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MEP



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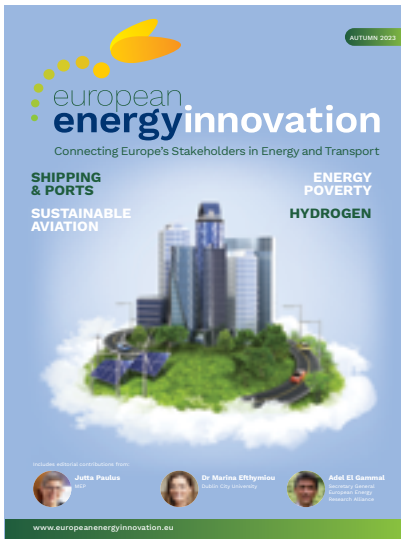
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# The truth is out there

A TV series called The X-Files gave us this oft-quoted thought, but we have advertising doyen Bill Bernbach to thank for the observation that *“The truth isn't the truth until people believe you...”*

The disciplines of epistemology and ontology lie far beyond the scope of this publication, but the truth of the matter is that the truth about climate change has been out there for decades: nearly a quarter of a century ago, a report<sup>1</sup> for the WWF suggested that *“For many areas on Earth these changes are becoming manifest through changes in the frequency and the intensity of extreme weather events.”* Since then, the words “Climate Change” have become familiar enough to leave too many people cold – if we can excuse a rather dark pun. Yet emissions and global temperatures continue to rise remorselessly, and the ice caps continue to shrink: perhaps there is not enough belief out there that the climate is changing. Perhaps issues such as energy prices, or Russia's illegal invasion of Ukraine, command our more immediate attention.

But we overlook our climate at our collective peril, so EEI is delighted to feature ENVI committee member Jutta Paulus MEP in this issue. She reminds us that: *“The fourth Autumn in a row, worrying temperature records were hit, July 2023 being the hottest month ever recorded on our planet and droughts, floods, heatwaves causing havoc in Europe and around the world.”* She outlines one practical response: recent legislation targeting international maritime transport emissions, which have never before been subject to binding emission reduction measures. She goes on to discuss how the EU

Renewable Energy Directive (RED) will form a basis for measures to introduce targets for renewable energy content of marine fuels, and carbon pricing of intra-EU voyages as well as outgoing and incoming journeys; nor will these overlook the significance of methane and nitrous oxide emissions.

Expanding on this theme, Xavier Noyon discusses biodiesel's impressive credentials for decarbonising EU transport. Beginning by outlining the “monumental” scale of the challenge (reducing transport emissions by 90% by 2050), he highlights the potential for renewable biodiesels to cut emissions by about 80% before discussing other consequences of using rapeseed, recycled cooking oil, and animal fats in the production of biodiesel. The benefits of these HVO and FAME technologies go beyond reducing emissions, he notes, because their byproducts can replace fossil-fuel-based chemicals in cosmetics, food, and polymer production. Noyon calls for policy initiatives that go beyond RED III to accelerate adoption, concluding that biodiesel is *“not just a bridge but an essential building block in the road to a greener transport future.”*

The words “Net Zero” are usually used in the context of decarbonisation and emissions. But a well-written and challenging article from EERA examines the complex relationship between prosperity, growth, social equity and the environment; and serves up a rather unpalatable truth: *“There is”, it says, “a rather strong case that the continuous pursuit of economic growth... renders a sustainable climate trajectory increasingly unattainable.”* Setting out three broad strategies – Energy Efficiency, Energy Sufficiency and

Behavioural Change – EERA argues that net zero might also be applied to economic growth models. Keep an eye open for its report *“Researching energy pathways to a resilient and net-zero society”*.

Meanwhile, Dr Marina Efthymiou explores the interaction between growth and green policies in the aviation sector. Unsurprisingly, the effects of the Covid pandemic on transport emissions were most apparent in aviation, and in international aviation in particular. As air travel now rebounds, she argues that *“There is a compelling need for better interconnection of sustainability policies in Europe, where the intersection of economic growth, aviation, and environmental responsibility is paramount.”*

Bernbach also famously observed that *“In communications, familiarity breeds apathy.”* We simply cannot afford apathy as we face the colossal task of balancing economic aspiration, social justice and climate change – in Europe and beyond: the truth **is** out there, and it is staring us in the face.

And there is much more for you to read inside...

Michael Edmund  
Editor

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The WWF is now known as the WWF-World Wide Fund For Nature in many territories



# Efficiency in shipping

By Jutta Paulus, MEP

The fourth summer in a row, worrying temperature records were hit, July 2023 being the hottest month ever recorded on our planet and droughts, floods, heatwaves causing havoc in Europe and around the world. With the European Green Deal, the European Union initiated important policy measures to bring forward climate action. Until 2030, the European Union aims to reduce its greenhouse gas emissions by 55% compared to 1990, a goal that can only be reached if every sector contributes its fair share to this effort.

International maritime transport has never been subject to binding emission reduction measures yet, although being responsible for three percent of global greenhouse gas emissions. Therefore, the legislation which was now adopted in Europe is a global first and could serve as blueprint for similar laws around the globe.

Europe carries 77% of its foreign trade by sea, which accounts for 13.5% of European transport emissions. The International Maritime Organisation IMO estimates that global emissions from ships would increase by 90% to 130% between 2008 and 2050 if no measures were taken. For ships calling at ports in the European Economic Area, the EU Commission expected an increase of 86% compared to 1990. Hardly any other industrial or transport sector shows such high emission increases.

Emissions from maritime transport make significant contributions to environmental pollution. Sulphur dioxide, nitrogen oxides, black carbon, and oil leaks harm the health of marine animals and plants, endangering biodiversity in our seas. Air quality in port cities is likewise affected. After decades of discussions, limits for sulphur oxide emissions were introduced, but still more action is needed for achieving

zero emission ports. Particulate matter and nitrogen oxide are responsible for more than 400.000 premature deaths in the EU, and while cars have become cleaner due to EU standards, considerably lowering urban pollution, shipping is still steaming below the radar of pollutant regulation.

Russia's invasion of Ukraine showed that dependencies on fossil imports has more disadvantages than harmful emissions and accelerated Europe's ambition to phase out fossil fuels and gain energy sovereignty. With skyrocketing prices for gas, the switch to renewable energy showed to be economically viable both in terms of price stability and reliability.

Concerning greenhouse gas emissions from maritime transport, the EU had decided to monitoring these as late as 2016, after it had become clear that IMO would not act on this matter. When the



corresponding regulation was revised, the European Parliament demanded to not only count emissions but actually act on them and voted for the inclusion of shipping in the emission trading system ETS and the application of efficiency targets. Consequently, when the ETS was revised, shipping was addressed in a stepwise approach. All ships above 5000 gross tons, irrespective of their flag, owner or cargo, will be included.

All intra-EU voyages and half of outgoing and incoming journeys will be subject to carbon pricing not only for CO<sub>2</sub> emissions but also for the much stronger greenhouse gases methane and nitrous oxide, which have greenhouse gas potentials of 82 and 300, respectively, compared to CO<sub>2</sub>. This is especially important regarding the future use of alternative fuels in shipping. However, pricing alone will not be enough to ensure a climate friendly, sustainable shipping sector. If trade at sea is about to increase, ships and fuels need to get more sustainable to steer shipping on the course of climate neutrality.

In July 2023, the European Parliament finally adopted the Fuel EU Maritime Regulation, the world's first law for alternative fuels in international maritime shipping. The new law will oblige ship owners of large ships with a gross tonnage of more than 5,000 GT to gradually reduce the greenhouse gas intensity of the used shipfuels. Starting with 2% in 2025,

fuels in 2050 may only cause 20% as much CO<sub>2</sub> equivalents per energy unit as today.

From 2031, a target for the use of synthetic fuels based on renewable energies of at least one percent is being introduced. The EU Renewable Energy Directive RED will be the basis for the definition of Renewable Fuels of Non-Biological Origin (RFNBO),

As a compromise it was decided that the European Commission will monitor the development and if the shipping fleets will not reach the required threshold of 1% RFNBOs by 2031, a binding quota of 2% will apply only from 2034. We Greens managed to prevent food and feed crops from being allowed as sustainable biofuels.

With regard to research and development of sustainable fuels and marine propulsion, the new law misses an opportunity. The quota of 2% is far too low for providing incentives for additional investments in sustainable synthetic fuels. It only takes effect if the share of renewable marine fuels is below one percent in 2030. The largest container ship owner Maersk alone has announced investments that will probably meet the entire EU quota.

Fuel EU Maritime will contribute to more sustainable ports by obliging cargo and passenger ships in large EU ports to source their energy needs entirely from shore-side electricity

from 2035. In 2035, the obligations will also apply to smaller EU ports.

There will be exemptions for up to four percent of ships. Fuels used by icebreakers in winter will not count towards the greenhouse gas intensity goals and some regions will temporarily benefit from geographical exemptions. For voyages where the port of departure or destination lies outside the EU, only half the distance will be taken into account. We Greens were able to prevent the most impactful exemption which would have affected 15 percent of all vessels; those belonging to small companies that own less than three ships. It is obvious that this would only have set an incentive to split up companies.

The ambition of Fuel EU Maritime is not far-reaching enough to adequately contribute to the EU's climate target. However, it is a first step in the right direction and could set important international standards. For a future revision, it will be important to also address climate-impacting substances such as Black Carbon and methane.

Ships that are built today will sail the oceans for decades. This requires long-term adaptation and measures on the international level. Fuel EU Maritime could steer not only Europe's climate action in the shipping sector into the future, but also lead as an example worldwide. ●

# Net Zero (Growth) by 2050?

By Adel El Gammal Secretary of the European Energy Research Alliance (EERA) and professor of Geopolitics of Energy at Université Libre de Bruxelles (U.L.B.)



It is broadly accepted that economic growth has brought widespread prosperity in the post-World War II era, reducing poverty and allowing progressive public policies in most Western countries. However, progressively, the neoliberal central emphasis on economic growth has revealed its deep social and environmental consequences, compromising the two other dimensions of sustainability in its traditional definition<sup>(1)</sup>.

The mainstream argument suggesting that economic growth is a prerequisite to improving social welfare might, in fact, only hold true within certain boundary conditions.

From a social perspective, it is plagued with myopia, largely neglecting the adverse social effects induced in other parts of the world. In addition, it implicitly assumes the existence of an efficient and fully functional wealth redistribution framework.

From an environmental standpoint, the detrimental effects of economic growth have been long overlooked until recently, when it has become impossible to externalise further its impacts beyond our field of vision.

The current global economic paradigm has remarkably invalidated both these boundary conditions. By erecting the pursuit of economic growth and profit at the core of its model, it has fully globalised the economy while at the same time broadly deconstructed the post-war redistribution frameworks of the so-called "Welfare State".

The consequences are staggering.

In most developed economies, a trend towards greater social inequalities, an unprecedented concentration of wealth, alongside with increasing poverty levels is unfolding, leading to widespread social discontent, growing distrust in democracies, and the rise of populist voices.

Last year, the global average temperature was 1.26°C higher than that of pre-industrial levels<sup>(2)</sup>, and a very recent study established that 2023 has seen for the first time 6 out of 9 planetary boundaries being transgressed, with pressure increasing on all of them<sup>(3)</sup>. There is a rather strong case that the continuous pursuit of economic growth is colliding with the planet's boundaries and renders a sustainable climate trajectory increasingly unattainable.

In the words of UN Secretary General Mr. A. Guterres, "the Era of global boiling has arrived". Continuing along this course is inexorably leading us to an announced soon-to-come chaos. And there is little hope that Sultan al Jaber, CEO of Abu Dhabi National Oil

Company and, incidentally, President of the upcoming COP28, will reverse this course.

The time for discontinuous thinking has arrived. We need to design a transformative model able to generate social welfare while remaining compatible with planetary boundaries.

We need to recognise the very physical dimension of the current economic paradigm and disconnect economic sustainability from the dogma of economic growth.

This finding, dating back over half a century, was initially developed in "The Limits to Growth", a report published in 1972<sup>(4)</sup>. Few of us remember that it profoundly inspired the European Commission's 4<sup>th</sup> President, Mr. Sicco Mansholt, who then attempted to redesign the economic paradigm of the bloc in a fundamental way. History tells us his aspirations were not followed through.

This debate, for long inaudible for mainstream economists and politicians, is suddenly re-emerging with an acute sense of urgency<sup>(5)</sup>. A range of positions exists in the growth debate. Most moderate positions advocate for "**Green Growth**", which fundamentally tables on adjustments and/or additions to the current economic paradigm to make it compatible with social and environmental sustainability.

Proponents of "**Degrowth**" put forward instead a radical and opposite vision, arguing that growth itself is the issue, colliding with the limited regenerative capacities of the earth system and being the root cause of growing social inequalities.

Supporters of "**Beyond Growth**" or "**Post Growth**" theories are



*“ We have a finite environment – the planet. Anyone who thinks that you can have infinite growth in a finite environment is either a madman or an economist. ”*

**– Sir David Attenborough**

essentially agnostic about using growth as a central policy objective but suggest concentrating on rethinking the nature of economic activity to reach the multidimensional goals of social and environmental sustainability.

Embracing the latter, which suggests a more open and mission-driven approach, and focusing on addressing the climate emergency, underscores the necessity to break the status quo to avoid short-term climate chaos.

Science indisputably tells us that our 1.5°C carbon budget will be exhausted in just a few years (2). Global emissions are still on the rise, and the world is on track to largely overshoot the upper 2°C limit. This trajectory is believed to trigger several tipping points that would irreversibly propel human society into an unpredictable future.

In contrast, even the prudent IEA analysis, suggesting that fossil fuel

demand might peak during this decade, is being put in jeopardy by the unfolding economic and geopolitical context. Backlashes as already recently witnessed in countries such as the UK and Germany, and the growing pushback against U. von der Leyen’s progressive Green Deal agenda could indeed easily further extend the reign of fossil fuels. A chasm exists between the observed historical rates of carbon abatements, the foreseeable technology improvements, and the required rate of emission reductions to be achieved year on year up to 2050.

Considering decarbonisation of the supply side of the economy appears arguably too slow, reason compels us to now consider seriously addressing the demand side as well.

Since the 70’s oil crises, demand reduction policies - with the notable exception of efficiency measures - were mostly banned from the policy discourse as essentially colliding with

the very principle of economic growth.

However, the full-scale Russian war on Ukraine and the consequential energy crisis have suddenly revived the debate, with demand reduction being remarkably included as an integral part of Europe’s REPowerEU policy response. But while it has been mostly seen as crisis-related, i.e., “a temporary short-term fix”, the time has come to structurally integrate long-term demand reduction strategies into the core of the Clean Energy Transition policymaking.

Energy demand reduction strategies can broadly be conceptualised as a set of distinct yet complementary approaches, including:

**Energy efficiency:** Reducing the energy input per unit of energy service output. Efficiency essentially provides an energy reduction relative to the desired energy service but does not guarantee, by itself, an absolute reduction of energy

Figure 1. Beyond Growth model

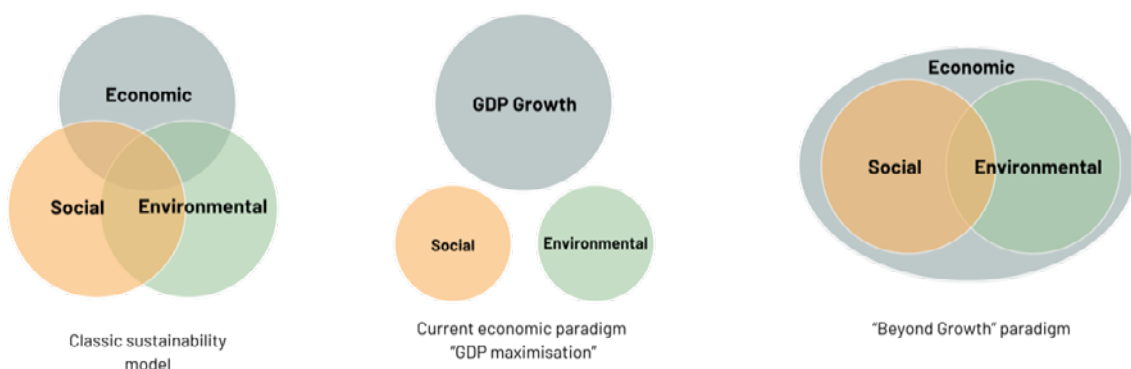
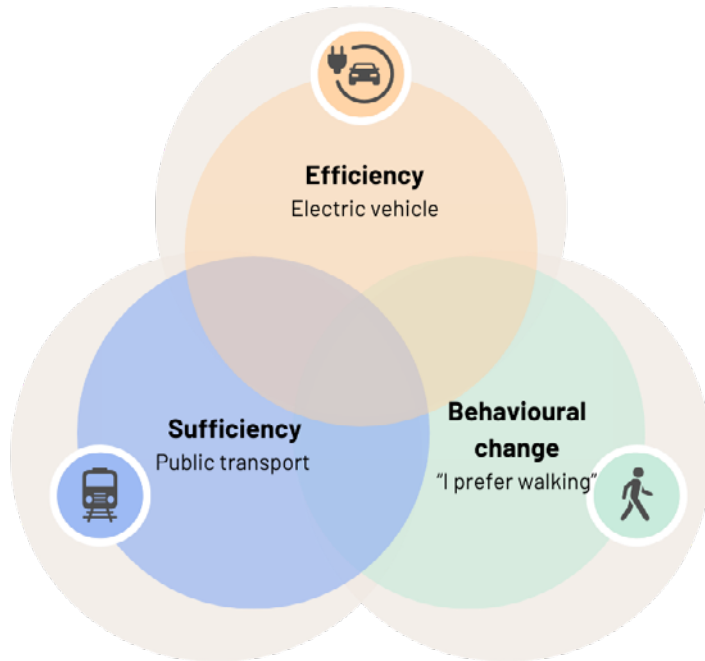


Figure 2. Demand reduction approaches



demand. It consists of increasing energy productivity and is essentially achieved through technological improvements. Examples include reducing space heating energy consumption in a building by better insulating its envelope or replacing electrical convection heaters with heat pumps.

**Energy sufficiency:** Reducing the aggregated absolute energy use by decreasing or avoiding energy services needs. This is essentially about reconsidering the amount of production and consumption necessary to ensure a satisfactory level of well-being. Examples include reducing the nominal temperature setting in living or working spaces or using a staircase instead of an elevator.

**Behavioural change:** Referring to both

individual-level (e.g., households) and/or collective (e.g., community-wide) changes in behaviour and decision patterns intended to effectively reduce the aggregated energy consumption. It mainly relates to individual or collective shifts towards sufficiency and/or efficiency measures. Opting for public transport rather than individual cars, avoiding air travel by changing holiday destinations, or refraining from using air conditioning whenever possible are examples of behavioural changes leading to energy sufficiency or energy efficiency gains. Behavioural change has an essential cultural and societal dimension as it often relates to changing prevailing societal values and practices. Although it often represents a substantial aggregated demand reduction potential, it usually entails longer time cycles.

The European Energy Research Alliance (EERA) catalyses scientific research for achieving the clean energy transition across more than 200 leading research organisations within 30 European countries. It provides leading-edge research on low-carbon technologies and on the socio-economic conditions required for the EU to achieve its long-term objectives of climate neutrality. The EERA scientific community has been calling for a holistic approach, leveraging best-in-class technology progress in combination with socio-economic research to drive the Clean Energy Transition<sup>(6)</sup>.

Building on this work, EERA will present its flagship report on energy demand reduction at the occasion of its annual high-level policy conference, "Researching energy pathways to a resilient and net-zero society". The event will take place in person in Brussels and will also be broadcast online. Registrations are open at this link: <https://www.eera-set.eu/events/3940:researching-energy-pathways-to-a-resilient-and-net-zero-society.html> or by scanning the QR code below. ●

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# Enhancing the role of the building sector in the energy transition through Big Data and AI

The European energy sector is undergoing a fundamental change with the increasing digitalisation of energy assets and the wide penetration of Distributed Energy Resources (DERs), such as renewable energy sources (RES), smart home devices (IoT) and smart meters. The increasing growth of DERs is continuously expanding the energy system “edge”, in terms of controllability, while increasing its operational complexity, since the amount of data is growing exponentially and “understanding” of the knowledge encapsulated in these big data will be critical for meeting operational requirements for high efficiency, resilience and decarbonization. The edge of the energy system is dominated by buildings that shall no longer be merely perceived as depreciating assets, but as active nodes of the system that are associated with the generation of vast amounts of data. Such large datasets provide significant opportunities for better and more efficient performance monitoring and optimization of smart buildings through Advanced Big Energy Data Analytics. However, the high upfront costs and the sheer complexity of building data keep slowing the pace of relevant investments and retain reluctance of building value chain stakeholders in making the transition towards data-driven and intelligent operations.

Under this perspective, the **H2020-BEYOND** project brings forward a novel and affordable bundle of big data and AI technologies that aspire to trustfully take data management

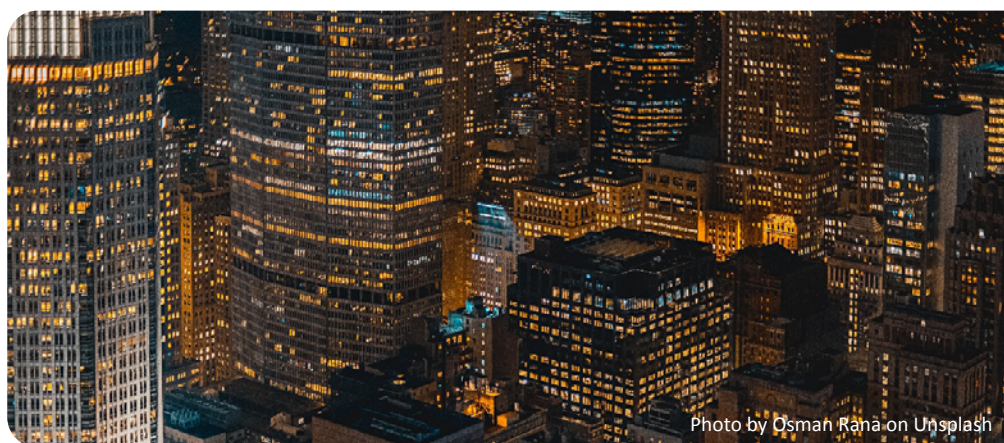


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and analytics away from the hands of building stakeholders, offer to them easily digestible intelligence extracted from diverse building data and enable the realization of data-driven optimization functions that can pave a ROI-positive path through better informed decisions and new business opportunities arising from the integration of the building sector in energy markets.

At the same time BEYOND addresses business and optimization needs of the variety of stakeholders involved in the energy system value chain and are dependent on data generated by the building sector, by increasing their data reach and allowing them to access and analyse myriads of building-related data for intelligently optimizing their business and operational processes, through the utilization of innovative data sharing models.

Apparently, BEYOND promotes the cultivation of a trusted and rigorous ecosystem of stakeholders related to the building the sector, enabling

them to navigate the convergence of their physical and digital worlds, further advance their operations and find new revenue streams, by blending internal intelligence with external information pieces which would, otherwise, not be accessible.

The business value of the BEYOND technological offering is currently validated and verified, through the release of a series of data intelligence-driven applications that effectively address the needs of the various stakeholders involved in the BEYOND-enabled ecosystem for (i) improvement of buildings’ energy performance and energy cost reduction, (ii) increase of self-consumption, (iii) creation of new revenue streams from involvement in energy markets, (iv) bankable investments in building-relevant energy infrastructure and (v) evidence-based network and urban planning, while allowing them to explore new business opportunities for enhancing their role and involvement in the digital energy transition. ●

# IPCEIs as Key Element for Europe's Hydrogen Market

Hy2Tech - Innovative technologies for creating a European Hydrogen Value Chain

By the European Commission

**H**ydrogen has strategic importance and strong decarbonisation potential, such as for energy generation, industrial processes and transport. Russia's war against Ukraine has underlined the need for the EU to diversify its energy sources and accelerate the green transition. To this end, renewable and low-carbon hydrogen is indispensable. Currently, the hydrogen market is still nascent, making it risky to invest in such innovative technologies. That is where State aid has a role to play: it helps to unlock, crowd-

in and leverage substantial private investments that would otherwise not materialise.

EU State aid rules for Important Projects of Common European Interest (IPCEI) allow Member States to pool resources and cooperate. IPCEIs bring together knowledge, expertise, financial resources and economic actors of various sizes throughout the EU. They enable breakthrough innovation in key sectors and technologies, where the market alone would not deliver, and ensure positive spill-overs for the

EU economy while preserving fair competition.

Pursuant to Article 107 (3)(b) of the Treaty on the Functioning of the EU, State aid to support IPCEIs may be declared compatible with the internal market by the European Commission. In its [Communication on State aid rules for IPCEIs](#), the Commission set out the criteria for assessing the compatibility of such aid. In 2021, the Commission revised the IPCEI Communication to strengthen the European and open character, facilitate the participation of small

## Approved Important Projects of Common European Interest (IPCEI)



	First IPCEI on Microelectronics (2018)	First IPCEI on Batteries (2019)	Second IPCEI on Batteries – EuBatIn (2021)	First hydrogen IPCEI – Hy2Tech (2022)	Second hydrogen IPCEI – Hy2Use (2022)	Second IPCEI on Microelectronics and Communication Technologies (2023)	Total
Participating companies	29	17	42	35	29	56	208 179*
Participating projects	43	22	46	41	35	68	255
State aid approved (EUR billion)	1,9	3,2	2,9	5,4	5,2	8,1	26,7
Expected private investments (EUR billion)	6,5	5	9	8,8	7	13,7	50
Participating Member States							21 with UK included as a Member State, plus Norway participated in at least one IPCEI

\*Excluding the companies that participated in more than one IPCEI

and medium-sized enterprises (SMEs) and align with current EU priorities, such as the twin transition - green and digital.

**IPCEIs assessed and approved by the Commission since 2018**

Since 2018, the Commission has approved State aid for IPCEIs in the fields of batteries, microelectronics and communication technologies, and hydrogen.

The €27 billion of total State aid approved, together with expected private investments of around €50 billion for these six IPCEIs, add up to almost €77 billion, demonstrating that the IPCEI-induced funding also offers a significant investment boost to the EU economy.

**IPCEI Hydrogen Technology (Hy2Tech)**

In the hydrogen sector, the Commission has approved the first two IPCEIs in July (Hy2Tech) and September 2022 (Hy2Use). While Hy2Use focuses on hydrogen-related infrastructure and decarbonising industry, Hy2Tech enables the development of innovative hydrogen-related technologies to decarbonise industrial processes and mobility, thereby contributing to the achievement of the objectives of the European Green Deal.

Hy2Tech is structured in four technical fields (TF), covering technologies for hydrogen generation, fuel cells, storage, transportation and distribution of hydrogen, and end-user applications.

**TF1 – Development of Hydrogen Generation Technologies**

TF1 concerns the development of electrolyzers and establishing different layers of integration of hydrogen technologies for various applications. An important part involves the reduction or replacement of critical materials, such as nickel and cobalt, to improve cost efficiency and reduce reliance on



Source: European Commission

these materials. It also aims at increasing the system efficiency for each electrolyser technology and improving reliability and durability through better stack design and heat management or by integrating technologies to increase the electrolyzers' lifespan.

**TF2 – Development of Hydrogen Fuel Cell Technologies**

TF2 focuses on further developing, testing, validating and system integration of hydrogen fuel cell components for stationary, mobility and transport applications. It aims at increasing efficiency and reducing costs, expanding integration into different operating systems, and improving the life cycle design of fuel cells.

**TF3 – Development of Technologies for Storage, Transportation and Distribution**

TF3 aims to develop hydrogen storage, transportation and distribution technologies necessary to connect supply and demand. The goal is to achieve a cost reduction of

the input materials, identify material replacements, and implement and improve testing and monitoring procedures.

**TF4 – Development of Technologies for End Users**

TF4 focuses on the development of hydrogen technologies for mobility and transport applications, in particular for powertrains of buses, locomotives, ships, and light and heavy-duty trucks.

Hy2Tech involves 35 companies and 41 projects from fifteen Member States: Austria, Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Italy, the Netherlands, Poland, Portugal, Slovakia and Spain. These companies include large industrial players, SMEs and start-ups, which engage in additional collaborations with over 300 indirect partners throughout Europe, including universities and research organisations.

The Member States provide up to



€5.4 billion in public funding for Hy2Tech, which is expected to unlock an additional €8.8 billion in private investments. Altogether, the project is estimated to create 20,000 high value jobs throughout Europe.

#### **Streamlining Efforts of the Commission**

Since 2018, the Member States and the Commission have gained experience and knowledge on IPCEIs. To further accelerate and facilitate the process for Member States to design, prepare and notify IPCEIs, the

Commission published a Code of Good Practices in May 2023. If applied by all participating Member States, it will significantly increase efficiency and speed in the approval of IPCEIs.

Furthermore, in March 2023, the Commission endorsed an amendment to the General Block Exemption Regulation. This amendment allows smaller innovative projects, involving usually SMEs, in several Member States to be supported without prior Commission

approval, thereby significantly alleviating the assessment. These comparatively smaller projects still benefit through cross-border collaborations within an IPCEI created ecosystem.

The Commission is also launching a Joint European Forum for IPCEI to support the Member States' technical understanding of IPCEIs and work towards identifying new value chains of strategic importance. This will help exploit the instrument's full potential. ●

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#### **Sources and more information can be found here:**

[https://competition-policy.ec.europa.eu/state-aid/legislation/modernisation/ipcei\\_en](https://competition-policy.ec.europa.eu/state-aid/legislation/modernisation/ipcei_en)

<https://ipcei-hydrogen.eu/>

# Tomorrow's sustainable energy leaders convene in Upper Austria

By Christiane Egger, Deputy Managing Director of the OÖ Energiesparverband

At the International Clean Energy Challenge 2023, held in July in the Austrian Alps, 49 highly-qualified young professionals from more than 30 countries developed concrete energy solutions for the local energy transition in diversified and interdisciplinary teams. The event was organised by the regional energy agency of Upper Austria (OÖ Energiesparverband, ESV) in collaboration with other regional energy agencies from all over Europe.

**A**ccelerating the clean energy transition towards climate neutrality is presently at the top of the agenda.

Supporting the next generation of energy experts in developing their peer network is an important contribution to the positive impact they can have in their professional lives. This was an aim of the International Clean Energy Challenge that brought together enthusiastic young innovators under 35 from all over the world and 8 regional energy agencies from different EU countries for an event of collaborative thinking. They tackled real-life challenges that immersed them into the world of the local energy transition. The challenges related to energy efficiency and renewable energy in communities, buildings, companies and more.

### Together we achieve more!

The event focused on creation through collaboration. The innovation process combined brainstorming activities, autonomous group work and peer-review sessions. The coaches offered valuable support and professional coaching and two external mentors offered their expertise on communication and entrepreneurship.

In the final session, the teams showcased their work to a jury and symbolic awards were presented. Very positive feedback was received from all people who took part. Participants gained practical, real-life insights into driving change, and they contributed to developing ideas and

solutions that will have an impact on achieving climate neutrality. The partner organisations profited from the creative thinking of inspirational, bright young minds.

The participants were mostly young professionals working in businesses, energy agencies, associations, public bodies, industry, and research institutions. They came from a diversity of educational backgrounds including engineering fields, economics, architecture, business, environmental sciences, IT, communications, law, political science and more. The event was organised by the ESV, the regional energy agency of Upper Austria and was held in the context of the H2020 project "Remarkable Climate Leaders" and with support of the region of Upper Austria.

### Annual Young Energy Researchers Conference in Wels/Austria

ESV has a long-standing commitment to supporting budding energy experts. For over 10 years, it has organised a conference dedicated to young researchers in the context of its annual World Sustainable Energy Days (WSED) – a leading annual conference on the energy transition and climate neutrality. The Young Energy Researchers Conference presents the work and achievements of young researchers in the fields of energy efficiency and biomass. The next edition takes place on 5 March 2024. The Call for Papers is open until 10 October 2023. More information at [www.young-researchers.eu](http://www.young-researchers.eu). ●



# Embracing Clean Aviation: hydrogen-powered aircraft technologies shaping a sustainable future

By Sebastien Dubois (pictured), Head of Programme Development and Communications, Clean Aviation Joint Undertaking

**Green hydrogen shows real potential to power aviation.  
On what areas does Clean Aviation focus its efforts?**

**H**ydrogen presents several major advantages in achieving the goal of climate-neutral aviation. It allows for the complete elimination of CO<sub>2</sub> emissions during flight and

throughout its entire life cycle when produced using a carbon-free process. However, it is not without its challenges, and we cannot bet solely on one horse or only on one solution for sustainable aviation.

Our €4.1 billion programme, co-funded by the European Union, explores innovative hybrid-electric concepts, ultra-efficient aircraft architectures, and disruptive hydrogen-powered technologies for the next generation of aircraft. Our innovative technologies will help reduce net emissions of greenhouse gases for commercial air travel by no less than 30% for short-medium and for regional range compared to the best aircraft models available today. Our programme's PHASE 1, running until 2025, focuses on the identification of high-potential technologies and disruptive aircraft concepts. PHASE 2 will integrate and demonstrate by 2028 – 2030 their potential impact to reduce greenhouse gases and support the launch of disruptive new products entering into service by 2035.

Concerning hydrogen propulsion to power future aircraft, we focus our efforts on hydrogen-direct burn and fuel cell-based propulsion. The first means replacing kerosene by

hydrogen, and the second covers the potential of mixing both oxygen through the air and hydrogen to produce electricity. Beyond such propulsion concepts, we are also looking at hydrogen storage on board aircraft. We need to look at the aircraft architecture, define the storage device but also make sure to be able to keep the liquified hydrogen at the very low temperature of – 253 degrees Celsius. Other challenges to be addressed in synergy with Clean Hydrogen are how to re-fuel, how to integrate it all into airport infrastructure and of course ensure that everything is safe both on the ground and during flight. That is why the European Union Aviation Safety Agency (EASA) participates in our projects to comply with certification requirements.

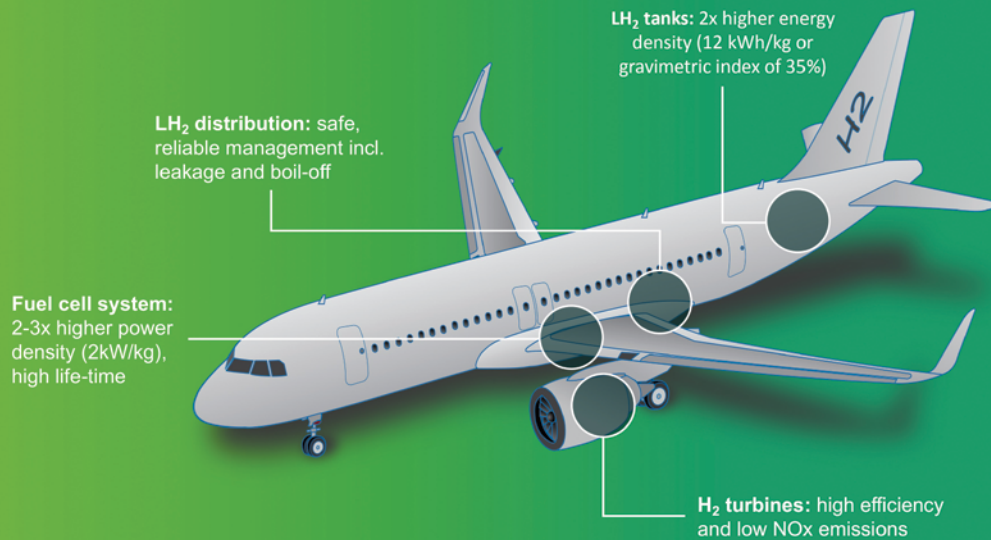
Overall, I am proud to say that Europe is one of the world leaders in pursuit of sustainability goals. Our work supports the European Green Deal and will benefit from ReFuelEU Aviation. This European initiative aims at accelerating the scale up and production of sustainable aviation fuel, also comprising hydrogen. Moreover, our research into disruptive technologies matches our ambitions as a founding member of the Alliance for Zero-Emission Aviation (AZEA).







## Aircraft design: four technology improvements...



### What are some key examples of Clean Aviation projects related to hydrogen?

Our programme's first PHASE is organised around two calls for proposals. Call 1, with a budget of €1700 million composed of EU funding (€654 million) and private members contribution, brought together a wide array of public and private partners, research centres and academia from all across Europe to work on **20 daring projects**. Six of them are dedicated hydrogen-powered aircraft projects, representing 24% of the total effort of the call 1.

The CAVENDISH and HYDEA projects, led by Rolls Royce and Avio Aero respectively, cover the maturation of hydrogen direct-burn concepts. The Honeywell-led NEWBORN project looks at the next generation of high-power fuel cells. Aciturri leads the H2ELIOS project, which looks at the necessary technologies required to store hydrogen on board. The last two projects, FLHYing Tank and HYPOTrade, led by Pipistrel, are

investigating all aspects related to hydrogen storage on board and the potential of fuel cells for use and testing on smaller aircraft during flight.

Our **second call for proposals**, with €152 million in EU funding (€380 million of budget), complements our first call projects in preparing all the necessary elements for ground and flight test activities. Three topics are specifically dedicated to hydrogen-powered aircraft.

They will investigate topics such as engine and aircraft fuel distribution systems, as well as a multi-megawatt fuel cell propulsion system. I am eager to see the results of these projects, which will help pave the way for the entry into service of new highly efficient aircraft by 2035.

### How important is collaboration to reach shared climate-neutrality objectives?

Clean Aviation will not succeed on its own. The required investment in reducing aviation's footprint is

substantial, hence we bring key players in the aviation field together.

It is important to collaborate at European, national and regional levels. Last year, we signed a Memorandum of Understanding with EASA and another one earlier this year with the Clean Hydrogen Partnership to strengthen cooperation with key players on research and innovation. We are also liaising with national authorities in France and Germany, with more to come, to streamline efforts.

At regional level, we have recently signed Memoranda of Cooperation with the Campania region in Italy and the Occitanie region in France to accelerate the maturation and demonstration of low-emission aircraft technologies. As often said by Axel Krein, Clean Aviation Executive Director: "we need to fly in formation".

We simply cannot fail to meet our climate neutrality objectives by 2050 and have a future where clean air transport is the norm. ●

# What the climate policy for aviation needs to get right

By Dr Marina Efthymiou (pictured), Dublin City University, Ireland

Aviation's emissions are gaining a lot of public attention, with civil society being worried about climate change and its impacts. The industry's environmental performance is frequently scrutinized and air transport is regularly portrayed in the press as a major contributor to greenhouse gas emissions and a significant driver of climate change. Aviation today is responsible for approximately 2% of all man-made CO<sub>2</sub> emissions and 3-4% of all man-made greenhouse gas emissions. The reality is that as the number of flights increased year-on-year (pre-COVID-19), aviation's contribution to climate change had been growing steadily in absolute terms but remaining stable relative to other emission sources.

## The need for a systemic approach to all aviation entities and cooperation

Aviation constitutes a multifaceted and interconnected system with a web of interdependencies. Beyond airlines, aviation encompasses aircraft and engine manufacturers whose innovations influence fleet efficiency and environmental performance. Airports facilitate passenger and cargo flows and themselves have a significant environmental impact. Air traffic control coordinates the aircraft movements, and any inefficiencies lead to extended flight paths. Maintenance Repair and Overhaul (MRO) organisations, ground handlers, equipment providers are only a few parts of the aviation systems, along with passengers and corporate travel.

By recognizing these diverse

components and their interactions, policymakers should have a system-level thinking and develop policies that account for the entire aviation ecosystem, fostering a balanced approach that considers economic growth, environmental consideration, and social welfare. Following a systems perspective, policymakers can have a better-informed decision-making, identify potential synergies, recognise conflicts and trade-offs and implement multifaceted policy solutions for sustainable aviation.

## Policies should be better interconnected

There is a compelling need for better interconnection of sustainability policies in Europe, where the intersection of economic growth, aviation, and environmental responsibility is paramount. This is even more critical when we recognise that aviation is a system. Having a siloed approach to address environmental issues limits the

effectiveness of sustainability policies. By fostering further synergy among policies across various areas, such as engine standards and airspace architecture improvement, climate policy can be more effective.

Complementarity is an essential aspect of decarbonisation policies for aviation. This means that policies must work together to achieve the greatest possible reductions in emissions. There are various policies related to sustainable aviation with various levels of interconnection. An area that I have explored is the European Union's Emissions Trading System (EU ETS) for aviation, coupled with the Single European Sky initiative, that exemplify how regulatory frameworks can work in tandem. These two policies are not interconnected, but they complement each other. The EU ETS places a cap and trade on carbon emissions from flights incentivizing airlines to adopt cleaner technologies and invest in



“ *There is a compelling need for better interconnection of sustainability policies in Europe, where the intersection of economic growth, aviation, and environmental responsibility is paramount.* ”

sustainable practices. Simultaneously, the Single European Sky initiative aims to optimise the airspace architecture, reducing congestion and shortening flight routes, thereby lowering fuel consumption and emissions. It is critical when we look at the effectiveness of the schemes to evaluate any cancel-out effects or double-counting in the reduced emissions attributed to each scheme.

EU ETS is now also better connected to Sustainable Aviation Fuel (SAF) in the form of offering 20 million SAF allowances to aircraft operators to incentivise the deployment of SAF as directed by the ReFuelEU blending mandate and financially assist the industry when the free ETS allowances are faced out from 2026. Similarly, though policies aimed at increasing the use of SAF (e.g., ReFuelEU) must be accompanied by supply-driven policies that aim to reduce the cost of SAF and increasing their availability.

In conclusion, European aviation policy needs to realise its full potential of approaching environmental sustainability policies in an interconnecting way to drive meaningful progress toward a more sustainable future while addressing environmental, economic, and societal dimensions simultaneously.

#### **Regulation of Carbon emissions is only the start**

When talking about sustainable aviation in terms of climate change, we think of carbon. Most sustainable

aviation policies focus on reducing the carbon dioxide (CO<sub>2</sub>) emissions produced by aircraft fuel burn, with CO<sub>2</sub> being a well-known contributor to climate change. We have achieved some significant progress on this thanks to the airlines push for fuel efficiency. Jet aircraft in service today are well over 80% more fuel efficient per seat kilometre than the first jets in the 1950s.

CO<sub>2</sub> emissions are the most well-known and well-understood aspect of aviation emissions, but non-CO<sub>2</sub> effects such as contrails and cirrus clouds can also have a significant impact on the environment. As the scientific understanding of GHG is increasing, we need to realise that aviation decarbonisation efforts need to go beyond CO<sub>2</sub>, as according to EASA (2022), two-thirds of aviation's effect on climate is caused by non-CO<sub>2</sub>, with contrail cirrus alone accounting for up to 57% of the total impact.

Aviation produces black carbon emissions (soot) can contribute to localized warming and NOx emissions from aviation lead to ozone concentrations in the upper atmosphere, increasing radiative forcing and contributing to climate warming. The climate impact of the non-CO<sub>2</sub> emissions is dependent on the altitude and meteorological conditions and therefore is not related to the fuel consumption in a linear way. Therefore, addressing the fuel consumption does not resolve the non-CO<sub>2</sub> effects; thus, they require further policy control.

There is a growing body of scientific research supporting the existence and significance of non-CO<sub>2</sub> effects of aviation on the Earth's climate and policies need to consider this. The inclusion of non-CO<sub>2</sub> emissions in the MRV of EU ETS is a positive step towards the right direction, but the non-CO<sub>2</sub> emissions are still largely ignored in other sustainability and aviation policies. Establishing clear and ambitious emission reduction targets for both carbon dioxide (CO<sub>2</sub>) emissions and non-CO<sub>2</sub> effects is vital.

#### **Conclusion**

The aviation industry has made significant commitments to achieving net zero emissions, but those commitments are only aspirational and not binding. Therefore, interconnected decarbonisation policies for aviation are critical to reducing greenhouse gas emissions and mitigating the effects of climate change. These policies must be complementary and consider both CO<sub>2</sub> and non-CO<sub>2</sub> effects and more importantly approach aviation as a system. ●

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# Fueling the future: biodiesel's role in decarbonising the EU transport sector

By EBB Secretary General, Mr. Xavier Noyon (pictured)

**P**hasing out fossil fuels in the transport sector is no longer just a climate change imperative; recent geopolitical events have underscored the urgent need for the European Union (EU) to accelerate the reduction of its dependence on fossil fuels. In this context, sustainable biodiesel from crops, wastes, and residues, is a pivotal player in Europe's quest for decarbonisation of transport, and especially aiming at hard-to-abate sectors such as heavy-duty vehicles, maritime, and aviation. These versatile fuels are primed to revolutionize the EU's energy and transport sectors, offering a greener path forward.

## **A complex challenge: phasing out fossil fuels**

The EU faces a monumental challenge: reducing greenhouse gas (GHG) emissions from the transport sector by a staggering 90% by 2050. Achieving such an ambitious goal necessitates a multifaceted approach, as the transport sector is a web of complexity. While electric vehicles have garnered considerable attention, their widespread adoption alone won't suffice to meet the EU's 2030 climate targets. The road to full electrification is long, with today's diesel-powered buses, trucks, and cars, set to remain on European roads for many years to come.

This is where biodiesel steps into the spotlight. Sustainable biodiesel presents a compelling solution to significantly lower emissions from

the transport sector. According to a recent study by Studio GearUp, biodiesel (HVO and FAME) in 2021 saved between 77% to 81% of GHG emissions. As a result, about 45 Mtonne CO<sub>2</sub>eq emissions were saved by biodiesel in 2021. Additionally, the advantage of biodiesel lies in its compatibility with existing infrastructure and engines, making it a seamless and cost-effective replacement for fossil diesel.

## **Beyond decarbonisation: biodiesel's additional benefits**

Biodiesel's sustainability credentials go beyond simply emissions reduction. It plays a pivotal role in both fuel and food production, a true win-win scenario. Consider this: 9 million tons of rapeseed account for approximately 40% of EU biodiesel production; simultaneously, this production delivers high-protein byproduct which becomes a valuable source of animal feed, supporting EU farmers and offsetting the need for animal feed imports from third countries. This dual functionality aligns seamlessly with the EU's climate objectives and agricultural sustainability.

But biodiesel's impact doesn't stop there. Waste and recycling companies play a crucial role by supplying used cooking oil and animal fats, byproducts of consumers and industrial processes, to modern biodiesel refineries. This process not only contributes to the EU's circular economy but also reduces emissions.

Moreover, biodiesel production yields

several valuable byproducts, including glycerin, bio-naphtha, lecithin, bio-LPG, and various biochemicals. These substances replace fossil fuel-based chemicals in everyday products such as cosmetics, food, and polymers, further advancing sustainability across multiple industries.

## **Policy initiatives: driving biodiesel's adoption**

In tandem with industry developments, policy initiatives are pivotal to accelerate the adoption of biodiesel and other sustainable biofuels. The recently finalized EU Renewable Energy Directive (RED III) embodies a bold step in the right direction. EU policymakers have agreed upon a robust 42.5% renewables target for 2030, coupled with a 14.5% GHG emission reduction target for the transport sector. These targets signify a resolute commitment to decarbonisation and sustainability, offering clear signals to the market and fostering increased investments in renewable energy.

Crucially, the RED III maintains the cap on crop-based biofuels at 2020 consumption levels (with a maximum of 7%), ensuring stability in the regulatory framework for crops until 2030. Biodiesel, being the first renewable energy source in the transport sector in 2020, is well-positioned to contribute significantly to the EU's 2030 objectives. The continuation of double counting for Annex IX-B feedstocks underscores the vital role of waste and residues in the EU's decarbonisation journey.

### Challenges and opportunities

Despite biodiesel's potential, several obstacles must be addressed to fully unlock its capabilities. Firstly, immediate action is needed to promote the use of higher biodiesel blends beyond B10, such as B20, B100, and HVO100. As stated in the B+ Manifesto, co-signed by more than 50 organizations, it is imperative to put in place a regulatory framework that respects technology neutrality and differentiates between CO2 emissions from fossil fuels and emissions from biogenic fuels. The B+ Manifesto also urges policymakers to consider vehicles powered by carbon-neutral fuels as equivalent to battery electric and fuel cell vehicles, and to allow higher blends of green fuels, particularly in dedicated and captive fleets.

Ensuring regulatory stability is equally critical. Frequent changes to the EU Renewable Energy Directive and other regulations can deter large-scale investments and stifle innovation. A stable and technology-neutral regulatory environment provides the certainty necessary to nurture both investment and creativity in the sector.

Furthermore, policymakers must acknowledge the value of fostering a diverse range of transport energy options. This recognition is especially pertinent in the ongoing revision of CO2 emission standards for new heavy-duty vehicles (HDVs). Shifting from a focus solely on tailpipe emissions to a comprehensive life-cycle assessment (LCA) approach will promote informed decisions that align with broader sustainability goals.

### Conclusion

Transport decarbonisation is a complex puzzle that Europe must solve swiftly. To do so, we must confront uncertainties and leverage all available tools at our disposal. While no single technology holds all the answers, creating a framework that encourages innovation and



enables various segments and sectors to contribute is key.

With the right tools and incentives in place, we can set the EU on a trajectory toward a more sustainable and decarbonised transport sector. Biodiesel, with its significant emissions reductions, multifaceted benefits, and compatibility with existing infrastructure, stands ready to play a central role in this transformative journey. As Europe looks to shape its future in a post-fossil fuel era, biodiesel proves that it is not just a bridge but an essential building block in the road to a greener transport future. ●



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# GeoHEX Project: The Heat Exchanger Revolution for the Geothermal Industry

The European Commission has established clear objectives intended at reducing greenhouse gas emissions and promoting the wider utilisation of renewable energy sources. Geothermal energy holds great potential for contributing to these goals. However, the utilisation of geothermal brines to extract heat presents unique materials and technological challenges, such as corrosion and scaling leading to blockages or plugging, which have a significant impact on various components of a geothermal power plant, including turbines, conduits and well pipes.

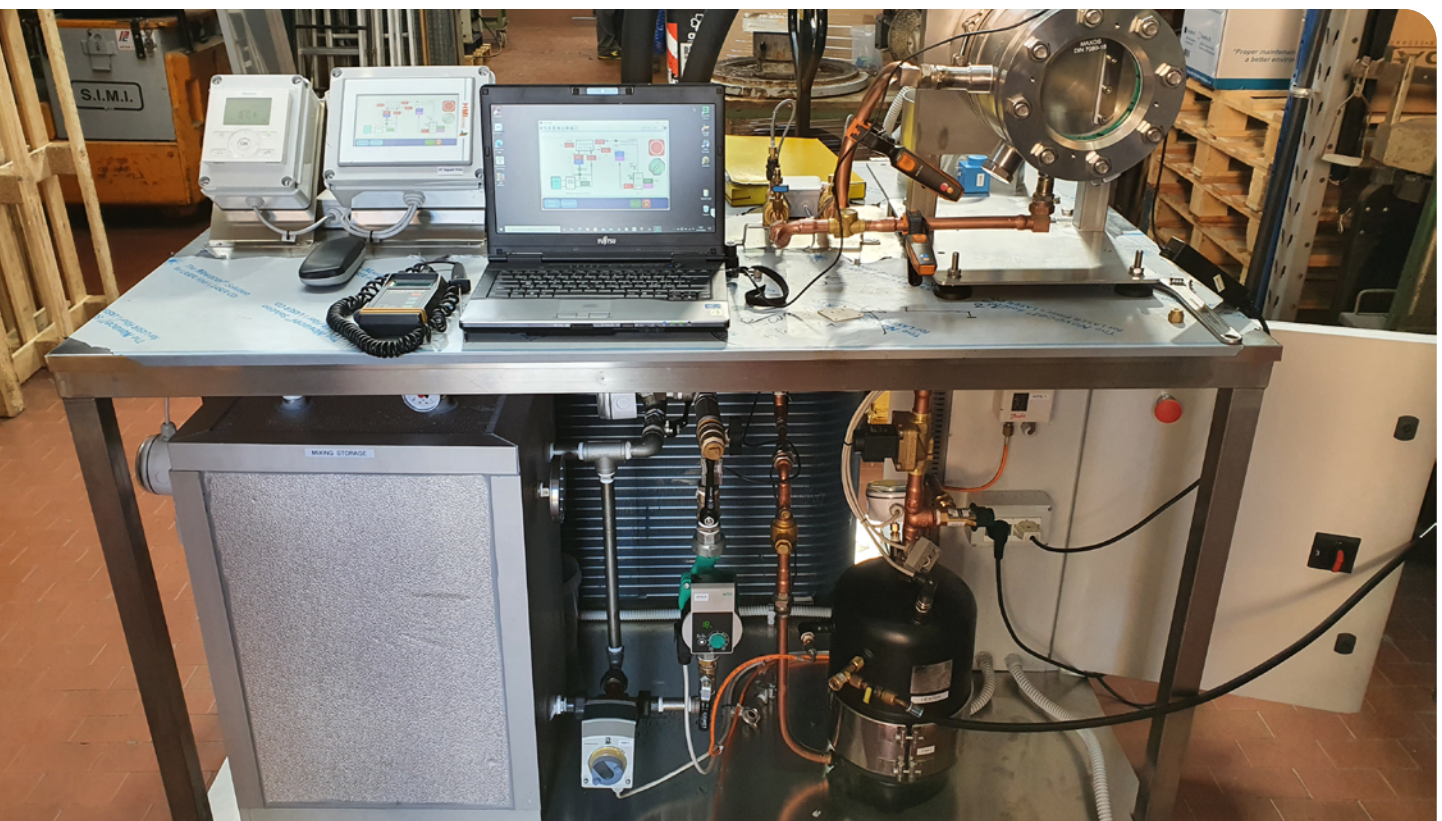
One crucial element within a geothermal power plant is the heat exchanger. In this project, we are pursuing a multi-stage,

practical approach to implement specialised coatings for heat exchanger applications. During the coating development phase, we encountered various types of heat exchangers in a geothermal power plant, each with specific thermodynamic requirements crucial for optimising the energy generation cycle. For instance, in condenser heat exchangers, the condensation of liquid films creates a thermal barrier, resulting in energy generation inefficiencies. To address this issue, we explored the use of hydrophobic coatings that prevent the formation of liquid films through droplet condensation. This is just one example of the numerous developments within the GeoHEX project.

The selection and testing phase of

these coatings involved the design and fabrication of instrumented test rigs by one of the consortium partners. These rigs enable us to assess the coatings' effectiveness in mitigating corrosion, preventing scaling, and enhancing energy efficiency. For instance, one of the rigs was deployed inside a geothermal power plant in Iceland, connected to a bypass in the geothermal brine pipeline, to determine which coating could effectively reduce mineral scaling while continuously monitoring thermal efficiency.

During the testing phase within the heat exchangers, it is worth noting that certain parameters are challenging to assess outside of an actual energy generation cycle. Parameters like the impact





on sub-cooling or the flow rate at the turbine's exit pose difficulties. One of the Project's objectives was to construct a pilot modular geothermal power plant for testing heat exchangers with and without the novel coatings developed in GeoHEX. The coatings' efficacy was evaluated based on the energy output from a small turbine.

GeoHEX represents a collaborative, cross-border initiative involving partners from seven diverse nations. These include the United Kingdom, with TWI, the University of Leicester, and Technovative Solutions; France, with Enogja and CEA; Romania, with the University of Bucharest; Iceland, with On Power, University of Iceland, ICETEC and Grein Research; Italy, with Spike Renewables; Norway, with Flowphys; and the Philippines, with Quantum Leap JMB. The shared objective among these international collaborators is the development of specialised engineered coatings tailored exclusively for the geothermal sector. ●



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Platform's Manifesto for the 2024 EU elections

# 2024-2029 People & Progress: Five Years to make the e-mobility transition a Success

The agreement to pursue zero emissions for Europe's new cars and vans by 2035 has set a clear direction and an unequivocal target for sustainable transport measures; with the last legislative session providing backing for the European Green Deal. We fully back these efforts, and urge support through enhancements to the existing charging infrastructure, the development of alternatives such as a strong rail network and a sustainable batteries value chain.

However, in order to make the Green transition a reality, and bring its benefits to people, the planet and business, it is vital that we act now. Making the transition to e-mobility must be a priority, not simply to deliver environmental sustainability but also to reinforce the EU's industrial strength, security and competitiveness.

## Now is the time to put the Green Deal into action

The Green Deal, its technologies and fully electric transport modes will significantly reduce Europe's **dependency on fossil fuels**. Recent geopolitical events have shown the importance of ensuring energy security and resource independence.

The Green Deal will also make the EU a global leader in the **sustainable transport industries**. It will position Europe as an authoritative voice on the need for climate change action while bringing welcome economic growth and the creation of high-quality jobs.

The Green Deal will allow Europe to prioritise the **quality of life of its current and future workforce**. This will see the highest social standards put in place to protect the interests and livelihoods of Europe's workers, both now and as part of a sustainable future.

## An effective green industrial policy will bring the benefits of Europe's Green Deal to all.

Continuing and rapid decarbonisation is crucial: but it must be done in such a way that preserves Europe's competitiveness. Nowhere is this more important than in transport and mobility. The Platform for electromobility – an alliance of companies, cities and NGOs – brings the knowledge and expertise to make an effective and efficient mobility transition a reality.

To do so, the Platform is calling on future legislators to prioritise the following actions in 2024-2029:

### 1. A Green and Just Industrial Policy

Main policy ideas:

- Creating an integrated recycling industry ecosystem in Europe.
- Smartening and upgrading existing grid infrastructure to allow it to support greater levels of renewable energy.
- Ensuring strong end-of-life vehicles regulation, focused on low carbon and recycled materials.

One of the richest 'urban mines' available to Europe is the supply of old batteries and other waste materials. By **investing in integrated recycling and repurposing facilities for collecting, dismantling, recovering or reusing valuable metals from batteries**, Europe can, by 2040, secure a large share of the metal resources it needs for battery production. Such an approach not just reduces waste, it is also scalable, preserving and reusing precious raw materials and keeping a greater proportion of them within Europe, increasing our strategic autonomy.

The overall concept of Europe keeping potentially valuable waste within its borders is one that should be widely adopted. Environmental recycling standards vary; exporting waste for processing to locations without equivalent standards undermines our own attempts to reduce environmental impacts. The EU should encourage recycling by establishing a harmonised approach to the intra-EU shipment of spent batteries. All. Executed properly, this can make Europe competitive in battery recycling, ensure the highest environmental standards and help create a flourishing recycling industry in the future

Resilient, affordable renewable energy will be key to a successful industrial policy; however, this demands that the correct grid assets are in place. With a **European Grids Package**, Europe can refresh and upgrade its infrastructure to meet the demand to accommodate higher levels of



renewable energy. Although this will require investment, doing so will allow Europe to tap into its future grid asset – electric vehicles. It will accelerate the connection of chargers and other Green Deal enabling technologies and allow Europe to tap into the huge energy storage potential offered by electric vehicles.

Europe must also go further than simply reducing vehicle engine emissions; it needs a **more-holistic approach to reducing the environmental footprint of all road vehicles**. This means decarbonising manufacturing materials, increasing manufacturing efficiency and maximising the circularity of the materials used. Introducing digital product passports, revamping EU products policy to reduce environmental footprints and committing to deliver a strong end-of-life vehicles regulation based on low carbon and recycled materials, will be the key drivers for such change in the years ahead.

Finally, while a renewed European industrial policy has focused on key components and sub-systems, it is important that it considers the **full scope of the mobility industries' value chains** supporting their global competitiveness as they address the green transitions.

## 2. Investment Plan to implement the Green Deal

Main policy ideas:

- Making it easier for green energy transition sectors to access current EU funding mechanisms.
- Deploying infrastructures to support zero-emission passenger and freight transport across Europe.
- Introducing a dedicated budget for urban nodes, to avoid cities becoming a weak link.



The 2023 Net Zero Industrial Act and the Critical Raw Materials Act needs an accompanying **European Net-Zero Infrastructure Investment Plan**. A long-term, easy-to-access investment facility – aimed at sectors key to Net Zero – should be a core issue during the European elections.

Freight and logistics infrastructure are a vital component in the movement of goods within Europe. There should be comprehensive investment in developing and deploying sustainable logistics infrastructure. The key elements for decarbonising freight in Europe while remaining competitive are the roll-out of **high-power charging infrastructure** required for deploying electric trucks of all ranges, the completion of a **high quality, interoperable rail network** with very high-speed connections, while ensuring a level playing field with other non-emitting modes of transport of goods.

Europe must also improve support for urban transport. Cities are working to accelerate the modal shift and to increase the electrification of their vehicle fleets. To avoid cities becoming the weakest links **Europe should be providing parallel support to investments in zero-emission public transport networks and to the deployment of smart and efficient charging infrastructure within urban areas**. To support the required local infrastructure investments, the next Connecting Europe Facility (CEF) transport programme should include

a dedicated budget for urban nodes, building upon the experience of the Alternative Fuel Infrastructure Facility.

Further support from EU research and innovation programmes as well as guidance, will also be needed to overcome challenges such as the constraint of public space, uneven distribution of private investments in EV charging infrastructure in cities or their integration in multimodal hubs, as well as lack of grid capacity.

Net Zero Sectors include the sustainable mining, processing and recycling of critical minerals and metals, modernising power grids and facilities for industrial material recovery as well as renewable energy production. Although existing European funds could contribute significantly, prioritising access to the current EU funding mechanisms and tailoring them to the specific needs of the sustainable transports value chain participants is essential.

## 3. People at the heart of the e-mobility ecosystem

Main policy ideas:

- Supporting reskilling programmes to attract workers from traditional industrial sectors and aiding their transition into these emerging sectors.
- Enabling Vehicle-to-Grid (V2G).
- Mandating electric vehicle adoption in corporate fleets.

As Europe shifts to a green economy, the demand for workers in industries such as critical raw materials, batteries and renewable energy industries will grow. Therefore, it will be essential to allocate EU resources and support to help **steer young people into those technical fields essential for the green transition.**

There should be communication campaigns aimed at raising the visibility – and value – of these technical fields. It will also be crucial to implement well-funded reskilling programmes that will **attract workers**

**away from existing traditional industrial sectors and into emerging sectors** such as renewable energy, grid management, infrastructures and recycling. These programmes will upgrade workers' skills, train future workforces and ensure a just transition for the workers, their employers, and regional authorities.

The wider adoption of electric vehicles and rooftop photovoltaic solutions offer significant opportunity to **unleash 'prosumer potential'** in Europe. Restructuring Europe's electricity market will allow us to

maximise this potential, specifically through creating opportunities for Vehicle-to-Grid (V2G) where appropriate. This would enable EV drivers to take an active part to the transition by supplying power back to the grid. Allowing them to be rewarded for providing additional grid capacity and thus making the energy system more dynamic and resilient.

It is critical that **zero-emission mobility is affordable to everyone.**

To that end, both old and new electric mobility solutions must be scaled up across Europe: Existing facilities include public transport offerings, shared cars and e-bikes for situations where individual cars are unnecessary.

When they are unavoidable, newer solutions include low-cost leasing options, targeted purchase incentives policies and industrial strategies that support the deployment of smaller, more-efficient battery models should be provided. The rapid uptake of electric vehicles within corporate fleets will accelerate their second-hand availability. Implementing the Climate Social Fund should help drive this transition with the least possible impact on lower income families.

In conclusion, the Platform's key policy asks revolve around enhancing autonomy, promoting sustainability, and economic prosperity both for clean transports industries and for their consumers. We believe that by prioritizing these issues, we can pave the way for resilient, global-leading Europe. To learn more about our policy initiatives and hear from our dedicated members, we invite you to get in touch with us. Together, let's create the sustainable transport system of tomorrow. Reach out to us today! ●



**About the Platform for electromobility**

The Platform for electromobility is a unique alliance of over 49 Europe-based vehicle and product producers, infrastructure managers, operators, transport users, cities and environmental civil society organisations from across industries and transport modes.

Our overarching vision is to reach a sustainable, multimodal transport system in which people and goods are moved across land, inland waterways, sea and air in Europe using exclusively fossil-free electricity. To reach its vision, the Platform unites all sectors constituting the electromobility ecosystem to pragmatically ensure the conditions for the full electrification of new light-duty vehicles by 2035, and build a sustainable European zero-emission transport system by collectively sharing their expertise, challenges and solutions.

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# Cities decarbonizing their heating and cooling systems: a journey from vision to reality

“We no longer need a (gas) pipeline network in residential areas” affirms Stefan Fritschi (pictured), city councillor and Head of Technical Operations from the City of Winterthur, Switzerland.

**W**interthur is one of the seven European cities that are taking up the challenge of decarbonizing their heating and cooling systems with the EU funded project Decarb City Pipes 2050.

To achieve climate neutrality in 2050 or before, cities need to tackle a major energy consumer: buildings, and especially their heating and cooling systems. For environmental and, since the Russian invasion of Ukraine, geopolitical reasons, cities are committed to phasing out fossil gas. As Winterthur shows, the alternatives to gas are available: “Decarbonisation in the sector of heat is comparatively simple from a technical point of view. Replacement solutions such as heat pumps are technically fully developed”, according to Mr Fritschi. Since 2020, the cities of Bilbao, Dublin, Munich, Rotterdam, Vienna and Winterthur have explored these different solutions and worked out actionable, district-by-district transition roadmaps.

**There is no silver bullet: a combination of technical solutions is required. However, green gases are not the best option to decarbonise buildings’ heating.**

“Biogas, synthetic methane and also hydrogen will be part of the energy future. But we will no longer heat houses with it, these energy sources are too precious for that. The industry will certainly need large quantities of hydrogen. For these applications, however, we no longer need a pipeline network in residential areas.” explains Mr Fritschi from Winterthur.

**Decarbonising heating requires long-term planning of energy infrastructures to avoid stranded assets.**

And it is important to start in advance, according to Mr Fritschi: “We have been working for years to make this transformation possible at the lowest possible cost. For example, we have not built any new connections to the gas grid for several years. Also, investments in the gas grid are only made where it is mandatory for safety reasons. We used to invest over 3 million in the gas grid every year. Today, not even one. On the other hand, we will invest a lot of money in new district heating networks in the next few years.” In fact, each city involved in the project views district heating networks as a key solution for decarbonised heating and cooling in densely populated areas.

**During their journey, the cities are also reaching the limits of their own capacities and have come up with recommendations for changing the legislative framework.**

In the case of Austria, there is still a binding requirement for gas grid operators to connect buildings in case the owners request it. Such legislation is no longer sustainable if cities are to make the transition. Recommendations to improve the regulatory framework are valuable results of this project and should be discussed at national and European levels.

**Join us on the 11th of October in Brussels to learn and debate during the final conference of Decarb**



**City Pipes 2050!** Cities will share their main lessons in terms of heat planning and on how to make the most of local levers. These are key insights considering the upcoming obligation for all local authorities of more 45,000 inhabitants to develop heat plans, as stated by the recast EU Energy Efficiency Directive adopted in July 2023. ●



# Delivering reliable power for net zero a European Grid Action Plan

By Kristian Ruby (pictured), Secretary General at the electricity industry association Eurelectric

The electricity industry in Europe has shown remarkable resilience and adaptability over the years. 2022 was a critical year for the sector. Europe's energy crisis challenged the integrity of our internal electricity market and proved the value of clean and renewable power, not only for Europe's climate mitigation but also for its energy security.

With Russia's brutal war against Ukraine raging next door, it's clear that our dependence on unreliable regimes must be confined to history. There is no doubt today that the surest way to end that addiction to fossil fuels from abroad is with homegrown clean and renewable electricity. The recently approved [Renewable Energy Directive](#) calling for a 42.5% renewable target, together with the Heat Pump Action Plan and the 2035 phase-out for new sales of passenger cars with internal combustion engines are landmark legislative pieces setting out the way ahead.

Europe will now have to deploy some 600 GW in additional renewable capacity by 2030 on top of the 408 GW of preexisting capacity. This objective, combined with the EU's stronger push for decarbonising the transport and heating sectors with clean, energy-efficient electric technologies will exponentially increase electricity demand in the next decades.

Good news: Electricity in the EU is getting cleaner fast. As shown in Eurelectric's [Power Barometer 2023](#), the electricity industry has continued

to reduce its carbon footprint and, in 2023, has reached the lowest emissions intensity ever, 45% less than in 2000. The sector is on track to reaching carbon neutrality by 2040, but net zero will depend on the rest of the economy following suit.

Bad news: other sectors are not electrifying fast enough. Electrification rates must triple by 2050 for a realistic shot at reaching net zero. As society will rely more and more on electricity, electricity must be reliable for all. This means getting our ageing infrastructure up to speed to support the upcoming electrification wave.

## Grids for the future

The existing electricity networks, while resilient, were originally designed for a more centralised power system with large, conventional power plants connected at transmission level and power sent off towards the final consumer. It was a one-way system.

Today the same networks have to handle much more complex flows with the variability and decentralisation inherent in renewable energy sources. Consumers have turned into prosumers as they can interact with the grid by selling back the excess power stored in their electric vehicles' batteries or generated by their rooftop solar panels.

It is time to modernise our grids. Over 30% of distribution grids in the EU are over 40 years old and only have limited capacity to accommodate new connection requests, according to Eurelectric's recent [Grid report](#).

Europe's electricity infrastructure must be able to integrate hundreds of gigawatts of renewables coming online as more wind and solar projects come to fruition, and electric vehicles (EVs) and heating systems connect to the grid.

Already between 2020 and 2021 new connection requests increased by 19% across Europe, but the network extension has not kept pace due to lengthy permitting and an anachronistic regulatory framework. This lack of infrastructure not only poses a threat to the reliability of our

electricity supply but also hampers the full integration of renewable energy into our energy mix.

Adding to the complexity, the geography of the power system is also evolving. Rural areas, once primarily characterised by low energy consumption, are now transitioning into consumption-intensive regions due to the solarisation of supermarkets, construction of logistics centres, and introduction of EVs, to name a few.

Yet, the scarce grid capacity begets longer waits to connect and higher costs for all network users because of the work required to accommodate new capacity connections. As the power system evolves so should our infrastructure.

**From targets to plans... action plans!**

Grids must be prioritised to prevent

them from becoming the “new permitting” of the energy transition. This calls for a change of mindset at both EU and national levels: from an incremental to an anticipatory approach.

At national level, regulators must allow network operators to anticipate the need for grid extension via anticipatory investments. Enshrining the possibility to anticipate capacity needs in the electricity market design reform is paramount to ensuring system operators are incentivised to build the electricity networks needed for tomorrow. At EU level, policymakers should provide clear guidance to spur national authorities into action via a European Grid Action Plan.

An overarching EU strategy should foster grid expansion across Europe while incentivising system operators to make the best use of the capacity that already exists by investing in

digitalisation, enabling new flexibility schemes, and easing permitting procedures. Last but certainly not least, access to transparent data is a critical precondition for a smart future-proofed infrastructure. Smart meters are a key technology in this regard, as they provide real-time data for system operators to manage peaks in electricity demand.

Today, smart meters have reached 56% of EU customers, but large disparities persist across EU countries, with much less progress in Eastern and Central Europe. As more electric solutions enter EU buildings, smart meters are critical for managing an accelerating electrification rate.

A comprehensive action plan will not only modernise our grid but also lay solid foundations for a cleaner, secure, more prosperous Europe. It's time to power up our future. ●



# Tackling animal diseases in Europe: the power of SOUND-control

By Dr Inge Santman-Berends, Royal GD, Deventer, the Netherlands

Europe has faced its fair share of animal health crises, like the outbreaks of Foot and Mouth Disease, Avian influenza in the Netherlands (2003), and African swine fever. But what about the diseases present in many countries that don't grab the headlines? That's where the COST Action Standardizing output-based surveillance to control non-regulated diseases of cattle in the EU (SOUND-control) steps in, making a big impact on animal health.

SOUND-control is all about improving animal well-being, reducing antibiotic use, ensuring safe trade, and easing the burden of animal diseases on society. By standardising surveillance methods, this initiative allows us to compare how different European countries handle non-regulated cattle diseases.

Dr Inge Santman-Berends from Royal GD in the Netherlands, and the Chair of SOUND-control, shares the successes and challenges of controlling cattle diseases in Europe.



## The need to harmonise disease control in European cattle

The Animal Health Law implemented in 2021 categorises infectious diseases in cattle based on their impact, labelled from A to E. Category A and B diseases have strict control measures, while the others have less strict regulations. Examples of the latter include BVDV, BoHV1, and Paratuberculosis.

European countries have specific disease-control programs tailored to their unique situations for these diseases. Risk profiles also vary in between countries, such as Sweden with low imports and the Netherlands with high density and frequent contacts. For instance, the Netherlands successfully eradicated Leptospirosis in dairy cattle but still faces occasional re-infection due to imports from neighbouring countries.

To minimise risks, comparing the disease status of traded cattle from different control programs is crucial.

This process, known as output-based comparison, involves assessing results from different programs. The SOUND-control Action aims to harmonise the results generated by these diverse programs.

During its four years, this Action provided a comprehensive overview of cattle diseases controlled in at least one European country. The findings were published in *Frontiers in Veterinary Science* 'Overview of Cattle Diseases Listed Under Category C,D or E' and made accessible through a digital dashboard. Detailed information about disease control in individual countries was also compiled in a handbook with peer-reviewed scientific publications, aiming to encourage more countries to engage in disease control and eradication efforts, ultimately improving animal health and welfare.

Furthermore, the collaborative efforts of SOUND-control led to the development of a digital and Open

“ I'm amazed at what a group of people can achieve by working together in a COST Action, and I'm grateful for the opportunity to chair SOUND-control. ”

Dr Inge Santman-Berends, Chair of SOUND-control

Access data collection matrix. This matrix facilitated the gathering of quantitative data to support output-based surveillance. Lessons were learned about data interpretation and the need to ensure data collection feasibility across all countries, while keeping in mind their different perspectives. This inclusivity prevented certain regions from feeling ignored or unable to comply, and necessitated a shift in approach and metrics.

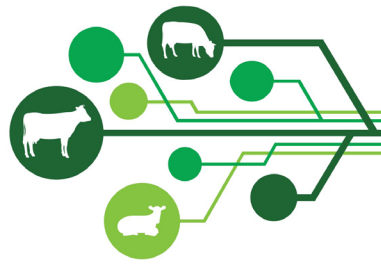
Additionally, gaps in output-based surveillance were identified by Action members, decision-makers, industry stakeholders, and farmers across Europe. Examples included variations in calf registration deadlines between countries, which complicates comparisons of mortality data. These identified gaps, along with their implications and potential solutions, formed the basis for a research agenda published at the end of the SOUND-control.

Inge admits that while output-based surveillance is believed to be the future, there is still progress to be made. Developing user-friendly methods and encouraging countries to share meta-data are essential steps for enabling meaningful comparison of program results.

“There is still much work to be done to make tools like output-based surveillance available to every country but it’s the future. And we want to control as many diseases as we can. Because it is good for animal health and animal welfare, for the climate, for the environment and biodiversity and you name it, it’s good for everything.”

Dr Inge Santman-Berends, Chair of SOUND-control

To enhance accessibility to information on the disease status of endemic cattle diseases in Europe, a user-friendly [Shiny app](#) was developed. The app allows users



## SOUND control

COST Action CA17110

SOUND-control COST Action: advancing cattle disease control

to search for specific diseases and compare control programs across countries. Recently, the app was updated with new features, including the ability to generate maps for all diseases in the database, and to provide a list of available literature on listed control programs.

Inge believes that the Action results can support safe trade and enable farmers to make informed decisions when purchasing animals based on calculated risks. Ultimately, the implementation of output-based surveillance, even on a small scale, will benefit both animals and farmers.

### Legacy of SOUND-control

The impact of SOUND-control goes beyond its initial phase. Some members of the network are now working together in project called [DECIDE](#), which is funded by the European Commission.

The success of SOUND-control has also inspired the creation of two other COST Actions. The COST Action [HARMONY](#) focuses on sharing knowledge and methods throughout Europe, while the COST Action [BETTER](#) aims to enhance biosecurity measures. These initiatives were initiated by enthusiastic participants of the original SOUND-control Action who wrote their own successful proposals. ●



### View the Action websites

Visit the COST Action webpage

SOUND-control network website

SOUND-control Reports & Publications

Global Control and Eradication Programmes For Cattle Diseases (Frontiers handbook)

Animal Health Law (europa.eu)

Shiny app

# Greening the maritime logistics supply chain

By Nicolette van der Jagt, Director General, Clecat (pictured)

The European Commission has set bold climate targets in the European Green Deal with the ambition for Europe to become the first climate-neutral continent in the world by 2050. This means that the transport and logistics sector will need to step up its decarbonisation efforts, which will pose a challenge given the current growth in transport demand and resulting emissions.

CLECAT is pleased to set out its views on the recent and future developments in the EU maritime transport and logistics sector, outlining the needs and objectives of European freight forwarders and logistics service providers in support of a shift to a sustainable maritime logistics supply chain.

CLECAT on its side has been encouraging its members to make the accurate measurement and reporting of GHG emissions a priority, in view of improving the carbon performance of their operations, as the clients of our members – shippers – are under increasing pressure to respond to the climate change challenge. They must understand, monitor and report the carbon footprint of their supply chains. It is for this reason that the freight forwarders want to be heard in the debate on measurements and reporting of emissions at regional and global level. Accordingly, CLECAT has been involved in numerous initiatives, including the development of an ISO standard for quantification and reporting of GHG emissions of transport operations, based on the GLEC Framework.

CLECAT also welcomes the recent CountEmissionsEU initiative proposed by the European Commission, setting a harmonised European framework for the measurement of transport and logistics emissions following the principles of the ISO standard.

CLECAT is also interested in efforts of the maritime sector to reduce their emissions as many forwarders want to reduce the scope 2 and scope 3 emissions of their supply chain. At EU level, CLECAT has welcomed the recent agreement to ramp up the production and deployment of sustainable alternative fuels, which is essential for reducing European transport sector's dependency on the fossil-based energy, as well as for mitigating the environmental and societal impacts of transport. The RefuelEU Maritime final agreement introduces new regulations concerning sustainable maritime fuels. The primary objectives of these regulations are to reduce greenhouse gas emissions and promote decarbonisation within the maritime sector. The text outlines a progressive reduction plan for greenhouse gas intensity of the energy used onboard ships. In deep-sea shipping, sustainably sourced methanol, hydrogen and ammonia, which can be used as fuel in internal combustion engines and also in fuel cells in the case of hydrogen, could be considered as zero-carbon alternatives to heavy bunker fuel, although commercial and technical limitations to their use remain.

The expected cost increases for importers and exporters of EU environmental regulations to

decarbonise shipping, namely the inclusion of maritime emissions into the EU ETS, the FuelEU Maritime Regulation, and the revision of the Energy Taxation Directive are considerable. As noted by the International Transport Forum (ITF) in its report on carbon pricing in shipping, this would largely depend on market conditions and bunker fuel price over time. Effective capacity could be affected either by slow steaming (increasing transit times) or by shorter routes (decreasing transit times), while a very low demand for ocean freight might deter ocean carriers from passing on certain extra costs. It is therefore essential that the revenues generated by these environmental regulations should be earmarked for the decarbonisation of shipping, via investments in cleaner vessels and corresponding recharging/refuelling infrastructure.

The main risk related to the inclusion of maritime transport in the shipping ETS are evasive port calls and modal shifts, which ultimately may lower the competitiveness of European ports. The Commission has promised to monitor how the market implements this policy and believes that it is not possible for EU ports to suddenly lose the majority of their cargo due to its introduction. This may be true, but it should be considered that business, once lost, will be difficult to reacquire.

The adoption of the Fit for 55 package is a step forward and the legislation will accelerate the green transformation of the transport and logistics sector in Europe. The success of decarbonisation of





the sector will depend on proper enforcement and compliance and sufficient investment incentives for the transport and logistics sector.

Besides this CLECAT highlights that the lack of well-developed, connected and accessible infrastructure remains a barrier to achieving fully sustainable cross-border freight movements across the EU. For European freight forwarders to remain competitive, it is important to have appropriate port logistics infrastructure and efficient and easily accessible connectivity to the hinterland. Interfaces between different transport modes, such as intermodal terminals, are crucial for promoting intermodal transport services and ensuring efficient intermodal supply chains across the EU. The lack of such infrastructure often leads to a decision against combined transport operations, which have a potential to reduce emissions. Better infrastructure availability and accessibility, focusing in particular on the lacking intermodal connections and transshipment facilities, should be fostered at EU level.

It is therefore important that the EU and national governments ramp up the financial support needed to invest in cleaner ships and infrastructure: More money should be allocated to the Connecting Europe Facility (CEF) to finance critical infrastructure such as onshore power supply in ports or multimodal terminals. Synergies with the energy sector must also be sought, as ports should also become energy hubs for clean power generation and production of sustainable fuels for vessels.

These substantial investments (including from private funds), required to develop better port logistics infrastructure, create multimodal transport corridors, enable a switch to sustainable alternative fuels and facilitate the circulation of information between the different parties of the logistics chain must be acknowledged. With the recent adoption of the FuelEU and ETS maritime the industry has received legal certainty and reassurances for companies that industry investments will be beneficial in the long-term. The Commission should also guide

private investors willing to invest in cleaner technologies.

Finally, the upcoming revision of a Combined Transport Directive is an opportunity to increase the uptake of combined transport across national borders in the EU. The Commission should therefore ensure that the 2023 revision fully addresses the market reality and creates a feasible framework for the Member States that incentivises the shift from long-haul road freight to low-emission transport modes, including inland waterways and maritime, subsequently reducing transport emissions and congestion on road networks. ●



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# Heat recycling: the next frontier of the green transition

By Jürgen Fischer (pictured), President, Danfoss Climate Solutions

**E**xcess heat is the world's largest untapped source of energy. **In the EU alone**, excess heat amounts to 2,860 TWh/y, corresponding almost to the EU's total energy demand for heat and hot water in residential and service sector buildings. Much of the excess heat that is released into the atmosphere every day could instead be captured and reused.

Every time an engine or machine runs, it generates heat. Anyone who has felt the warmth behind their fridge can confirm this. The same is true on a larger scale in supermarkets, data centers, factories, wastewater facilities, metro stations and commercial buildings. Excess heat can be reused to supply a factory with heat and warm water or reused by neighboring homes and industries through a district energy system.

This is entirely possible today with technologies that exist already. One **study** shows that 11-12% of excess heat can theoretically be recovered. But if we don't act, we are letting the lowest hanging fruit – and one of the greatest opportunities to increase energy security, affordability, and sustainability – slip straight through our fingers.

Excess heat not only has astonishing potential as an energy source at scale, but on a societal level, it can replace significant amounts of electricity or gas that are otherwise needed to produce heat.

This way, excess heat can help stabilize the future energy system

and thereby ease the transition to a cleaner energy system. While countries are taking mostly reactive emergency measures to the energy crisis, such as firing up old coal-fired power stations, they are simultaneously overlooking a readily available, safer and cheaper alternative. That is the smarter use of the energy we already have.

## What problems can heat recycling solve?

The energy crunch has presented European leaders with unprecedented challenges, not least where energy security and sustainability are concerned. European production of natural gas has **dropped off** in recent years and made Europe highly dependent on gas imports from other countries, threatening energy security. However, if the EU's excess heat could be captured and reused it may be possible to limit Europe's need to dip into energy reserves, while strengthening its position as an energy-independent region.

Some countries have so much excess heat they could cover their entire heat consumption. In the Netherlands excess heat amounts to 156 TWh/y while the heat demand is only 152 TWh/y. This demonstrates that excess heat is a gigantic opportunity.

## Where can we find the greatest opportunities?

Public decision makers have a key role to play in increasing the proportion of excess heat in the energy mix. The majority of high-temperature excess heat currently produced comes from the private

sector and collaboration between public and private entities will be essential to leverage these opportunities.

In the EU, there is a large excess heat potential from food retail, totaling 44 TWh a year. This equates to the heat generated by the Czech Republic and Belgium in 2021. Adding to this, excess heat from supermarkets can be tapped into very easily and reused to heat the space or to provide warm water. One **supermarket in Denmark** covers 78% of its heat consumption by re-using heat recovered from cooling processes. This provides a blueprint for how European supermarkets could, and should, be capturing and redeploying this crucial resource, using existing, proven technologies.

Similar opportunities exist for data centers. In Dublin, a well-known technology hub – Amazon Web Services – built Ireland's first, custom-built sustainable solution to provide low-carbon heat to the surrounding residential area. The recently completed **data center** will provide heat for initially 47,000 m<sup>2</sup> of public sector buildings and for 3,000 m<sup>2</sup> of commercial space, and 135 affordable rental apartments that would otherwise be heated by gas or electricity.

It is crucial that decision makers are aware of the potential of excess heat when conducting urban planning and designing the financial and regulatory framework for the future energy market. If we don't use it, we lose it!

One step in the right direction



came with the EU Energy Efficiency Directive, which mandates energy planning for municipalities and supports an improved interaction between heat supply and heat demand, such as for example between data centers and heating and cooling systems . We need many more measures like this.

Of course, these examples of supermarkets and data centers heating entire communities could

become the norm if the full weight of European policy makers were behind them. We urgently need policy measures to accelerate the use of excess heat across sectors to ensure that both citizens and businesses can benefit from lower energy costs as we accelerate the energy transition.

This is not only good for the environment, but it is also a good business case for Europe. A full implementation of technologies that

tap into synergies between different sectors and enable a utilization of excess heat has the potential to save €67.4 bn a year once fully **implemented in 2050**.

Now is the time to lay the foundations for the fully energy efficient, circular and sustainable future. Utilizing excess heat, the world's largest untapped energy source, will help get us there sooner rather than later. ●

# Study on hydrogen in ports and industrial coastal areas

## 2nd Report: Recommendations on the areas of priority for R&I projects, safety regulations, codes and standards and non-technical enablers

**Member States, EU and ports should act now to put in place an enabling environment for faster scaling up of hydrogen activities and infrastructure in ports areas, shows new study carried out by Deloitte Belgium for the Clean Hydrogen Partnership.**

The growing demand and supply of hydrogen (carriers) will open far-reaching opportunities for European ports, which are natural gateways for hydrogen and hydrogen carrier flows. The [study](#) informs stakeholders and policymakers on the areas of priority for overcoming technological, safety and non-technical (policy, regulatory, governance, strategic) gaps for the timely development of hydrogen related activities and infrastructure in EU port areas.

Clean hydrogen, especially of renewable origin (i.e., green hydrogen), has consolidated during the past years its prominent position in the EU's energy transition policies and is expected to be critical in substituting fossil gas, coal, and oil in some heavy industries (e.g., refineries, ammonia, steel, chemicals) and hard-to-decarbonize transportation (i.e., shipping, aviation, heavy duty road freight).

According to the REPowerEU Plan, the “development of port infrastructure and their connection to both industrial and transport users in the vicinity will be of critical importance” for increasing the demand for renewable hydrogen in Europe to 20 million tonnes per year in 2030. In this context, the Clean Hydrogen Partnership published in March 2023 a [first study](#), conducted by Deloitte, which provides detailed outlooks of the potential hydrogen demand and supply in European ports and coastal areas in 2030, 2040 and 2050, along with the required hydrogen value chain infrastructure and a no-regrets investment roadmap. It also provides an overview of the various possible roles that a port could fulfil in Europe's future hydrogen economy.

“A thorough understanding of the

*implications, requirements, and opportunities of the accelerated emergence of the clean hydrogen market for port areas is a prerequisite for a successful transition and the report identifies the most important ones, while providing recommendations for stakeholders and policymakers”.*

–Mirela Atanasiu, Executive Director A.I.  
Clean Hydrogen Partnership

Building on the results from the first study, Deloitte, with the support of the specialized consultancy TNO, carried out on behalf of the Clean Hydrogen Partnership a **three-level analysis** aiming at identifying current technological (R&I) challenges, gaps in safety regulations, codes and standards and non-technical (policy, regulatory, governance, strategic) barriers for various hydrogen activities and infrastructure that are expected to be rolled out in ports, and port areas.

The study also includes specific **recommendations to overcome the challenges identified** for each of these areas.

### Key recommendations to port authorities and other port stakeholders

1. Port authorities should engage with other relevant port-related stakeholders (i.e., terminal operators, fuel producers, fuel storage tanks owners, bunkering companies, shipping companies, ship owners, local electricity grid operators, local industrial clusters, etc.) and **systematically assess the techno-economic rationale and societal relevance for the development of hydrogen (carriers)-related activities and infrastructure in the port area** (e.g., import terminal, bunkering, hydrogen production, storage and/or conversion, multi-modal refueling stations, use as a fuel in ships, etc.).
2. In those instances where the development of hydrogen (carrier) related activities is assessed as positive or likely to be positive in the coming years, port

authorities are encouraged to 1) **set up a hydrogen working group** composed of representatives of local authorities as well as private stakeholders operating in the port ecosystem and 2) **develop a clear roadmap with key milestones, conditions, and organizational structure** for the successful and safe integration of these hydrogen-related activities in the port area.

3. In an effort to develop a more integrated and coordinated approach to coastal energy and infrastructure (e.g., import terminals, bunkering, storage tanks, conversion facilities, etc.) planning, **coalitions or framework agreements should be developed** between port authorities, key other relevant port-related stakeholders and neighboring connecting ports.
4. Port authorities should actively contribute to **establishing the necessary technical, economic and regulatory framework in the port area** to encourage port-related stakeholders to timely develop and/or operate hydrogen (carrier) related activities and infrastructure.
5. **The European Sea Ports Organization (ESPO) and the European Federation of Inland Ports (EFIP) could act as a trusted advisor** to the EU political legislator and Member State policymakers and support port authorities and other relevant port stakeholders on the specific regulatory, policy, governance and socio-economic enablers needed to encourage cross-border cooperation and faster development of hydrogen-related activities and infrastructure in maritime and inland port areas.

### Key recommendations to governments of EU Member States

1. Member States should consider **including specific provisions in their respective national hydrogen strategy for the timely development of integrated hydrogen-related infrastructure along coastal areas**

under national jurisdiction.

- In the framework of their national hydrogen strategy, Member States are encouraged to **promote and facilitate greater regional coordination, integration and mutualization** (at the level of coastal areas) for the development of hydrogen-related activities and infrastructure (e.g., storage and distribution). To this end, Member States could work towards the **development of integrated cross border hydrogen valleys involving several sea and inland ports.**
- Member States are advised to **allocate direct public funding to pioneers in the EU port areas that are launching investments in R&I and market-ready projects** aiming at demonstrating or decreasing the cost of import, production, storage, conversion, transport, refueling and end-use of hydrogen (liquid and gaseous form) and hydrogen carriers in a port environment.

#### Key recommendations from the study to the EU policy makers

- Complementary to national funding programs, the EU could consider to **allocate public funding** (e.g., through CEF-Energy, IPCEI, Horizon Europe, Clean Hydrogen Partnership, ZEWT Partnership, etc.) **to pioneers in the EU port areas that are launching investments in R&I and market-ready projects** aiming at demonstrating or decreasing the cost of import, production, storage, conversion, transport, refueling and end-use of hydrogen (liquid and gaseous form) and hydrogen carriers in a port environment.
- The EU should **encourage the International Maritime Organization (IMO) and International Organization for Standardization (ISO) to develop prescriptive harmonized international regulations as well as technical and safety standards** for
  - the sea-based transportation of hydrogen,
  - import terminals of hydrogen and LOHC,
  - the bunkering of hydrogen and hydrogen-based fuels and
  - the utilization of hydrogen and hydrogen-based fuels in deep-sea and short-sea applications.
- Building on future updated IMO**

**and ISO regulatory framework (see above), the EU is advised to work with the relevant regulatory and standardization authorities** (e.g., CCNR, CESNI, CEN and CENELEC) **to develop prescriptive harmonized EU-wide regulations, clear guidelines to Member States on administrative practices and permitting procedures, as well as technical and safety standards for**

- the transportation of hydrogen on inland waterway vessels,
- the bunkering of hydrogen/hydrogen-based fuels in inland ports,
- the utilization of hydrogen/ hydrogen-based fuels in inland waterway ships and hydrogen-based cold ironing systems,
- the construction and operation of multi-modal stationary hydrogen refueling stations in port areas,
- cargo handling and other terminal equipment powered by hydrogen/ hydrogen-based fuels,
- hydrogen carrier conversion facilities (ammonia crackers, LOHC dehydrogenation),
- the transportation of gaseous and LH2 by rail in the EU and
- the large-scale inherently safe production of hydrogen.

The full report can be downloaded [here](#).

#### About the Study on hydrogen in ports and industrial coastal areas

Although the transformations expected in ports as a result of the emergence of a European hydrogen economy are specific to each port, with different implications expected for sea and inland ports, the recommendations on strategic actions for port authorities and other port-related stakeholders outlined in this report are intended to encompass the entire European port ecosystem, and are therefore not tailored to any particular port archetype (e.g., seaport or inland port, logistics and transport, urban, industrial, or bunkering).

The report is designed in such a way as to allow port authorities (of all port archetypes) and other port-related stakeholders to navigate easily through the relevant considerations for hydrogen (carriers) related activities of interest to them (depending on the port's specific activities and strategy).

Throughout the course of the study, **several plenary and bilateral consultations with members of the Advisory Board** for this project and other key port-related stakeholders took place for maximum relevance and completeness of the analysis and conclusions.

The 'Study on hydrogen in ports and industrial coastal areas' comprises several phases, with this report being the **second in a series of three reports** that will all be released by the end of 2023.

**The first report**, released on March 30th 2023 (click [here](#) to access it), uses a scenario-based approach to provide detailed outlooks of the potential hydrogen demand and supply in European ports and coastal areas in 2030, 2040 and 2050, along with the required hydrogen value chain infrastructure and a no-regrets investment roadmap. It also provides an overview of the various possible roles that a port could fulfil in Europe's future hydrogen economy.

The **third report**, expected to be released in November 2023, will **examine several case studies highlighting the techno-economic feasibility** of developing a range of hydrogen-related activities and infrastructures in the vicinity of ports.

In parallel, the organization of multiple **European Hydrogen Ports Network events** all along the duration of this study **creates impetus** for the main European representatives of the port ecosystem to come together, **exchange, connect and take a long-term perspective** on hydrogen take-up in European ports.

These activities aim **to enable the creation of a 'European Hydrogen Ports Roadmap'**.

For more information visit:

[www.clean-hydrogen.europa.eu](http://www.clean-hydrogen.europa.eu) ●



# To tackle energy poverty effectively, local governments need ambitious policy support from above

By Arthur Hinsch

According to Eurostat's most recent data, in 2022, 42 million people in the EU could not afford to heat their homes adequately. Additionally, approximately 52 million people delayed paying their energy bills. And this is just the tip of the iceberg. Energy poverty materialises in many ways and is not limited to citizens, with many businesses and local governments facing increasingly high and volatile energy prices.

To address Europe's energy poverty problem, we must pursue a policy approach that allows lower energy prices and higher levels of energy efficiency to materialise, particularly for those who need it most. When it comes to a complex problem like energy poverty, it is clear that solutions need to be rooted in not only energy, but also social policy.

Eight national roadmaps to alleviate energy poverty have been co-developed under the EU-funded

POWERPOOR project and now serve as guidance for national, regional, and local governments to implement legally binding strategies. The countries covered are Portugal, Spain, Hungary, Croatia, Greece, Bulgaria, Latvia, and Estonia. These roadmaps contain insights on recommended policies and highlight that additional overarching national measures, such as temporary direct income support and large-scale renovation subsidies, can be effective ways to tackle energy poverty. While debate surrounding the

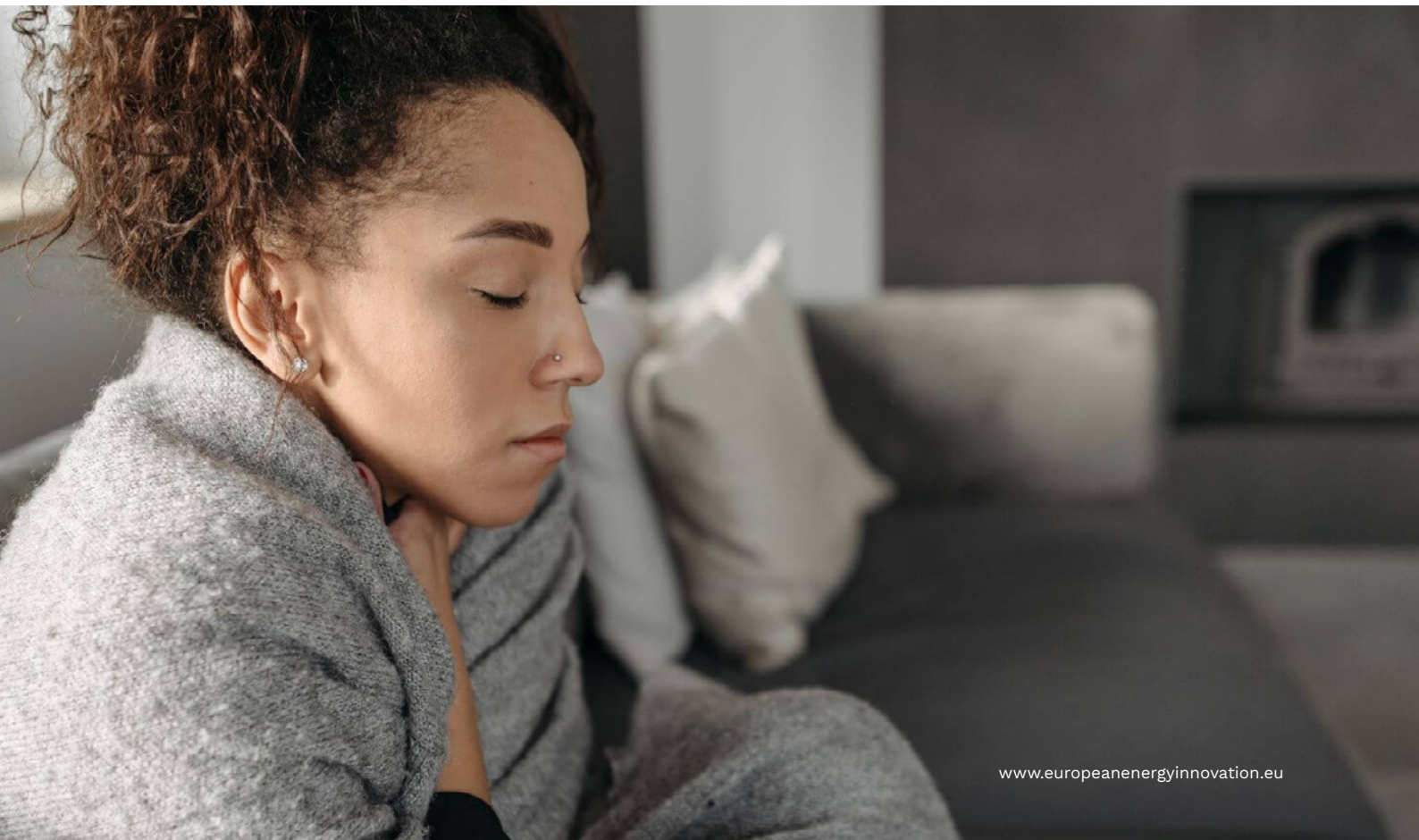


Photo: Julian Hochgesang, Unsplash

introduction of social energy tariffs is tricky, the Bulgarian roadmap, for example, advocates for the latter solution to ensure that energy poor households are not disconnected from the grid. Meanwhile, the Greek roadmap suggests introducing a targeted building renovation financing scheme to support the upfront renovation costs of energy poor households. The Greek roadmap also recommends prioritising the pilot implementation of a universal basic income in areas with high-energy poverty rates.

Next to relevant national measures, the consensus across the countries analysed is that local level solutions are crucial to tackling the problem effectively. There is a need for more structural and financial support to help local governments in identifying and supporting energy poor citizens, e.g., via the operation of municipal one-stop-shops. Across Europe many so called “energy poverty alleviation offices” (EPAO) have materialised as one-stop-shops within municipalities. While the EPAOs can also provide information about the benefits and support schemes for implementing building renovations, they also give more immediate advice on how citizens can reduce their energy bills in the short-term. Such an office can either be staffed by municipal or third-party staff and

assist citizens with various practical services. However, their long-term operation is often at risk due to financial and staffing constraints. It is imperative that EU Member States take advantage of the use of funds available under EU funding programmes, e.g., LIFE and the Recovery and Resilience Fund, as well as the upcoming Social Climate Fund (SCF), to increase local renovation rates and support the setup and continued operation of local EPAOs.

Member States should include clear financing avenues for EPAOs and for building renovation in their upcoming Social Climate Plans. It is important that these financial support schemes have a long-term perspective in order to avoid having EPAOs pause or halt operations, compromising efforts to build trust and credibility which can take years to establish. In addition to national-level renovation funds, financial resources must be channelled through subnational government budgets. Local governments should be involved in the allocation of SCF spending at Member State level.

The national roadmaps also recognise the importance of local ownership of energy infrastructure and energy communities to protect vulnerable consumers from high prices. In fact, experience from POWERPOOR and

MATRYCS shows that effectively managed energy communities and energy sharing/collective self-consumption schemes can contribute to lower costs. Currently, the Social Climate Fund foresees that part of the available funding can be allocated directly as income support to certain low-income households. To ensure that direct income support encourages long-term energy savings and behavioural change, it could be used to cover the investment cost for vulnerable households to become members of an energy community. Rather than targeting economic return via feed-in tariffs, these energy communities should be focused on triggering rebates on the participating households’ electricity costs via models such as collective self-consumption, energy sharing and (virtual) net metering.

Evidence from the POWERPOOR national roadmaps and across Europe shows that many local governments have a keen interest in pursuing innovative approaches to tackle energy poverty. This is best done within a national environment that understands that to address energy poverty effectively, local governments must be supported.

Take a look at the [eight national roadmaps](#) in their entirety on the POWERPOOR website. ●

The logo for European Energy Innovation features a stylized yellow and orange leaf-like shape at the top, with a series of yellow and green dots of varying sizes arranged in a curved path to the left. The text 'european' is in a light yellow sans-serif font, 'energy' is in a bold white sans-serif font, and 'innovation' is in a bold orange sans-serif font.

# european energyinnovation

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