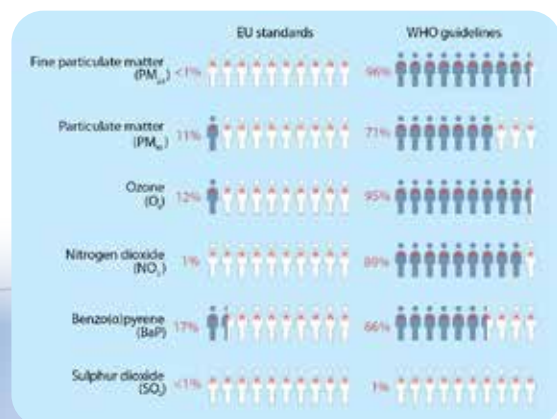


Figure (left). Share of the EU urban population exposed to air pollutant concentrations above EU standards and WHO guidelines in 2020.

Nitrogen dioxide levels (NO₂) decreased sharply in major cities in France, Spain, and Italy during the first lockdown in spring 2020



Will FuelEU Maritime deliver on decarbonisation?

Policymakers should introduce dedicated quotas and incentives to boost demand for hydrogen-based shipping fuels.

The FuelEU Maritime regulation was put forward by the European Commission in July 2021 as part of its “Fit for 55” package. Together with four other legislative proposals, it seeks to steer the EU maritime sector towards decarbonisation.

But the inclusion of fossil gas (LNG) in the Commission’s FuelEU Maritime proposal is incompatible with the recommendations of the latest report by the Intergovernmental Panel on Climate Change (IPPC), writes Faig Abbasov from Transport & Environment (T&E) in an article in Euractiv.

According to a recent T&E study, fossil gas will make up nearly a quarter of the total energy used for EU shipping by 2030, as misguided EU sustainability targets encourage an uptake of LNG. This will lock-in fossil fuel use for decades while bringing limited benefits to the climate.

Faig Abbasov: “As an essential part of Europe’s economy, maritime transport must contribute its fair share to the continent’s decarbonisation and transition away from dependence on fossil energy. Promoting fossil LNG goes against any common sense, geopolitically and environmentally.”

In brief, the Commission’s FuelEU Maritime proposal seeks to drive the

uptake of low-carbon fuels by introducing limits on the carbon intensity of the energy used on board ships and mandates the use of onshore power supply (OPS) in EU ports.

A briefing from the European Parliament concludes that the proposal aims to reduce the annual average GHG intensity of energy used on board in three steps, starting from 2025 with a modest 2 per cent improvement compared to a 2020 baseline. However, the requirements would get increasingly stringent over time, with a 6 per cent improvement required by 2030 and a 75 per cent cut by 2050.

The requirements would apply to all the energy used on board a ship in or between EU ports, but to only 50 per cent of the energy used by ships arriving at or departing from EU ports on voyages to third countries. They would apply to most big commercial vessels (above 5,000 gross tonnes, GT), regardless of flag. T&E has estimated that using this size limit exempts 19.7 Mt of emissions from vessels below the 5,000 GT threshold, and therefore suggests lowering the size limit to 400 GT.

The geographical scope is the same as in the proposed EU-ETS extension, but

the FuelEU Maritime proposal applies a full lifecycle approach to determine CO₂ emission equivalents (including methane and nitrous oxide) from the energy used.

Regarding OPS, from January 2030 container and passenger ships staying at EU ports for more than two hours will have to connect to a shore-side electricity supply and use this electricity for all energy needs while at berth, unless they use zero-emission technologies. However, exemptions would be allowed until 2034. It should be noted that the proposed OPS mandate is limited to passenger and container ships, which according to calculations by T&E leaves out more than half of EU emissions at berth, i.e. 5 Mt of CO₂ and 3 kt of sulphur dioxide per year.

Non-compliance with both the fuel standards and with the OPS requirements will result in harmonised penalties, and the money collected will feed into the EU’s Innovation Fund and help finance the production of renewable maritime fuels and other greening activities in the maritime sector.

In contrast to recent conclusions made by the IPCC on the need to halve greenhouse gas emissions by 2030 and achieve full



© AUDIO UND WERBUNG / SHUTTERSTOCK.COM

EU hydrogen plan may do more harm than good

The EU's flagship hydrogen plan has been labelled 'dangerous' by Transport & Environment (T&E) and risks undoing positive, ambitious steps to promote a fuel that will be vital for decarbonising shipping and aviation.

T&E has warned that the target of 5.7% of all transport energy to be supplied by green hydrogen and e-fuels is not backed by data and could increase Europe's demand for electricity by as much as a third.

EU climate chief, Frans Timmermans, said himself that hydrogen would only qualify as renewable if during its production it does not increase the use of electricity generated from fossil fuels and if it returned as much renewable electricity to the grid as it used up. Instead, the EU Commission has applied a 'grandfathering clause' which means additionality - the coupling of hydrogen production with new renewable energy generation - does not apply to energy production sites set up before 2027.

If this proposal is adopted, a hydrogen facility built within the next five years could use grid electricity - a mix of fossil, renewable and nuclear power - forever to develop 'renewable' hydrogen. Combined with increased demand for electricity to make the new hydrogen, this would make the energy grid dirtier and put pressure on household energy bills.

Source: T&E press-release, 24 May 2022, <https://transenv.eu/3ahRyKp>

Hydrogen may only qualify as renewable if production does not increase the use of electricity generated from fossil fuels and if the return of renewable electricity to the grid equals what is used up.



© OLEKSIY MARK / SHUTTERSTOCK.COM

decarbonisation by 2050, the Commission proposal aims to achieve just 75 per cent decarbonisation of shipping by 2050 with no significant emission cuts during the current decade.

The IPCC report also states that fossil gas is inadequate to deliver stringent decarbonisation in shipping. Instead it recommends promoting hydrogen-based alternative fuels, including ammonia and other synthetic fuels for shipping.

Delphine Gozillon, sustainable shipping officer at T&E, said: "Europe's policymakers should introduce dedicated quotas and incentives to boost demand for hydrogen-based fuels. Genuinely clean solutions do exist, but currently they are expensive. If we kick start demand now, a green shipping future is possible. Continue to waste precious time on fossil gas and it will start to look impossible."

The proposed FuelEU Maritime legislation is currently under discussion in the European Parliament and the Council. A vote in Parliament's Transport Committee (TRAN) is scheduled for July and a vote in the Plenary could take place in September, which means that a final text could be adopted in autumn 2022.

Christer Ågren

Sources:

Sustainable maritime fuels "Fit for 55" package: The FuelEU Maritime proposal (April 2022). European Parliament Briefing 698808. Link: [https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/698808/EPRS_BRI\(2021\)698808_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/698808/EPRS_BRI(2021)698808_EN.pdf)

How the IPCC report contradicts the EU's vision on shipping (20 April 2022). Euractiv. Link: <https://www.euractiv.com/section/shipping/opinion/how-the-ipcc-report-contradicts-the-eus-vision-on-shipping/>

IPCC AR6 – Summary for policymakers. (April 2022). Link: <https://www.ipcc.ch/2022/04/04/ipcc-ar6-wgiii-pressrelease/>

EU Fuel Maritime – T&E recommendations for driving the uptake of sustainable and scalable marine fuels (February 2022). Transport & Environment Policy Briefing. Link: <https://www.transportenvironment.org/discover/the-eus-fuel-maritime-proposal-will-lock-in-gas-until-the-2040s/>

Proposal for a regulation of the European Parliament and of the Council on the use of renewable and low-carbon fuels in maritime transport and amending Directive 2009/16/EC (COM/2021/562 final) (July 2021). European Commission. Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0562&qid=1631197035907>

UN review of the long-term climate target



Climate Action Network has sent a submission to the UN Climate Convention with proposals for the Second Periodic Review and the Structured Expert Dialogue (SED). The submission focuses on seven elements:

1. Definition of the long-term goal
2. Consideration of the risks of overshooting the long-term goal
3. Scenario development to reach the long-term goal
4. Recognition of the gap to reach the long-term goal
5. Identification of action delivered

until now

6. Contribution from the IPCC to the third Structured Expert Dialogue
7. Suggestions for further research on the long-term goal.

Information about SED meetings: <https://unfccc.int/topics/science/workstreams/periodic-review/SED>

CAN's submission to SED: https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202203041045---CAN%20Submission_Third%20SED_February2022.pdf



Flanders acts on nitrogen pollution

In April the Flemish government presented a proposal to deal with the high levels of nitrogen emissions in the region. With the package of measures, Flanders wants to drastically reduce emissions to avoid a permit freeze such as that in place in the Netherlands, where nitrogen emissions are the highest in Europe.

The package includes withdrawing permits for 40 livestock farms and two manure treatment plants with a particularly high nitrogen impact by 2025. These will be compensated financially, and they will be given an extra bonus if the business is closed earlier. In addition, there will be a programme for voluntary decommissioning of livestock farms with a medium-high nitrogen impact. The intention is to

reduce the number of pigs in the region by 30% by 2030.

The remaining livestock farms are obliged to reduce their ammonia emissions. For poultry and pigs, the requirement is a 60 per cent reduction at barn level by 2030. For beef cattle 7.7% and for dairy cattle 23.7%.

Exceptions are made for small-scale and organic farms with little nitrogen impact and ammonia emissions below 500 kg per year.

They also propose to introduce a ban on the spreading of manure and fertilisers in sensitive areas from 2030.

According to the largest farmers' union, Boerenbond, the framework "is a sledgehammer blow for our agriculture

and horticulture". Another farmers' union, Algemeen Boersyndikat, also expresses disappointment with the way the legislation was drafted but still recognises the need for it: "it is necessary to look at this file with some form of future orientation for the farming sector, as well as from an environmental point of view".

The environmental organisation Bond Beter Leefmilieu comments on their discontent: "The fact that this has to be done in a way that is very painful for farmers and very expensive for society is not so much the fault of the current choices, but of years of bad policy".

The draft legislation is open for consultation until 17 June: <https://omgeving.vlaanderen.be/openbaar-onderzoek-pas>

Farmers will be obliged to reduce ammonia emissions from dairy cattle by almost a quarter.





© MASTER1305 / SHUTTERSTOCK.COM

Consultation on Sustainable Food Systems

The European Commission has opened a consultation on a legislative framework for a Sustainable Food System, which was originally announced in the Farm to Fork Strategy. They plan to present a full proposal by the end of 2023.

The aim of the Commission with this initiative, as explained on their website, “is to make the EU food system sustainable and to integrate sustainability into all food-related policies” and to “lay down general principles and objectives, together with the requirements and responsibilities of all actors in the EU food system”.

More specifically the Commission has identified three areas where the new

directive will set up rules: sustainability labelling of food products; minimum criteria for sustainable public procurement of food; and governance and monitoring.

It is believed that this piece of legislation has the potential to be a game-changer in EU policymaking, framing any subsequent policy reforms in the areas of agriculture and food in the logic of a more systemic transition to sustainable food systems.

The consultation is open until 21 July 2022: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13174-Sustainable-EU-food-system-new-initiative_en

Fungi-based meat alternatives can stop deforestation

If 20 per cent of global consumption of meat from ruminants is replaced by microbial protein by 2050, it would be enough to stop the expansion of pastures and the deforestation that would result from increased food demand, according to a recently published analysis from the Potsdam Institute for Climate Impact Research (PIK). Related CO₂ emissions would roughly halve.

“The reduced numbers of cattle do not only reduce the pressure on land but also reduce methane emissions from the rumen of cattle and nitrous oxide emissions from fertilizing feed or manure management,” says lead author Florian Humpeöder.

Microbial protein is a meat alternative produced in fermentation tanks using sugar as feedstock.

“There are broadly three groups of meat analogues,” Isabelle Weindl, co-author, explains. “There are plant-based ones like soybean burger patties, and animal cells grown in a petri dish also known as cultured meat, which is so far very expensive but got a lot of public attention recently.

And there’s fermentation-derived microbial protein, which we consider most interesting. It is available in a large variety already today in supermarkets, for example in the UK or in Switzerland, and, importantly, it can be largely decoupled from agricultural production. Our results show that even accounting for the sugar as feedstock, microbial protein requires much less agricultural land compared to ruminant meat for the same protein supply.”

The authors see microbial protein as a promising substitute but raise some reservations about energy use in production. “A large-scale transformation towards biotech food requires a large-scale decarbonisation of electricity generation so that the climate protection potential can be fully developed,” co-author Alexander Popp



© DRONG / SHUTTERSTOCK.COM

A stir-fry of mycoprotein instead of beef can cut carbon emissions significantly.

adds. “Yet if we do this properly, microbial protein can help meat-lovers embrace the change. It can really make a difference.”

PIK Press release 4 May 2022 <https://www.pik-potsdam.de/en/news/latest-news/fungi-based-meat-alternatives-to-help-save-earth2019s-forests>

Article in Nature <https://doi.org/10.1038/s41586-022-04629-w>

CCS around the world

This is a continuation of an article from the previous issue, here presenting the situation for Carbon Capture and Storage (CCS) in Australia, China and the US.

Fredrik Lundberg

Little new CCS in near future

In April 2022 there were five larger projects under construction according to the pro-CCS Australian think tank, the Global CCS Institute and its database CO2RE.

Two of them are in Norway, involving the capture of 0.4 Mton/yr at a cement factory, plus a storage facility.

Of the 3 non-Norwegian projects, one is the ZEROS project in Texas(1), for which there is little detail. This is a "proposed" project (for operation in 2023) not yet under construction. A "diverse range of waste fuels" will be burned in 2x120 MW boilers.

Sinopec Qili(2) in China is a chemical plant, and will use the CO₂ for enhanced oil recovery. It will send 0.5 Mton of CO₂ per year into the ground, but the

extra oil would emit roughly the same amount. It is said to be operative in 2021. It is still "under construction" by April 2022 according to CO2RE.

Guodian Taizhou(3), also in China, is a 4000 MW coal power station which at full utilisation emits some 20 Mtons per year. Of this, 0.5 Mton would be captured and mainly used for enhanced oil recovery. It is said to be operating "in the early 2020s".

Santos Cooper Moomba(4) CCS in Australia is another gas processing plant, aiming to capture 1.7 Mton/year from 2023. It has been under consideration since at least 2006, but was announced in the Glasgow COP. It is eligible for carbon credits under a government scheme, and has also received a direct

federal subsidy. It has been called a "scam" by the Australia Institute as it may be used for enhanced oil recovery.

A Louisiana project(5) for blue hydrogen is also in the CO2RE as under construction for "expected" operation 2025-26, very big and very vague, and can not be considered as really under construction.

At best, all projects now classified as under construction (excluding Louisiana) would store 4. Mtons per year. For comparison, global CO₂ emissions are about 31,500 Mtons/yr. The shift to renewables has reduced global CO₂ emissions by 1348 Mtons between 2016 and 2020, and by 440 Mton in 2020 alone, according to the IEA .

CCS Australia: Oil & gas industry asks for more

The Australian Petroleum Production and Exploration Association (APPEA) – a leading lobby group for the oil and gas industry – has called for more government support to be provided to carbon capture and storage projects from the Morrison government.

Their one project so far is the Gorgon LNG CCS (6), which came far too late and captured far too little CO₂ to meet the conditions for government approval back in 2009. Chevron and its partners have agreed to buy carbon credits likely to cost more than 180 million USD as a penalty for failing to meet a five-year target for carbon capture and storage, according to Reuters. This is on top of the 2.3 billion USD investment in the CCS plant. Reuters also said that by November 2020 Gorgon had captured

5.5 million tonnes, which indicates that it operated at about half capacity during the first two years and a few months.

Though CCS is hardly a success story so far, the APPEA wants more of it and more taxpayer money, this time for "blue hydrogen", i.e. hydrogen produced from natural gas with CCS.

Other Australian companies are betting on green hydrogen, electrolysis of water from wind and solar electricity. The plans are huge, with a project pipeline of 69 GW of electrolyser capacity (equivalent to 69 nuclear power reactors), according to Rystad Energy. This is ahead of Europe, where green hydrogen projects are also popping up at bewildering speed. It is too early to tell how many of the plans will eventually materialise.

Australia is heading for a war between

Blue and Green hydrogen, of global significance. The Blues fired the first shot in January 2022 with a project(7) for hydrogen from brown coal to be exported on a liquid hydrogen ship to Japan. The project is being led by a Japanese-Australian consortium including Japan's J-Power, Kawasaki Heavy Industries, Shell and AGL.

A "world-first that would make Australia a global leader", commented Prime Minister Scott Morrison.

But as Tim Baxter, a senior researcher for climate solutions at the Climate Council told the Guardian: "Hydrogen derived from fossil fuel sources, like what is being shipped out of the LaTrobe Valley, which is derived from some of the world's dirtiest coal, is really just a new fossil fuel industry."

Midwest Carbon Express – huge CCS pipeline project

A 2000-mile Midwest Carbon Express project(8) intends to coalesce the carbon dioxide emissions from 31 ethanol plants in five states and ship it to North Dakota. The project, announced last summer, with additional detail in January 2022, is led by agri-business leader Bruce Rastetter, who is a well-known donor to the Republican Party, and his companies Summit Agricultural Group and Summit Carbon.

One corner of the proposed grid goes to Decatur, Illinois where agri-giant ADM now has an ethanol plant with CCS. It is the only significant bioenergy CCS (BECSS) plant in the world, and one of only five major CSS plants in the world that is not used for enhanced oil recovery. Its permit only runs until 2022 and for a maximum of 5.5 Mtons

stored, so its future is far from secure.

The Summit Carbon pipeline network would capture and transport up to 12 Mtons of CO₂ per year, which would make it the biggest CCS project in the world, by far.

The environmental movement is against the project for various reasons. The Sierra Club in Iowa, which is at the centre of the project, has stated that

“CCS is a false solution in this instance because:

- It does not address other emissions or forms of pollution from fossil fuel extraction and industrial agriculture
- It will allow for the extension of fossil fuel extraction through enhanced oil recovery
- Fails to acknowledge CO₂ is incredibly dangerous and a pipeline leak

or break could poison surrounding communities and first responders.”

The Sierra Club Iowa claims to have found strong indications that the CO₂ will be used for enhanced oil recovery.

Even if it is actually heading for dedicated geological storage, it is not a big net sink for CO₂. Ethanol from corn without CCS is only 46 per cent less carbon intensive than gasoline, according to a recent study from Harvard and Tufts quoted by agribusiness sources. Whether that would be better or worse after a proposed CCS scheme depends on a number of assumptions about the fate of the captured CO₂, sources of energy for heat and electricity and agricultural practices.

Australia ex-PM: CCS a scam and a con

Australia is the top world coal exporter and has long been very supportive of CCS, having spent several billion dollars on the technology and on propaganda for it.

Not all of its politicians agree.

“Now this is a scam and a con. CCS is a proven failure,” said Malcolm Turnbull, prime minister of the right-centre Liberal government between 2015 and 2018, according to the Canberra Times.

Turnbull was talking specifically about “blue hydrogen”, which is made from fossil fuels with the CO₂ captured and stored, but also about CCS in general.

CCS Institute: Less CCS in operation in 2021

The CCS Institute, a think tank, or PR organisation, for the CCS Industry in Australia publishes an annual report, Global Status of CCS, on developments in the field.

Not much has happened, it appears.

Since the start of Gorgon LNG CCS in Australia in 2019, four years late, there has been no further new CCS capacity in the world up to September 2021. The capacity declined somewhat in 2020 and stayed there during 2021 to judge from a diagram of worldwide capture capacity, at about 37 Mton/year.

The drop during 2020 can be attributed to the coal power retrofitted CCS plant Petra Nova in Texas, with a capacity of 1.4 Mtons per year. It was suspended in 2020.

Most of the 37 million tonnes are for

enhanced oil recovery. Capture capacity does not mean that 37 Mtons were actually captured.

If any other major CCS project was brought into operation, it is not included in the CCS Institute’s database. The database does however contain a long list of “completed” projects and a few examples of “operation suspended”, one of which is Petra Nova. (See AN2/21.)

The Global Status report 2021 did not have much news, but it did carry a two-page endorsement of CCS by HRH Prince Charles. The message conveyed is that “The sooner we include carbon capture use and storage technologies into the fold of wide-spread decarbonisation initiatives, the more likely we will be able to achieve Paris agreement climate targets and get to net zero emissions”.

© ALPHA_7D / SHUTTERSTOCK.COM

Bye, bye oil, hello peace & democracy

We can get rid of oil, is the chief message of a new AirClim report, *Phasing out oil*. Many of the methods and policies were in fact devised in 1974, and many have been added since.

The report "Phasing out oil" was written just before the Russian invasion of Ukraine. The following events made it even more topical.

Oil emitted about 12.5 billion tonnes of CO₂ in 2021, of a total of 39.7 billion tonnes from fossil fuels, cement and deforestation. It is a big part of the global warming problem.

Oil is now recognised as a problem in other respects as well, not just for the climate and air pollution. Oil dependence became a big issue during the oil crises in 1973 and 1979, and yet again in the early 2010s because of wars in Syria, Iraq, Yemen and Libya.

Over and over again, for more than a century, oil has destabilised the economy through price booms and busts, destabilised democracy, propped up dictators, caused wars and funded wars. Peak Oil, a situation when the world to pump up enough oil to meet the demand, has been yet another menace.

There have been many reasons to kick the habit.

But the oil lobby is strong. Some of its constituents are the oil-producing companies, the "downstream" suppliers, i.e. refiners and service station chains, governments of oil-producing countries,

automotive manufacturers and their governments.

Big Oil has gone to battle every day against every effort to limit its power, with an almost infinite budget for lobbying and PR, and it has won most of its battles.

At the 1992 Rio Conference, when the Climate Convention was first negotiated, former oil man president H. W. Bush famously quipped that the "The American way of life is not up for negotiations. Period."

The report argues that he was factually wrong. "Our lifestyles are up for negotiation all the time. Lifestyles change for all kinds of reasons." One of the changes comes from technology. "Technology is sometimes lifestyle-neutral. A hybrid car uses less petrol than an equivalent car without a hybrid system, but the driving experience is not very different. Even a battery car is not so different. For consumers, electricity from solar or wind is the same as electricity from fossil fuels. The light from a LED lamp is much the same as that from an incandescent."

Using less oil must, accordingly, not be a sacrifice. But it serves the oil industry well to say it must.

In 2019, the report says, the majority of oil (66 per cent) was used for transport: road transport (48%) air transport (9%) and sea transport (9%) in the EU.

We have known for more 50 years that oil consumption can be cut with other modes of transportation and less transport. After the oil crises of the 1970s we got much more efficient cars.

In later years we have seen battery cars take off, with hydrogen from renewable electricity as a complement in the near future.

Vehicle emissions are a problem for which a solution already exists, technologically and economically.

15 per cent of EU households and 8 per cent of offices are heated by oil. That can be cut through better insulation – which should have been implemented 30–40 years ago – and eliminated through heat pumps or district heating.

Oil use to generate electricity has been reduced by 80 per cent since 1998. What remains could be replaced with renewables and efficiency, "which should not be very difficult", according to the report.

Much oil is used to make plastics. Most of it ends up either as landfill or is incinerated. With better organisation most could be reduced, re-used and recycled, so much less oil would be needed.

Should oil be cut from the supply side or the demand side? Do both, says the report. It is important to stop financing, to stop subsidies for use, to tax use etc and to support emerging technologies.

This clearly can create problems.

A "policy of subsidising battery cars for the rich and financing them with higher petrol prices for the poor is arrogant, stupid and dangerous, as the emergence of the Gilets Jaunes demonstrated in France", says the report: A fast transition is possible, but it has to be just, or it will not happen.

Fredrik Lundberg

The report can be downloaded at: <https://www.airclim.org/publications/phasing-out-oil>



Health inequalities highlighted at Zero Pollution stakeholder meeting

The EU Zero Pollution Stakeholder Platform held its second meeting on 25 April with a focus on health and the Zero Pollution Action Plan to reduce water, air and soil pollution and health inequalities in the EU.

The EU still suffers from pollution, with 17 per cent of all lung cancer deaths attributed to air pollution and 11 per cent of premature deaths ascribed to environmental pollution. The right to a clean environment is far from equally distributed among member states and socio-economic groups within member states. Participants pointed out that science

and innovation offer new opportunities to reduce environmental pollution but that we need to do more to deploy and implement these innovations at all levels. Patrick Child, Deputy Director General of DG Environment at the European Commission and Co-Chair of the Zero Pollution Stakeholder Platform, said: “The challenge of energy security addressed in the Commission’s RePowerEU strategy calls for rapid acceleration of decarbonisation and deployment of renewable energy, which should have direct benefits for the EU’s zero pollution goals.”



17 per cent of all lung cancer deaths attributed to air pollution

Source: European Committee of the Regions, 29 April 2022, <https://cor.europa.eu/en/news/Pages/Reducing-pollution-key-overcome-health-inequalities.aspx>

Top 12 measures to limit car traffic in cities

A study by Lund University Centre for Sustainability Studies has screened nearly 800 peer-reviewed reports and case studies from all over Europe, since 2010, to identify measures used in cities to successfully reduce car use. The researchers decided to study car use as it has tremendous impact, being the second largest (and growing) source of climate pollution in Europe, a leading killer of children in the US and Europe, the principle cause of stress-inducing noise pollution and life-shortening air pollution, and a leading driver of urban

environmental injustice. The most effective measures were:

1. Congestion charges, in which drivers pay to enter the city centre
2. Removing parking spaces and altering traffic routes
3. Limiting traffic zones (excluding all but resident traffic from an area)
4. Mobility services for commuters (such as free public transport passes)
5. Workplace parking charges
6. Workplace travel planning
7. University travel planning

8. Mobility services for universities
9. Car sharing
10. School travel planning (helping students and parents to walk, cycle or carpool to school)
11. Personalised travel planning
12. Apps for sustainable mobility

The conversation, 14 April 2022, <https://theconversation.com/12-best-ways-to-get-cars-out-of-cities-ranked-by-new-research-180642>



Brussels on a carfree Sunday.

Implications of the Russian military attack on Ukrainian nuclear facilities

Russian military attacks on Ukrainian power plants were the first real example of an event that was always considered a theoretical scenario.

During the night of 4 March 2022, buildings at the Zaporizhzhia nuclear power plant in Ukraine were shelled by Russian tanks, resulting in a fire in the administrative building. Two of the three operating reactors were shut down. (The attack has been analysed in detail by NPR.)

Earlier, on 24 February, the Russian army took control of the Chernobyl power plant site, entering the radioactive exclusion zone from Belarus and remaining there until 31 March. Fighting in the area led to a forest fire and destroyed a power line, raising concerns over the electricity supply to the complex of facilities that include spent-fuel cooling storage, three non-operational reactors and the containment structure built above the reactor that was destroyed in the 1986 disaster.

Across Ukraine there were further inci-

dents that led to nuclear safety concerns, as research reactors and radioactive waste storage sites were shelled. What would be a major concern in a normal situation was overshadowed by the high risk of an accident at Zaporizhzhia.

The possibility of military attack on nuclear facilities has been a matter of concern for many years. It is prohibited under the Geneva Convention and must therefore be treated as a war crime. Member states of the International Atomic Energy Agency IAEA have also approved a number of resolutions agreeing that attacks on nuclear facilities are unlawful and that member states will be ready to

provide immediate peaceful assistance to the attacked party. It is not clear if IAEA member states have taken steps to approach Russia and express any formal concerns at the level of responsible bodies or calls for the withdrawal of troops.

The risk of military attack was regularly downplayed during the environmental impact assessments for the newly constructed reactors. The idea of a terrorist attack was seen as more realistic. Ukraine gained a clear appreciation of the risks during the war in 2014, when the Ukrainian army faced Russian attacks in the east of the country just a few hundred kilometres from Zaporizhzhia nuclear

Right: Fire at the Zaporizhzhia Nuclear Power Plant, after Russian shelling 4 March 2022.

Below: IAEA Director General, Rafael Mariano Grossi, the same day at a press briefing, explaining the situation.



FLICKR.COM / DANIEL ARRHAKIS CC BY-NC



FLICKR.COM / IAEA IMAGEBANK CC BY

Cooking outdoors
or with cleaner fuels
does not increase
malarial risk in
children.

© PHOTOGRAPHY / SHUTTERSTOCK.COM



Smoke, malaria and children under five

The smoke from biomass burning causes severe health risks, including 450,000 premature deaths in children under five years of age. Cleaner fuels, electrification of cooking or changes to cooking practices could reduce exposure to harmful smoke. Malaria is also a threat to children and leads to around 270,000 premature deaths in children under five. Smoke could also potentially act as a mosquito repellent and possibly reduce malaria infections. There has been little evidence to support this theoretical risk, but large and well-designed studies have been needed. A new cross-sectional study of 17 sub-Saharan African countries was used to test the hypothesis by examining data on 85,000 children tested for malaria in malaria-endemic areas and data on cooking fuel type and habits. The authors found that that cooking outdoors or with cleaner fuels did not increase malarial risk in children under 5 years.

Source: Malar J 21, 133 (2022). <https://doi.org/10.1186/s12936-022-04152-3>

Governments in EU may be liable for dirty air

European Union citizens whose health had been affected by excessive air pollution may be able to claim damages from governments, an Advocate General pointed out.

Advocate General Juliane Kokott said that in her opinion “an infringement of the limit values for the protection of air quality under EU law may give rise to entitlement to compensation from the State.”

Advocates General routinely provide legal guidance to the European Court of Justice. Their opinions aren't binding but followed in most cases.

AP News, 5 May 2022, <https://apnews.com/article/europe-france-pollution-air-quality-b703ff-152e702408ff0256e7c0b494bd>

plant, posing the threat of deliberate or accidental missile strikes. In response, nuclear reactor operators and Ukrainian states took undisclosed steps to improve physical protection. However, it is now clear those steps were insufficient to protect the power plants.

Today, Russian military forces still occupy the site of Zaporizhzhia power plant, so the story is far from over. The plant is being used as a military base and is protected by mines laid on the river side. But operational reactors and spent nuclear fuel storage provide further protection, as it will be difficult for the Ukrainian army to shell Russian forces and risk an accident that could lead to long-term radioactive pollution or a major accident. The occupation of a nuclear power plant also gives Russian forces control over a significant proportion of Ukrainian electricity production. One unit on the site produces 5–10 per cent of the entire electricity produced in the country. (The latest reports state that two units are still producing electricity, but it is not clear if this is still the case and at what capacity they are operating).

The main fear is uncontrolled release of radioactive materials into the atmosphere, which would clearly have serious health impacts and pollute large areas of land. There are various scenarios of what could go wrong and hence the scale of an accident. There could be a direct hit on a reactor building or spent nuclear fuel casks. This could happen with or without a major explosion. There is a possibility that if the external electricity supply is cut, nuclear fuel in the cooling pool or reactor core could overheat, melt, and release radioactive gases. For this scenario to occur it would only require that the site is disconnected from the grid supply until the backup generators run out of fuel.

These high-risk scenarios make accidents such as unauthorised movement of radioactive sources or destruction of

monitoring systems less of a concern. As Russian military forces have now retreated from Chernobyl we feel some relief, despite them having looted expensive computers and laboratory equipment, results of scientific research and historical artifacts.

The idea of regarding existing nuclear plants as a potential weapon that has already been deployed on one's territory has previously been considered. Having a nuclear site is effectively a military disadvantage for the country that is defending its territory. It serves as an attractive military target for controlling, but not destroying, electricity generation capacity. It provides a relatively safe base for an aggressor. It is also a site that defending forces are more likely to give up, rather than risk heavy fighting that could cause long-term damage to the area and your own people.

We have also seen that international agreements like those reached by the IAEA assume that no state would be willing to risk the lives of large numbers of civilians. The IAEA has found itself in a situation where observers have expected far more from the organisation than it could deliver. And it appears that member states have not done much to utilise common agreements to approach Russia with the call to stick to the agreement not to attack nuclear power plants.

The war in Ukraine has shown that nuclear power plants are attractive military targets. And that major wars are not a relic of the past. This is yet another reason to phase out nuclear energy. We can expect new initiatives to build new international agreements. But in time of war driven by unmet ambitions those agreements do not work.

Olexi Pasyuk,
Deputy Director,
Center for environmental initiatives
'Ecoaction'

The Paris Agreement climate goal is within reach, but requires steep emission reductions

Over the past year Climate Action Network Europe, Climate Analytics and AirClim have been working on an analysis of pathways that would make it possible to reach the 1.5°C target of the Paris Agreement. A study by Climate Analytics shows that there are several decarbonisation pathways that can put the EU and its member states on track to meet the climate goal of limiting the global temperature rise to 1.5°C by the end of this century. All these pathways entail steep emission reductions by 2030. The study finds that if the EU sharply reduces its energy consumption while multiplying its renewable energy capacities and ramping up support for emission reductions in developing countries during this decade, it can still contribute its fair share to limit global temperature rise to 1.5°C. As a rich economy, as well

as a major historical emitter, the EU should strive for emission reductions of at least 65% below 1990 levels by 2030. Only such a substantial cut will represent a sufficient contribution by the EU within its own borders to achieving the Paris Agreement goal and will place the EU on a 1.5°C aligned decarbonisation pathway, as illustrated by Climate Analytics' report.

To date, governments have submitted inadequate and unambitious national climate targets that are not sufficient to meet the Paris Agreement long-term temperature goal according to the latest available science. The project generated national scenarios for Sweden, Denmark, Germany, France, Spain, Italy, Poland, Portugal and Romania, being amongst the biggest emitters in the EU27 and also characterising the diversity across the EU. An EU-wide scenario covering all energy and non-energy related emissions will also be developed.

The project has identified milestones in terms of greenhouse gas reduction pathways needed in

different sectors, related to different gases, as well as providing guidance on the phasing out of fossil fuels and mobilisation of energy savings and sustainable domestic renewable energy sources. "This study demonstrates that technically, steep and fast emission reductions in line with the Paris Agreement are fully feasible for the EU and its member states. It's a matter of showing political courage and leadership to make that transition happen," concludes Ryan Wilson, Climate and Energy Policy Analyst at Climate Analytics and one of the report authors. Going beyond the EU's current net 55% emission reductions target to ensure the EU makes a sufficient contribution to the achievement of the Paris Agreement's 1.5°C long-term temperature goal, the report is intended to inform the strengthening of the current target and the ongoing legislative process on the bloc's key climate and energy laws.

Reinhold Pape

Compiled from press statements of Climate Analytics and CAN Europe

<https://caneurope.org/work-areas/climate-action/#emission-reduction-pathways-for-europe>

<https://climateanalytics.org/publications/2021/15c-pathways-for-europe-achieving-the-highest-plausible-climate-ambition/>

Screenshot from a campaign video by CAN Europe.



Egypt's coral reefs endangered due to climate change

Climate change could affect 94% of Egypt's coral reef tourism income, says study. For many years the rich and diverse ecosystem of the Red Sea in Egypt, which boasts more than 1,000 species of fish, has been a major destination for lovers of water activities, such as diving, snorkelling, and glass-bottom boat trips. These activities provide Egypt with about \$7bn annual revenues, of which 86% comes from coral reef

Researchers warn that Egypt – among a number of other coastal countries, such as Mexico, Indonesia, Maldives, Malaysia,

Australia and Thailand – faces the risks of losing more than 90% of its income from coral reef tourism if countries do not take serious measures to stem the rise in global warming emissions.

Climate change is expected to cause the elimination of 74% of coral reef habitats in Egypt by 2100, according to the most pessimistic projections, and thus the country will lose an important source of income from tourism.

Source: Daily News Egypt, 18 December 2021, <https://dailynewsegypt.com/2021/12/18/egypts-coral-reefs-endangered-due-to-climate-change/>

FLICKR.COM / FELIX SHALLER CC BY-SA





© VADIM PETRAKOV / SHUTTERSTOCK.COM

1.5°C: a tipping point for the Arctic

A recently published briefing by Climate Analytics summarises some of the observed and projected impacts on the physical, biological, and human dimensions as outlined by the most recent IPCC reports.

Some of the main take-aways are:

- The Arctic is warming at more than double the pace of the global average. The surface air temperature between January and March 2016 and 2018 was recorded at 6°C above the 1981-2010 average. Between 2014 and 2018 the annual surface air temperature exceeded that of any year since 1900.
- Sea ice is continuously melting over all months of the year. The average minimum sea ice extent per decade has decreased

by 31% from 1979-1988 to 2009-2018. The Greenland Ice Sheet is continuously losing mass and contributing to global sea level rise.

- The range of polar species is contracted while temperate species are expanding into the Arctic, leading to increased competition. The introduction of invasive species is threatening local flora and fauna.
- At global warming levels of 1.5°C, the Arctic annual mean surface temperature increase will be twice the global average.
- The first summer season with a practically sea-ice free Arctic Ocean will likely occur before 2050. At 1.5°C global warming, the likelihood of a sea ice-free September in 2100 is substantially

lower than at 2°C global warming. The risk of crossing the tipping point of the Greenland Ice Sheet increases rapidly above 1.5°C. At 2°C of warming, there is a higher than 50% chance that the tipping point will be crossed.

- Arctic communities are reaching socio-ecological tipping points. Changes such as sea ice loss, glacial melt and ecosystem shifts, which are exacerbated above 1.5°C, are threatening cultural identities, mental health, food sovereignty and water security.

Download file: https://climatenetwork.org/wp-content/uploads/2022/05/CAN-1.5-A-Tipping-Point-for-the-Arctic-final_clean-May-2022.pdf

Fossil gas and nuclear energy must not be included in EU Taxonomy

In January 2022, civil society organisations sent a letter to President Von der Leyen about the EU Taxonomy: “We are writing to you in light of the Commission’s upcoming publication of the Taxonomy Complementary Delegated Act on 2 February 2022 to express our grave concern at the proposal that fossil gas and nuclear energy be included in the EU Taxonomy, a prospect that stands in stark contrast with science, independent advice, existing EU legislation and good practices elsewhere. The inclusion of fossil gas and nuclear in the EU Taxonomy would not only mislead consumers and investors, but would also call into question the extent to which the European

Commission values scientific evidence. Including fossil gas and nuclear in the EU taxonomy would cause irreparable damage to health, nature and the climate, and deal a heavy blow to the credibility of the EU Green Deal. We consider this issue to be of the utmost importance and urgency and would like to request a meeting or video call on this subject before you publish the delegated act.” The letter was signed by the Green 10, the BEUC, ECOS and Finance Watch.

Source: CAN Europe, 28 January 2022, <https://caneurope.org/letter-to-president-von-der-leyen-on-taxonomy/>

Protest outside the European Commission, 21 May 2022.



Are we really on track to limit temperature rise below 2°C?

A recent Nature article by Malte Meinshausen et al.¹ received considerable attention in the media under the headline that current countries' pledges to reduce greenhouse gas emissions may limit global temperature rise to just below 2°C.

The article confirmed earlier assessments from the International Energy Agency² and Climate Action Tracker³ that also indicated that under certain assumptions, current pledges could limit temperature rise below 2°C (but all would fail to limit temperature rise to the 1.5°C Paris Agreement target).

These, to a certain extent “optimistic”, assessments contrast with the statements from both the UN Climate Secretariat (UNFCCC⁴) and UN Environment (UNEP⁵) which at the time of the Glasgow Climate Summit of November 2021 warned that current pledges would lead us to temperatures (well) above 2.5°C.

I aim to explain where the differences in these numbers come from.

Assessments differ hugely in whether they look at countries' 2030 targets and policies alone or also take into account post-2030 pledges and policies, including in particular net-zero pledges. In general, looking beyond 2030 gives more optimistic results. But it should be clear that looking beyond 2030 also substantially increases the level of uncertainty.

Whether the assumed temperature limit linked to the assessment of 2030 pledges and policies will actually be achieved depends on whether the pledges are actually implemented or not. And there are many reasons why this is far from certain, including the lack of integration of pledges into policies and measures, lack of financial means, the impact of Covid and/or the Russian invasion of Ukraine.

Assessing the impacts of

pledges and action beyond 2030 is however even more uncertain as this depends on:

- whether pledges (both for 2030 and in the longer term) will actually be implemented;
- whether countries actually intend to sustain the pledged action after 2030; and
- whether countries are able to overachieve their 2030 targets in order to achieve their net-zero pledges.

In addition, several of the assessments on which these long-term pledges are based also include the potential impact of collective pledges, through the efforts of ICAO (on international aviation), IMO (on international shipping) or the Global Methane Pledge, for example. This adds another layer of uncertainty as there is a risk of double counting of national and collective action.

Just before the Glasgow Climate Summit of November 2021, three reports assessing 2030 climate pledges were published: the

UNFCCC's revised synthesis report of Nationally Determined Contributions under the Paris Agreement (October 2021); UNEP's Emissions Gap Report 2021 (November 2021); and Climate Action Tracker's Warming Projections Global Update (November 2021).

These three reports came to rather similar conclusions (temperature rise of 2.4°C to 2.7°C) and differ basically on:

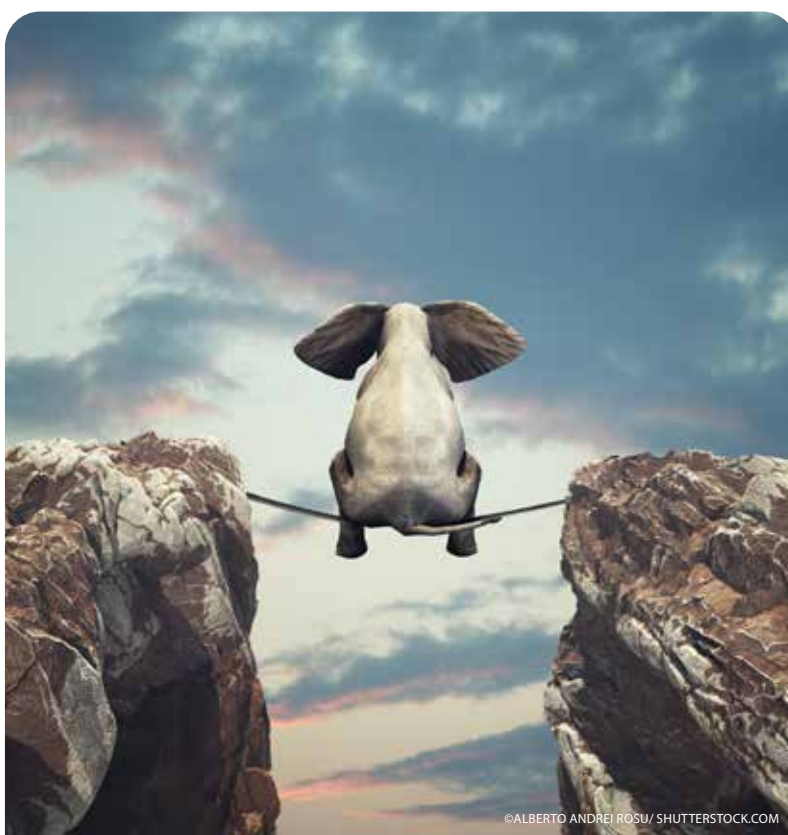
- the type of pledges included in the assessment; and
- the baseline for comparison of estimated 2030 emissions.

The UNFCCC report assesses all national contributions (NDCs) that countries submitted to the UN by October 2021. The UNEP report assesses all the above pledges, as well as pledges that countries announced before COP26 but did not submit (in time) for the UNFCCC report, which includes pledges from China, Korea and Japan. The CAT report assesses all of the above as well as the impact of existing policy scenarios

for those countries where projected emissions based on existing policies are lower than countries' pledged emissions limitations. Table 1 below provides an overview of the results of these assessments.

The three reports also use different numbers for the level of global emissions in 2030 that would be compatible with

Contemplating an emissions gap.



the objective to limit temperature rise to 1.5°C, and take different approaches to the level of likelihood of achieving the 1.5°C target, as indicated in Table 2 below.

When applying UNEP's approach to the different assessments the picture of how the different approaches lead to different results is quite clear, as shown in Figure 1.

The long-term assessment made by Meinshausen et al. is based on three elements:

- 2030 pledges (as well as existing policies and measures scenarios – whichever is the lowest);
- long-term targets incl. net-zero pledges;
- extrapolation of 2030 and long-term pledges beyond 2030/2050 using Integrated Assessment Models;
- collective action on international aviation and shipping.

They conclude that full implementation of all pledges and continuation of policies and measures would limit temperature rise by the end of the century to 1.9°–2°C.

In its Announced Pledges Scenario the IEA also includes an assessment of the potential impact of the Global Methane Pledge and concludes that temperature rise could be limited to 1.8°C by the end of the century.

Climate Action Tracker uses a very similar approach and concludes in its optimistic scenario that we could be on track to a 1.8°C temperature rise.

Whichever assessment is used we are facing an implementation gap

It is vitally important to understand that all the above assessments face the same challenge, which is the so-called implementation gap. The following four key messages from the UNEP Emissions Gap Report make it very clear that we face a number of challenges:

1. New mitigation pledges for 2030 show some progress, but their aggregate effect on global emissions is insufficient;
2. The emissions gap remains large: compared to previous unconditional NDCs, the new pledges for 2030 reduce projected 2030 emissions by only 7.5 per cent, whereas 30 per cent is needed for 2°C and 55 per cent is needed for 1.5°C;
3. As a group, G20 members are not on track to achieve either their original or

Table 1: Comparing estimated emissions in 2030 from different assessments (in GtCO₂-e)

	2030 emissions unconditional	2030 emissions conditional ⁶
NDCs submitted to UN prior to COP26	56.4	54.9
NDCs and other pledges made public prior to COP26	52.0	50.0
NDCs and other pledges as well as existing policies scenarios	49.0	(47.5)

Table 2: Comparing the baselines used to estimate temperature projections

	UNFCCC	UNEP	CAT
Likelihood to limit temperature rise to 1.5°C	66%	66%	50%
Emissions in 2030 compatible with 1.5°C	29 GtCO ₂ -e	25 GtCO ₂ -e	26 GtCO ₂ -e

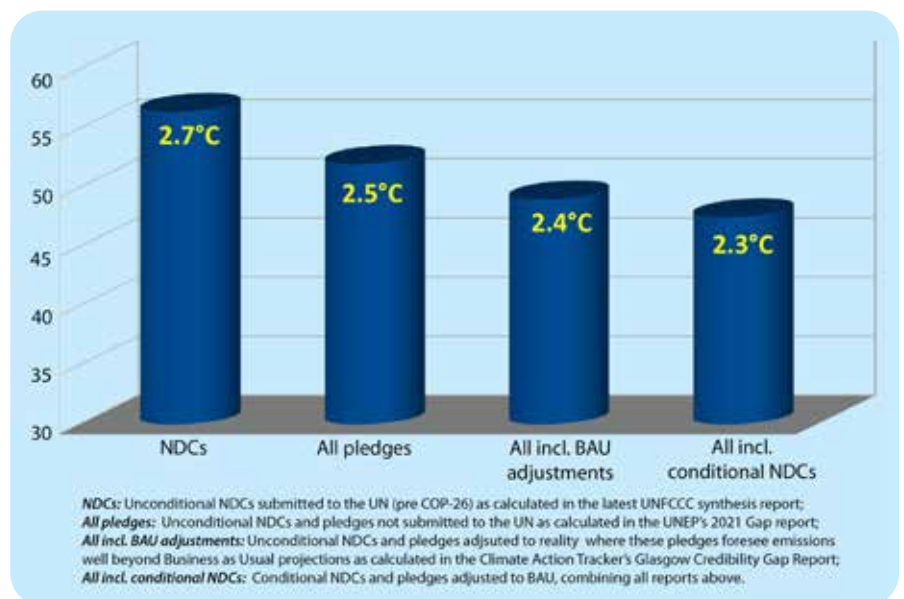


Figure 1: Temperature projections for different assessments of countries' NDCs, pledges and policies

- new 2030 pledges. Ten G20 members are on track to achieve their previous NDCs, while seven are off track;
4. Few of the G20 members' NDC targets put emissions on a clear path towards net-zero pledges. There is an urgent need to back these pledges up with near-term targets and actions that give confidence that net-zero emissions can ultimately be achieved and the remaining carbon budget kept.

Wendel Trio

¹ Meinshausen, M. et al. (2022). Realization of Paris Agreement pledges may limit warming just below 2°C. In: Nature. 13 April 2022. www.nature.com/articles/s41586-022-04553-z. xxx

² IEA (2021). Announced Pledges Scenario. November 2021. www.iea.org/reports/world-energy-model/announced-pledges-scenario-aps

³ CAT (2021). Glasgow's 2030 credibility gap: net zero's lip service to climate action. Warming Projections Global Update. November 2021. climateactiontracker.org/publications/glasgows-

2030-credibility-gap-net-zeros-lip-service-to-climate-action

⁴ UNFCCC (2021). Nationally determined contributions under the Paris Agreement. Revised synthesis report by the secretariat. 25 October 2021. unfccc.int/documents/307628

⁵ UNEP (2021). The Heat Is On. A world of climate promises not yet delivered. Emissions Gap Report 2021. October 2021. www.unep.org/resources/emissions-gap-report-2021

⁶ Conditional pledges refer to pledges made by (developing) countries which are (in part) dependent on receiving financial and/or other support from developed countries for their implementation



EU carbon market must deliver faster emission cuts

There is an overestimation of the carbon-allowances needed and the current proposal will even be inadequate to meet the 2030 target, according to new research.

If the European Union does not significantly strengthen its reformed flagship Emissions Trading System (EU ETS), it risks fuelling planetary heating that will exceed 1.5°C and even missing its own inadequate targets, two simulations show. The EU ETS must significantly raise its 2030 targets, lower its emissions faster than planned, and remove surplus allowances from the market.

The ongoing revision of the European Union's climate policy framework offers an eleventh-hour opportunity for the EU to do its part as one of the world's major emitters and go beyond the net 55% emissions reduction target for 2030 set out in its "Fit for 55" package.

Research commissioned as part of Life ETX, an advocacy project led by Carbon Market Watch, reveals that the European Union's Emissions Trading System is currently falling short of the bloc's climate obligations to keep global warming within

the limits set by the Paris Agreement.

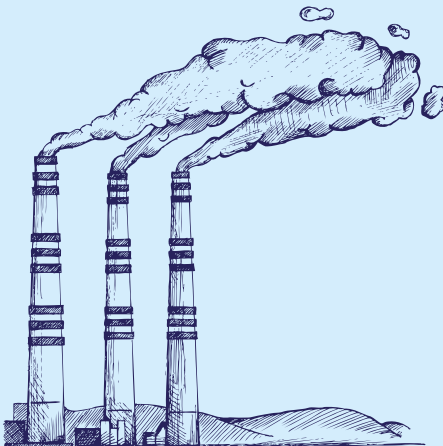
Unfortunately and shockingly, the reforms currently on the table will even fail to meet the EU's inadequate 2030 targets, to reduce emissions covered by the EU ETS by 61%. This is the conclusion of a modelling analysis released on 10 May 2022, which was carried out by the Öko Institute on behalf of the ETX Consortium. This is due to overestimation of the demand for allowances needed for risk management, such as energy sector hedging and long-term banking on the part of industry. Without stronger reform, the resulting oversupply in the EU carbon market would be so large that it would make it impossible for the ETS to reach its 2030 target. If humanity's rapidly shrinking carbon budget were divided equally on a per-capita basis, the EU would have to reduce its emissions by at least 65% by 2030. With the current 55% target, the EU will consume double its per capita

share of the remaining global budget, according to a new paper by Wendel Trio, a climate change policy and science analyst. This means that the EU must shrink its greenhouse gas emissions by at least 65% by 2030 (compared to 1990 levels), i.e. Fit for 55 needs to become Fit for 65. In addition, the EU must aim for climate neutrality by 2040 (instead of the 2050 goal of the European Green Deal). This requires a reduction of at least 70% in the EU ETS sectors by 2030.

Source: ETX/CMW press release, 10 May 2022

'The revision of the European Union Emissions Trading System Directive: Assessing cap and Market Stability Reserve reform options', Öko Institute study

'Why the EU must strengthen its climate target, including in the Emissions Trading System', paper by Wendel Trio



© ALEKS MELNIK / SHUTTERSTOCK.COM

Fossil gas has large health costs

A recent report by Health and Environment Alliance shows that burning fossil gas is a false fix for health. In 2019 alone, burning fossil gas for power and heat caused over 2,800 premature deaths from air pollution (from PM_{2.5}, NO₂ and

ozone) in the EU-27 and the UK. The health costs for the burning of fossil gas were up to 8.7 billion EUR in 2019, with the largest health burden falling onto Italy, Germany, the UK, France, the Netherlands, and Spain.

Download the report at <https://www.env-health.org/false-fix/>

Cleaner vehicles could save 100,000 lives in US

The American Lung Association estimates large health benefits and healthcare cost savings from switching to zero-emission cars and trucks. The switch could save more than 100,000 lives and \$1.2 trillion in healthcare costs over the next three decades.

The report looks at what we could gain if we transition to a society where all passenger and heavy-duty vehicles have zero emissions and are powered by clean, renewable energy by 2035. “These are ambitious but achievable targets,” said Will Barrett, director of clean air advocacy for the American Lung Association and lead author of the report. It shows that our fossil-fuelled society not only leads to climate change, but how much we can gain by switching from fossil fuels. The fossil fuels used for transport are harmful for public health at every step of the supply chain, from extraction and transporta-

tion to combustion in cars and trucks. If the US were to meet the targets in the report the road transportation sector would see a 92 per cent decrease in smog-forming nitrogen oxide pollution, a 61 per cent decrease in fine particle pollution, and a 93 per cent decrease in greenhouse gas pollution by 2050. That would prevent over 100,000 premature deaths, 2.8 million asthma attacks, and a variety of other health problems over the next 30 years. It would lead to reduced environmental injustice for the communities living next to truck freight roads where the air pollution disproportionately



Electric school bus in California, US.

FLICKR.COM / WILLIAM NEWTON CC BY-NC-ND

affects people of colour and those with lower incomes. Barrett called these findings “stunning new information on the transition to zero-emission electricity and transportation”.

Source: Grist 30 March 2022, <https://grist.org/transportation/zero-emission-vehicles-save-100000-lives/>

UN Health Agency: save lives by moving from fossil fuels

The UN Health Agency is calling for more action to reduce fossil fuels while the world is choking on the resulting harmful pollutants. These pollutants cause respiratory and blood-flow problems and lead to millions of preventable deaths each year. Six months have passed since the

World Health Organization tightened its air quality guidelines after new evidence accumulated over the last 10–20 years had shown air pollutants to be toxic at lower levels than previously understood. A staggering 99 per cent of the global population breathes air that exceeds its air-quality limits and is often loaded with particles that can penetrate deep into the lungs, enter the veins and arteries and cause disease. Areas with the poorest air can be found in eastern Mediterranean and Southeast Asia regions, followed by Africa.

Nitrogen dioxide originates mainly from traffic exhaust emissions or other human-generated burning of fuels and is most common in urban areas, with the highest concentrations found in the eastern Mediterranean region.

Particulate matter has many sources, such as transportation, power plants, agriculture, the burning of waste and industrial or natural sources such as desert dust. The developing world is particularly hard hit, especially in India and China.

Tanushree Ganguly, who heads a New Delhi-based think tank, called for action toward reducing emissions from industry, automobiles, biomass burning and domestic energy. “We need to prioritise clean energy access for households that need it the most and take active measures to clean up our industrial sector,” she said.

Source: AP News, 4 April 2022, <https://apnews.com/article/science-health-asia-united-nations-environment-dafbedfa74d46297e013a5f47ced010d>

Southeast Asia is one of the regions with the poorest air quality.



© MUHD IMRAN ISMAIL / SHUTTERSTOCK.COM

Fossil advertising – halfway towards a ban

A campaign that is calling for a ban on fossil advertising at EU level is well underway. Its main objective is to achieve an EU ban on fossil advertising through a citizens' initiative that is currently collecting signatures throughout the EU. Just over 200,000 people have already signed the petition and a total of one million signatures are needed by 4 October 2022 to require the Commission to consider the matter. About 30 European organisations are behind the campaign, including Greenpeace, WWF, Friends of the Earth Europe, ActionAid and ClientEarth.

The campaign has clearly succeeded in putting fossil advertising on the agenda in a totally new way. One of the clearest examples was possibly when Adam McKay, director of the international film hit *Don't Look Up*, tweeted in favour of a ban on fossil advertising: "We need to make fossil fuel advertising illegal the same way we did with cigarettes. One kills people, the other will kill most people." In Sweden, Minister for the Climate and Environment Annika Strandhäll commented that she is "cautiously positive" towards a fossil fuel ban.

Fresh facts have been brought to the table in the form of calculations showing the extent of emissions that arise from fossil advertising. Estimates from Greenpeace and the New Weather Institute show that the global climate impact of automotive and air travel advertising may have led to 606 million tonnes of greenhouse gas emissions in 2019 – about twice the level of Spain's emissions in the same year. Advertisements for cars and air travel in Europe in 2019 may have contributed 122 million tonnes of greenhouse gases, more than Belgium's greenhouse gas emissions in the same year.

Another persuasive argument for a ban on fossil advertising is its effects on people's health. Air pollution from burning fossil fuels causes approximately 8.7 million early deaths each year – more than those who die from tobacco-related illness.

Tobacco advertising has been banned in the EU for a long time, so why is there free licence to advertise products and companies whose core business leads to so many early deaths and is accelerating the climate crisis? Fossil advertising is simply life-threatening.

Swedish author Sven Lindqvist wrote a book in 1957 with a similar title: *Advertising is Lethal*. He described how, even back then, the power of advertising was difficult to defend against. It affects the way we think and our values:

"Everyone knows that advertising is consumption-driven. But even more importantly, it governs the way we think, our emotions and our living habits."

This is perhaps the biggest issue. How can we make the transition to a zero-emission society when the very lifestyles that are driving the combustion of fossil fuels are made out to be the norm and the ideal way of life? It is becoming increasingly clear that we need to change norms and change the way we think. Fossil advertising is an obstacle to that process because it preserves lifestyles that are dependent on high emissions

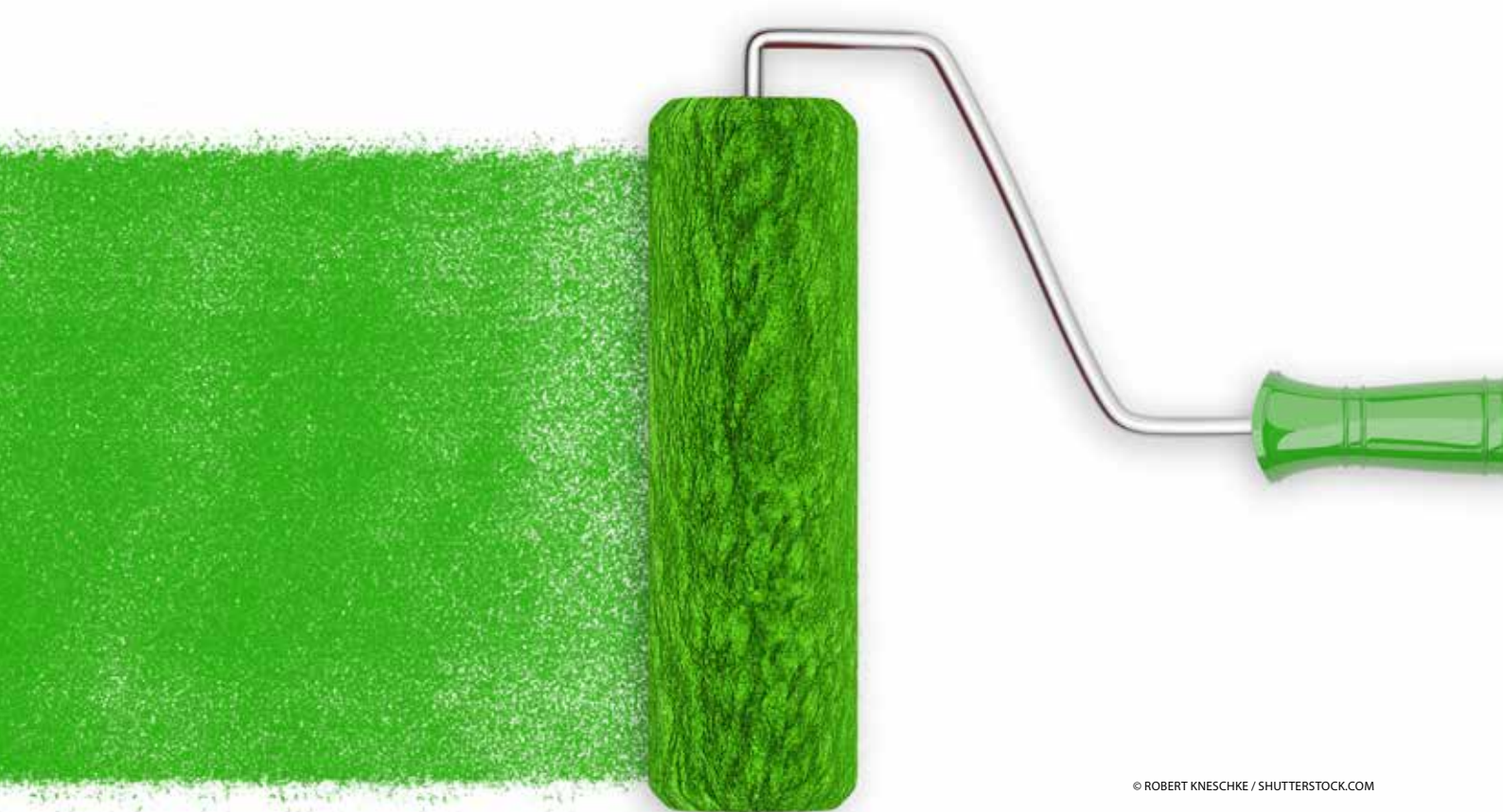
Another side of the campaign involves scrutinising and calling into question oil companies and other fossil advertisers for the misleading advertising and greenwashing they engage in. One recent example took place in France when a number of

environmental organisations sued the transnational oil company TotalEnergies for misleading the public on the alleged environmental benefits of fossil gas and biofuels through its "Reinventing energy" campaign.

In this wide-reaching marketing campaign the company claims that it is "a major player in the energy transition" and that the company will achieve "carbon neutrality" (net zero) by 2050. But in reality its plans would mean a massive increase in fossil fuels, partly through increased use of fossil gas. The company also fails to present any actual emission reductions from its operations or its products for the years up to 2030.

However, TotalEnergies is far from alone in using greenwashing even though it is increasingly obvious that fossil fuels and fossil-based lifestyles have reached the end of the road. One of the larger organisations that is still clinging on to the seemingly endless claims of "net zero 2050" is the global travel association, IATA. They have launched a campaign under the banner "Fly Net Zero".

IATA's plans have been examined by New Weather in a report titled *Pie in the Sky*. The trade association has the vision that air travel should continue to grow rapidly, doubling in size by 2050. Up until 2035 the rising emissions of carbon dioxide will be "compensated for" through investments in climate projects. Several



© ROBERT KNESCHKE / SHUTTERSTOCK.COM

studies, as well as statements from senior executives in the aviation industry, show that the main effect of this compensation is to reassure passengers and the public. There is no major climate benefit. In most cases climate compensation is, by definition, greenwashing, since the whole concept is based on perpetuating emissions and attempting to explain them away.

In the longer term, by 2050, IATA envisions that the entire air travel fleet (which will then be twice its current size) will be converted to biofuels. Fuelling these flying giants would, according to IATA, require three times as much biofuel as is produced globally for all industrial use today. It is unclear where this fuel will come from, but even trying to implement this entails a great risk to biodiversity on a global scale.

Despite the claims it would still not reduce the climate impact of aviation, since high-altitude effects, which have similar climate-warming effects as carbon dioxide emissions, will be twice as great. Under IATA's plan, air travel would at best have the same impact as today and by the year 2050 would consume over 15 per cent of the entire carbon budget for the Earth this century. But IATA still insists that the plan is in line with the 1.5-degree target of the Paris Agreement.

New Weather is now reporting IATA to the Swedish Advertising Ombudsman¹ for misleading information and is

urging the aviation industry to develop a plan that is truly in line with the Paris Agreement. This would mean limiting air travel to what can be achieved with electric or hydrogen-powered small aircraft, over short distances, where there are no reasonable alternatives. Anyone who thinks this seems unreasonable might like to consider that before the pandemic only 2–4 per cent of the global population flew at all during a year and that one per cent of the population accounted for half of air travel's global climate impact.

In Sweden, another greenwasher, Arla, has been resisting the efforts of the Swedish Consumer Agency to end its campaign for organic dairy products. At the end of 2019 the authority called on Arla to stop using the phrase “net zero climate footprint”, because it is misleading. For two years Arla continued to use the phrase on its packaging, until it was sued by the Consumer Ombudsman in November 2021. Now the packaging is finally on its way out, but by ignoring the authority's call for two years, the company succeeded in squeezing out an estimated one billion cartons with messages that misled consumers.

It is quite obvious that oil companies, the air travel industry and other large companies will not voluntarily adapt their operations or advertising to the emergency we are in. Their marketing sends

one message, while their operations and actual plans send another. What is needed now is regulation of these companies and their marketing, which are driving increased emissions and exacerbating the climate crisis.

There is also popular support. A recent opinion poll in the UK shows that 68 per cent of people support restrictions on advertising environmentally harmful products. An opinion poll in Sweden shows that 52.4 per cent support a ban on fossil advertising.

As usual, it is citizens and popular movements that need to make demands and show that there is support for action. And this needs to happen soon. Or as Sven Lindqvist puts it in his book: “Those who advertise cannot stop. That is why it is up to us.”

Gunnar Lind & Anna Jonsson

¹ The Swedish Advertising Ombudsman is a self-regulatory organisation, financed by the advertisers, advertising producers and media. Their main task is to review commercial advertising and make sure advertising standards are kept high by self-regulating the industry.

Planning for a green recovery

While the war is still ongoing, the Ukrainian environmental movement has already started to plan for how sustainability can be integrated in the rebuilding of their country.

© TAVAN150 / SHUTTERSTOCK.COM

Ecoaction is Ukraine's largest environmental organisation. I met up with their air pollution expert, Maryna Ratushna, and their energy policy expert, Anna Ackermann, for a remote conversation to hear what role their organisation has played during the war.

The very same week as Russia attacked Ukraine, AirClim and EcoAction were together planning to organise a workshop on monitoring air pollution. Maryna Ratushna told us about the plans: "The monitoring of air quality in Ukraine has been quite poor so far, but now there was an ambition to adapt the national monitoring to the standards prescribed in the EU air quality directive. The idea was to provide study events for local authorities directly responsible for building the air quality monitoring systems."

Like so much else, this project had to be cancelled for the time being.

EcoAction is based in Kyiv, but at this time most of the workforce of around 30 employees, was leaving the capital. Maryna Ratushna was one of the few who decided to stay. She tries to explain: "it was a difficult time, but I felt it was my city and I couldn't leave". However, her colleagues continued to work together, now scattered all over Europe, and they soon identified three priority areas to work on during the war.

The first was to document environmental damage caused by the Russian attacks. We are helping the government with this, Anna explains, so that later it will be possible to prosecute some of these cases as crimes of war. According to the Geneva Convention, "it is forbidden to use methods or means of warfare that are intended to cause or may be expected to cause widespread, lasting and severe

damage to the natural environment".

The second issue was to encourage countries to stop imports of Russian oil and gas. "It became clear to me how important this is when I saw the numbers; it costs Russia about 870 million euro to operate this war and EU member states pays 1,000 million euro to Russia every day for fossil fuels," says Anna Ackermann. "This demand has received the full support of our government," she adds.

The third area for attention is to prepare for a green recovery once the war is over. This work is quite naturally still in its infancy, but Maryna Ratushna says that they are already involved in various working groups on the topic. She pushes for cities to be rebuilt in ways that will reduce air pollution and for reconstruction projects to include funds for new air quality monitoring stations.

However, there are obstacles to these plans. In March, the Ukrainian parliament decided to stop requiring environmental impact assessments. "To have this type of derogation during the war is acceptable," argues Anna Ackermann. "Unfortunately, the decision also applies to the rebuilding phase. This decision was made very quickly, and it was a difficult situation for us to criticise. Now we must try to change it afterwards."

As part of a coalition with other green groups EcoAction has drawn up a list of principles for a green post-war recovery in Ukraine. "When a factory or a bridge is rebuilt it shouldn't be to the same state it was before the war, but according to the latest environmental standards," says Anna. With Ukraine's application for EU membership and probable status as

a candidate country, it will be natural to adapt to EU environmental regulations. The requirements set by donors will also play a major role in the reconstruction.

An important point they make is the inclusion of civil society. A "bottom-up" approach will favour a sense of ownership of community recovery processes. No one who has followed the news reporting can have missed the inspiring commitment of the Ukrainians. Many people are volunteering for the first time in their lives. Anna Ackermann hopes that these experiences in contributing to society can take on different forms once the war is over.

The wider public and decision makers will probably be more open to some aspects of a green recovery. For example, the vulnerability of centralised energy production has become apparent with the war, which will pave the way for investments in renewable energy.

Persuading people to reduce car traffic in big cities will be more difficult. Many wish to return to the comfortable life they had before the war and that lifestyle includes the car.

Another aspect of the green recovery is to create new green jobs. As a result of the war, 6–7 million Ukrainians are now living abroad. The people who have the easiest time adapting to a new way of life are generally better-educated and more progressive in outlook. Anna Ackermann concludes: "If Ukraine promotes sustainable and innovative solutions when rebuilding the country, chances increase that they will return".

Kajsa Pira



Maryna Ratushna



Anna Ackermann

Marine heatwaves forecasted

Marine heatwaves (MHWs) are extended periods of extremely warm seawater. They can have very serious consequences both ecologically and socioeconomically. Marine management has long called for methods to forecast MHWs. Now a group of researchers have managed to use global climate forecasts “to develop and assess MHW forecasts that cover the world’s oceans with lead times of up to a year”. The researchers used 30 years of retrospective forecasts to show that the method works. They show that skilful forecasts are possible in advance at a range of 1 to 12 months. The range is dependent not only on region and season, but also on

the state of large-scale climate modes (for instance El Niño/Southern Oscillation). The authors also discuss decision thresholds, which would allow stakeholders to be proactive depending on the risk at hand. An operational use of MHW forecasts is concluded to be similar to the use of forecasts of extreme weather phenomena, and such a use is suggested to globally promote climate resilience in marine ecosystems.

Source: Jacox, M.G. et al. 2022. Global seasonal forecasts of marine heatwaves. *Nature* 604, 486–490. <https://doi.org/10.1038/s41586-022-04573-9>



© SHANE MYERS PHOTOGRAPHY / SHUTTERSTOCK.COM

Forests of Russia and Climate Change

A recently published analytical report provides information on the forests and forestry complex of Russia, the impact of climate change on them, and possible measures to combat these changes and enable adaptation.

The report, published in 2021, is intended for environmental activists involved in solving the problems of global climate change, preserving forests and specially

protected natural areas, sustainable forest management, reforestation and afforestation. It should hopefully also be interesting and useful for teachers, journalists, and the general public. The authors hope that

the information in the report will become familiar to decision-makers, as well as heads of Russian companies, both in the forestry complex and in the oil, gas, mining and other industries that have already begun to actively respond to the global turn towards “The Green Deal”.

This report is part of the information kit produced to raise awareness of possible ways to tackle the climate crisis prepared by the Russian Social Ecological Union and Friends of the Baltic in cooperation with the non-governmental organisations AirClim (Sweden), Naturvernforbundet (Norway), EcoEnergy (Finland), Green Planet (Russia) and through the exchange of

experiences between other public environmental organisations in north-west Russia and the Nordic countries.

The information kit includes the brochures: “Municipal climate plans. Success stories and recommendations”, “Energy efficiency is the main step towards sustainable climate”, “Renewables in the Nordic countries and in Russia”, “Carbon-free transport” and “Climate and waste – closed-loop economy for zero emissions”. The kit also includes the analytical report “Forests in Russia and climate change” and collections of annotated publications on climate plans for regions, countries and municipalities, energy efficiency actions, renewable energy development, and decarbonised transport.

Reinhold Pape

Link to report Forests in Russia and Climate Change:

<https://www.airclim.org/sites/default/files/documents/forests-of-russia-and-climate-change.pdf>

All materials are available at: <https://rusecounion.ru/climateinfokit>

Source: Russian Socio-Ecological Union



Climate change and other threats to marine life in the Baltic Sea

Researchers conclude that climate change represents the overarching factor, affecting almost all the other natural and human-induced factors in the Baltic Sea.

A very long list could be made of the harmful environmental effects that are the result of historic and ongoing human activities, including the devastating consequences of climate change. The effects on aquatic ecosystems include eutrophication, overfishing and pollution, to name a few. Clearly, to understand the overall consequences of such detrimental processes, a multitude of factors need to be analysed simultaneously. For the Baltic Sea region, such an analysis was recently published in the journal *Earth System Dynamics*¹, based on an extensive review of available literature.

This Acid News article highlights some of the concurrent environmental effects of a selection of these factors and those caused specifically by greenhouse gases (climate change and ocean acidification), partly in relation to other recent publications.

In the case of climate change the analysis in *Earth System Dynamics* states: "Due to its proximity to the northern polar region, the Baltic Sea region is warming faster than the globe". It is also noted that the air temperature change is already among the strongest signals of climate change in Europe, with an observed land surface temperature rise of approximately 1°C over the past century. Projections to the end of this century range from 1.5 to 4.3°C.

Sea water temperatures are following suit and have also started to rise. Projections for 2100 range between 1.6 and 3.2°C.

Other clear changes include a drastic projected decrease in sea ice cover, as well as sea level rise. The latter is reported

to be caused by thermal expansion (as the volume of water masses increases with warming) as well as global ice sheet melting and atmospheric circulation changes. The effect of sea ice melting is perhaps surprisingly coupled more to Antarctic sea ice than to that in northern polar regions. Globally, sea levels are expected to rise by 43–84 cm, whereas predictions for the Baltic Sea (corrected for land lift) range from 80 to 100 % of the global figures.

Changes that are reported to be more difficult to predict include those for wind and precipitation. For the latter, however, an increasing trend is suggested for the entire region in winter, and the northern part in summer.

Ocean acidification is treated as one of the "other factors", since it is strictly speaking not a climate change effect, although caused by the greenhouse gas carbon dioxide. (In fact, ocean acidification is sometimes called "the equally evil twin of climate change".) As reviewed earlier by AirClim², understanding ocean acidification in the Baltic Sea is not as straightforward as in the oceans. In the Baltic Sea, several factors affect the buffering capacity (or alkalinity) of the sea water. Generally speaking, alkalinity is lower in the Baltic Sea than in the oceans, which would make it more vulnerable. However, there is great variability in the buffering capacity. For instance, geological conditions vary in such a way that the buffering capacity is higher in the southern parts and decreases northwards. Additionally, the buffering capacity has increased. The analysis in *Earth System*

Dynamics mentions that the explanations for this increase are not conclusive, but suggested reasons include processes in the sediment (sediment is material deposited on the sea floor) and increased weathering.

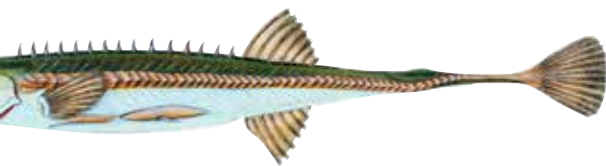
In AirClim's report, the role of factors such as eutrophication in this process is also discussed. Most importantly, however, an increase in buffering capacity has not compensated for all the fossil-derived carbon dioxide and should not be interpreted as offering protection from future acidification.

As for the effects of ocean acidification, the analysis in *Earth System Dynamics* mentions the important work done in mesocosms but concludes that ecosystem effects of ocean acidification still constitute a knowledge gap, i.e. that further studies are needed. It can also be noted that if other kinds of experimental studies are included (e.g. single-species studies), it becomes evident there are several species in the Baltic Sea that are sensitive to ocean acidification (see citations in AirClim's report), including some species of mussels and zooplankton, as well as cod (the western Baltic population). For cod, a significant population decrease has been predicted. Consequently, there is good reason to further address the knowledge gap in order to better understand how different sensitivities (and tolerances) at species level translate into ecosystem effects. This is especially true as many of the species are facing so many other environmental threats at the same time. Cod are a good example, as they are simultaneously threatened by oxygen depletion, accelerated by eutrophication (see below), and overfishing.

Regarding the effects of climate change on other factors, the analysis reveals that sea level rise could increase the inflow of sea water through the

Cod in the Baltic Sea are struggling, even without climate change and ocean acidification





Danish straits. This sea water is saltier than the brackish water in the Baltic Sea, and therefore has a higher density. Consequently, the stratification of the Baltic Sea, which consists of a saltier deep water layer and a surface layer of fresher water, would be reinforced. This is bad news, as oxygen from the surface is not mixed into the deeper water layer, and oxygen is ultimately depleted. This oxygen depletion is enhanced by eutrophication because organic matter is produced in excess, and organisms that consume this organic matter when it reaches the sea floor use up the oxygen in this process.

Another factor that is affected by climate change via sea level rise is erosion, which is predicted to increase. The analysis considers a number of other factors in relation to climate change, including nutrients, which are of course a major factor as eutrophication is such a serious

problem. Nutrient leakage is generally believed to increase due to climate change, but the authors conclude that there are uncertainties in predictions for nutrient levels, taking into account aspects such as precipitation changes and changes in agricultural processes. Nevertheless, increased erosion could lead to an increase in nutrient-rich materials entering coastal waters if erosion occurs on nutrient-rich land. The internal nutrient load is believed to increase even more due to the release of phosphorous from the sea floor when oxygen is depleted.

Chemical contaminants are also believed to be affected by climate change, and interestingly a possible connection between acidification and a release of contaminants is discussed. This connection would stem from changes in marine chemistry.

To be fair to the authors of the analysis, it should be emphasised that this Acid

News article only briefly touches on a few of the factors included in the analysis. Nevertheless, this article hopefully allows agreement with the authors when they conclude that “The main message from this analysis is that climate change represents the overarching factor, affecting almost all the other natural and human-induced factors”.

Marko Reinikainen

References:

- 1: Reckermann, M. et al. 2022. Human impacts and their interactions in the Baltic Sea region. *Earth System Dynamics* 13(1). <https://doi.org/10.5194/esd-13-1-2022>
- 2: Vehmaa, A. & Reinikainen, M. 2021. Ocean Acidification in the Baltic Sea (report). Air pollution and Climate Series 40. https://airclim.org/sites/default/files/documents/ocean-acidification-in-the-baltic-sea-apc-40_0.pdf

A warm acid bath is not good for fish larvae

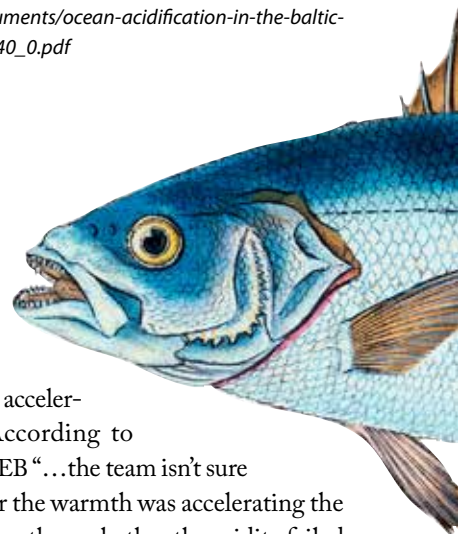
In a recent research article in the *Journal of Experimental Biology* (JEB), researchers used the larvae and juveniles of European sea bass to study effects of ocean acidification and warming over two generations of the fish. Studying the effects of acidification is important because the pH of oceans has already decreased by 0.1 pH units, which actually means a 30% increase in acidity. As ocean acidification and warming occur concurrently, it obviously makes sense to include warming in such studies. As for fish, the first author of the research article, Sarah Howald from the Alfred Wegener Institute for Polar and Marine Research (AWI), Germany, comments on the results in a section of the journal called Inside JEB. In her comments, she explains that “Fish had been thought to be less vulnerable to ocean acidification due to well-developed acid-base regulation systems”. More recently, however, research-

ers have discovered that fish larvae may be more sensitive than previously believed. In the current study, the researchers were particularly interested in how subsequent generations would respond. They therefore conducted a long-term study (5.5 years), in which the experimental treatment consisted of rearing newly hatched fish larvae in acidified conditions (and the appropriate control), corresponding to those that the IPCC predicts will be a reality in 120 years. When these fish reached maturity and spawned, this second generation of fish larvae was transferred again to acidified conditions and to combinations with cooler or warmer water. It turned out that larvae in a combination of acidified and warmer water were smaller when they metamorphosed into juvenile fish than the larvae that developed in other experimental treatments. However, as juveniles, the growth of these fish was

actually accelerated. According to Inside JEB “...the team isn’t sure whether the warmth was accelerating the fish’s growth or whether the acidity failed to impair the growing juveniles”. The team also warns that faster growth comes at a risk of possible food deficiency.

Sources:

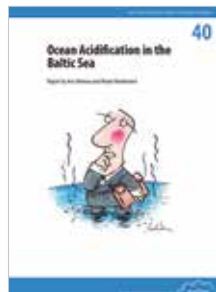
- Howald, S. et al. 2022. Effects of ocean acidification over successive generations decrease resilience of larval European sea bass to ocean acidification and warming but juveniles could benefit from higher temperatures in the NE Atlantic. *J. Exp. Biol.* 225 (9): jeb243802. <https://doi.org/10.1242/jeb.243802>
- Kathryn, K. 2022. Ocean acidification impacts fish larvae but warming could compensate juveniles. Inside JEB. *J. Exp. Biol.* 225 (9): jeb244420. <https://doi.org/10.1242/jeb.244420>



Air Pollution & Climate Secretariat
Första Långgatan 18
413 28 Göteborg
Sweden

Recent publications from the Secretariat

Reports can be downloaded in PDF format from www.airclim.org



Ocean Acidification in the Baltic Sea (April 2021). By Anu Vehmaa & Marko Reinikainen. The Baltic sea is especially vulnerable because of its low total alkalinity.



1.5°C to survive. Evidence from the IPCC Special Reports (May, 2021). By Susanne Baur, Alexander Nauels & Carl-Friedrich Schleussner.



Nordic Food Transition – Low emission opportunities in agriculture (June 2021). By Annika Lund Gade et al. Eight case studies and forty policy recommendations.



Overview briefing on the IPCC Special Report on Global Warming of the 1.5°C (May 2021). By Carl-Friedrich Schleussner et al.



Phasing out oil (May 2022). By Fredrik Lundberg. This report is on oil, what it is used for and how to phase it out in Europe.



The science of temperature overshoots (October 2021). By Susanne Baur, Alexander Nauels, Uta Klönne & Carl-Friedrich Schleussner



Forests of Russia and Climate Change (December 2021). By A.Yu. Grigoriev, A.P. Laletin, K.A. Pakhorukova, S.I. Zabelin



1.5°C Pathways for Europe: Achieving the highest plausible climate ambition (October 2021). By Ryan Wilson, Lara Welder, Alexandre Delfosse et al.

Subscribe to Acid News via email

Are you receiving the printed copy of *Acid News* but missing out on the online version? Sign up on our website to receive an email announcement when each issue of *Acid News* becomes available online.

Sign up at <https://airclim.org/subscribe-acid-news> or **scan QR code for link.**



Coming events

Climate Change Conference. Bonn, Germany, 6-16 June. Information: <https://unfccc.int/SB56>

International Conference on Air Quality – Science and Application. Hybrid format, 27 June – 1 July 2022. Information: <https://www.herts.ac.uk/airqualityconference>

UN Oceans Conference. Lisbon, Portugal, 27 June – 1 July 2022. Information: <https://www.un.org/en/conferences/ocean2022>

EU Environment Council. Luxembourg, 28 June 2022. Information: <https://www.consilium.europa.eu/en/meetings/calendar/>

International aerosol conference. Athens, Greece, 4-9 September 2022. Information: <https://iac2022.gr/>

The International Day of Clean Air for blue skies. Worldwide, 7 September 2022. Information: <https://www.un.org/en/observances/clean-air-day>

CLRTAP EMEP Steering Body + Working Group on Effects. Geneva, Switzerland, 12 – 16 September 2022. Information: www.unep.org/env/lrtap/welcome.html

United Nations General Assembly 77 with discussions about climate ambition (NDCs). New York, US 13-27 September. Information: <https://www.un.org/en/ga/>

ISEE 2022 34th Annual conference of the International Society for Environmental Epidemiology. 18-22 September 2022, Athens, Greece. Information: <https://www.viethconsulting.com/Calendar/moreinfo.php?eventid=66101>

IPCC 57th session, approval of AR6 Synthesis Report. Geneva, Switzerland, 26-30 September 2022. Information: <https://www.ipcc.ch/report/sixth-assessment-report-cycle/>

8th meeting of the Task Force on Techno-economic Issues (TFTEI), hybrid meeting, Rome, Italy, 06 - 07 October 2022. Information: <https://unece.org/info/events/event/367152>

1st meeting of the Task Force for International Cooperation on Air Pollution. Bristol, UK, 10 - 12 October 2022. Information: <https://unece.org/info/events/event/367729>

EU Environment Council. Luxembourg, 24 October 2022. Information: <https://www.consilium.europa.eu/en/meetings/calendar/>

UNFCCC COP 27. Sharm El-Sheikh, Egypt. 7-18 November 2022. Information: <https://unfccc.int/>

IMO Marine Environment Protection Committee (MEPC 79). London, UK, 12 - 16 December 2022. Information: www.imo.org

CLRTAP Executive Body, 42nd session. Geneva, Switzerland, 12 - 16 December 2022. Information: www.unep.org/env/lrtap/welcome.html

EU Environment Council. Brussels, Belgium, 24 October 2022. Information: <https://www.consilium.europa.eu/en/meetings/calendar/>