

 HEINRICH BÖLL STIFTUNG
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INTERIM REPORT

Mind the gap: Addressing the deficits in the EU's green industrial agenda

Policy recommendations of the Expert Group on 100% Renewables in the EU by 2030

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Introduction

The energy and climate policy debate has shifted fundamentally since Russia's attack on Ukraine in February 2022. Following on the heels of the Fit-for-55-package, there is a rush to accelerate planning and permitting of projects of renewable energy, hydrogen, mining and other infrastructure. The EU is striving to rapidly become more independent regarding not only energy but also critical raw materials (CRM), and to reshore and attract green industries, reacting to new industrial strategies being adopted by other countries, like the US-American Inflation Reduction Act (IRA) and rising concerns about China's dominance in global clean tech value chains. These have resulted in a range of new initiatives, such as REPowerEU, the Green Deal Industrial Plan (GDIP) and a flurry of new energy partnerships, chiefly focused on securing hydrogen imports.

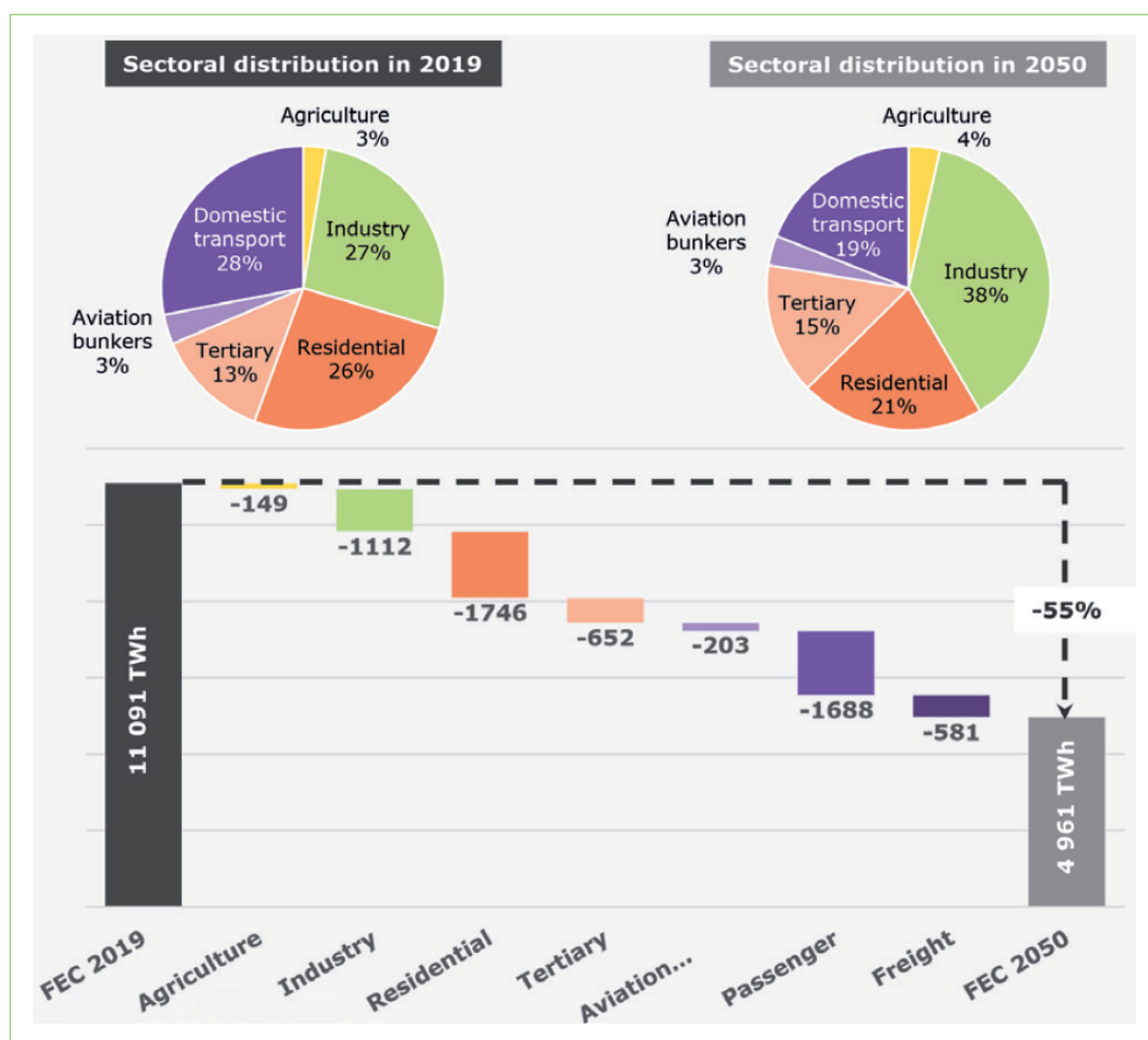
Heinrich-Böll-Stiftung European Union and Environmental Action Germany (Deutsche Umwelthilfe) have convened a group of over 20 experts from academia, industry, civil society and policy makers to discuss these issues, referred to below as the Expert Group. During our discussions, we identified several important policy gaps in the EU's approach, which should be addressed to ensure that the EU's new climate and industry agenda becomes as effective and globally equitable as it can be.

EU energy and resource usage should remain within planetary boundaries

Efficiency measures largely dominate the EU's current energy saving discourse. As we are nearing multiple ecological boundaries of our planet, it is becoming increasingly evident that relying solely on efficiency measures, driven by technological optimization and innovation, will be insufficient to meet the scale of the challenge. Even with significant increases in efficiency, per capita energy and resource usage are still rising in the EU, partly due to rebound effects. Demand reduction measures, such as further efficiency improvements, incentives for sufficiency and management of demand loads, are indispensable tools aiming at tailoring energy and resource demand to economic needs. This would help promote the transformation to a 100% renewable energy system without decreasing living standards, while massively improving the bloc's energy security as well.

The potential gains of demand-side management, including sufficiency policies, are enormous. For example, the CLEVER scenario published in June 2023¹ finds that adopting a range of such measures can double the energy savings achievable by relying purely on energy efficiency improvements (see Figure 1 below). The study finds that by 2050, EU final energy consumption could be lowered by 55% compared to 2019. Further, it finds that energy imports can be reduced to 90-100 TWh (green hydrogen) by 2050, from the 9,000 TWh fossil imports in 2020. This implies much lower overall system costs, energy imports and resource needs, making the prospect of reaching a 100% renewables-based system in time to respect planetary boundaries considerably more feasible.

Figure 1: Contribution of each sector in the EU27 Final Energy Consumption (TWh) reduction modelled in the CLEVER scenario between 2019 and 2050

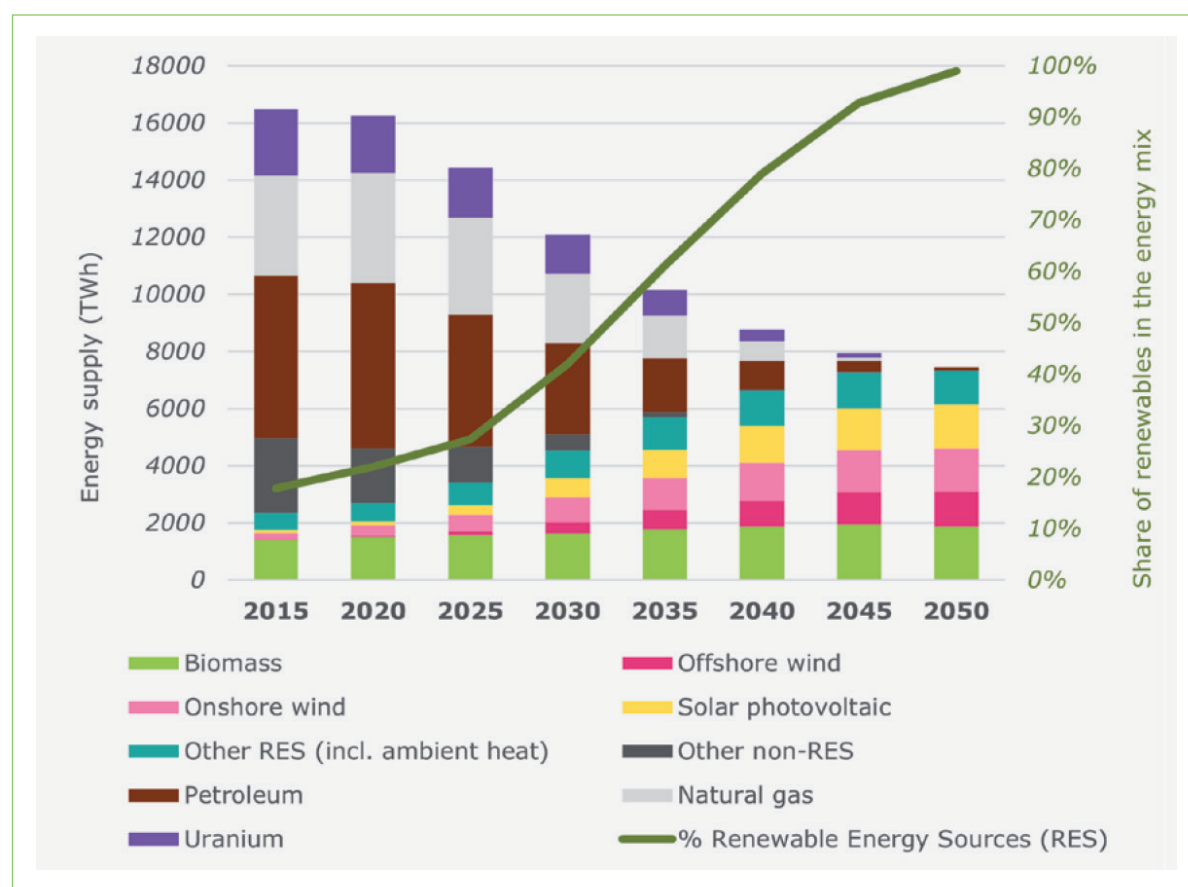


Source: CLEVER final report: A pathway to bridge the climate neutrality, energy security and sustainability gap through energy sufficiency, efficiency, and renewables (2023)²

1 https://clever-energy-scenario.eu/wp-content/uploads/2023/06/CLEVER_final-report.pdf

2 Ibid.

Figure 2: Evolution of primary energy supply by source and share of renewables in final energy consumption for the EU27 in the CLEVER scenario³



Source: CLEVER final report: A pathway to bridge the climate neutrality, energy security and sustainability gap through energy sufficiency, efficiency, and renewables (2023)⁴

The Expert Group therefore makes the following recommendations:

- **Elevating the ‘efficiency first principle’ in the Energy Efficiency Directive to a ‘demand reduction first principle’.** Alongside fostering further energy efficiency measures, effective and reasonable sufficiency policies should be considered as policies to reduce energy demand.
- **In the short term, the EU and its Member States can promote sufficiency by multiple and cross-sectoral measures** with negligible negative, and often positive, impacts on individual living standards. Good practices for sufficiency policies include speed limits on road transport and shipping, incentivizing the use of public transport and the shutting down of commercial lighting signs at night,⁵ enabling higher levels of working from home to reduce individual work commuting, adopting restrictions on short-distance flights and replacing them with high-speed trains, longer warranties on products to counteract planned obsolescence, obligations of modularity for different product groups to increase repairability,

³ Ibid.

⁴ Ibid.

⁵ NB: Such measures should only cover commercial signs used for advertising, rather than streetlights, which have numerous benefits, such as preventing crime.

shifting energy renovation subsidies from new buildings to the building stock, and the right to swap apartments with remaining contracts. Some Member States have already adopted some of these measures to limit energy and resource overconsumption in 2022 – these could be made more permanent.

- **In the longer term, infrastructure decisions and social norms heavily impact consumption patterns and addressing them brings down energy and resource use.** Urban and spatial planning plays a key role here. Improving low-energy and -resource infrastructure (such as rail and cycling) should be prioritized over high-energy and -resource infrastructure (such as construction of airports and highway lanes). Regarding tourism, promoting local tourism and ground-based travelling can help reduce aviation and individual car travel. With regard to mobility, emission limits on vehicles, especially individual cars, can incentivize the production of smaller cars, which use less resources and energy.
- **Sufficiency policies should pay special attention to limiting overconsumption among affluent consumers,** while enabling low- and middle-income consumers to adopt more sustainable consumption patterns. Globally, the most affluent 10 % of the world’s population is responsible for more than half of all carbon dioxide emissions.⁶ Policies with a strong social dimension, such as carbon wealth taxes or disincentivising the use of private jets and high-performance cars, are the natural place to start, rather than aiming to regulate the consumption of low- and middle-income groups. Aiming at excessive material overconsumption encumbers the poorer parts of our societies to a far lesser extent, and even has the potential to enable them to adopt more sustainable lifestyles if policies are designed accordingly.
- **The onus of reducing energy, resource and land consumption should be put on companies and industries to provide more sustainable products and services,** rather than on consumers who individually have little to no influence over business practices. The Corporate Sustainability and Due Diligence Directive currently under negotiation is crucial in this regard and should be adopted by EU institutions as a matter of high priority, as it is set to require companies to adopt a transformation plan and institute a system of legal supervision and enforcement to prevent breaches along the supply chain. Equally important is an ambitious and effective design of the Directive on the Right to Repair and the adoption of ambitious ecodesign standards for different categories of goods. As the EU is one of the world’s largest markets, EU regulation has significant power to force companies to change unsustainable business practices.

6 <https://oxfamilibrary.openrepository.com/bitstream/handle/10546/621305/bn-carbon-inequality-2030-051121-en.pdf>

- **The EU should also set binding 2030, 2040 and 2050 targets to limit the material and consumption footprint of the EU with the Critical Raw Materials Act**, as called for by the European Parliament in its Resolution on the Circular Economy Action Plan.⁷ Given the high anticipated resource needs of the energy transformation, the design of end products should have to meet material footprint requirements (e.g. relating to size, modularity and recyclability), in order to limit wasteful consumption of critical raw materials, such as lithium.

Moving towards a 100% renewable energy system

With the shift away from Russia as a major fossil energy supplier, the EU and its Member States have embarked, among other things, on a new expedited permitting agenda. This is being done to speed up the deployment of renewable energy and other critical infrastructure projects, mining for CRM, and removing state aid restrictions for promoting manufacturing of net-zero technologies. Long planning and permitting periods indeed create a bottleneck for critical projects such as renewable energy installations and power grids. Accelerating them is an essential element for the overall speed of the energy transformation. However, the current approach carries the risk of weakening key environmental safeguards for questionable projects, neglects social (in)justice and overlooks the importance of supporting policies.

The Expert Group therefore makes the following recommendations:

- **The EU needs accompanying regulatory policy instruments** to mandate the deployment of renewable electricity, heating and transportation options, such as solar rooftop obligations, obligations on public buildings to use renewable electricity and heating provisions such as the 65% renewable heating criterion originally foreseen in Germany's Buildings Energy Act. Current support instruments alone are insufficient to deliver the required acceleration of the renewable electricity and heating capacity needed to support the electrification of all end-uses and most economic activities.
- **Permitting agencies need greater capacity and financial resources to conduct thorough but speedy environmental impact assessments (EIAs) and expedite permitting.** While the US Inflation Reduction Act makes available several billion USD to various federal and state-level agencies specifically for this purpose, the situation in the EU is more complicated. The EU has opted to limit permitting and consultation periods, which is welcome in principle, to accelerate the build-up of the infrastructure necessary for the energy transformation. The EU has no mandate to top up the administrative capacity and resources of permitting agencies, however, so it falls under the responsibility of Member States to provide

7 https://www.europarl.europa.eu/doceo/document/TA-9-2021-0040_EN.html

that capacity. Otherwise, there is a considerable risk that crucial aspects of permitting, such as environmental impact assessments, will be conducted less thoroughly and effectively than is currently the case.

- **Repowering of wind turbines is a major missed opportunity.** The oldest wind farms are typically located on the best sites, but have the least efficient turbines due to their age. Repowering a wind park has the potential to almost triple its electricity output, according to figures from the European wind industry.⁸ Yet, onshore wind development focuses to a great extent on new sites, with many old wind parks opting for lifetime extensions as legislative frameworks for repowering are missing or cumbersome in many Member States. EU plans to set a maximum permitting period of six months for repowering will help address this. The implementation of these provisions falls to the EU's Member States, however, which should make much greater efforts to realize the potential of repowering by making the process easier and providing additional incentives for project developers.
- **The planning facilitation provisions for renewable energy projects should not be 'copied and pasted' into other areas.** Short permitting periods are sensible for renewable energy projects where the overriding public interest is widely accepted due to their importance in fighting the planet's overheating. Setting a maximum permitting period of two years and timelines of 90 days for environmental impact assessments is ill-advised for mining projects under the Critical Raw Materials Act (CRMA), however, given that the environmental damage is very likely to be irreversible and much more complicated to assess. All Natura-2000 areas must also be excluded from mining as a matter of principle. The same is true for nuclear and carbon capture and storage projects, which are set to receive a similar treatment under the Net-Zero Industry Act (NZIA). Likewise, any infrastructure projects fostering the EU's fossil dependency, such as roads and LNG terminals, should not be subject to planning facilitation and exemptions from EIAs as they hamper the transformation to 100% renewables in all sectors. A key risk of the EU approach is that other countries, often with less administrative capacity, might start mirroring EU permit lengths to compete with the EU, which would fatally weaken environmental safeguards in those countries.
- **Companies receiving state aid under the provisions of the Net-Zero Industry Act should be required to adhere to social-ecological standards.** As a minimum, all net-zero strategic projects should be required to respect the EU's Do No Significant Harm (DNSH) principle, which is not even referenced in the European Commission's proposal. The NZIA also foresees only vague measures to up- or re-skill workers as part of the selection criteria. More concrete obligations, such as apprenticeship quotas, would be desirable here to ensure these projects contribute to closing the skills gap. Social and quality of work standards are

8 <http://pr.euractiv.com/pr/repowering-europe-s-wind-farms-win-win-win-243330>

completely absent from the proposal as well. This is another area where the EU should draw inspiration from the US Inflation Reduction Act, which rewards fair wages and partnerships with labour unions, as poor working conditions in the renewables sector have been a long-standing issue. The European Commission should furthermore encourage Member States to develop targeted net-zero jobs initiatives.

Attracting clean tech investment: EU requires a clear, predictable framework

EU industrial policy seeks to secure a relevant share of the global market for clean technologies, which the International Energy Agency estimates will reach USD 650 billion by 2030.⁹ Yet, the EU's approach has several disadvantages compared to the US Inflation Reduction Act, which includes a public climate investment plan of USD 400-800 billion in total.¹⁰ While the EU has ambitious climate policy objectives and effective policy measures such as a high carbon price, public RD&D spending is falling in the EU just as it is rising in China and the US (see Figure 3). Private clean tech investment in the EU is rising, but only slowly. According to the European Investment Bank, EU climate investments need to rise by EUR 356 billion per year compared with the 2010-2020 period to achieve climate neutrality by 2050.¹¹ The Jacques Delors Centre stated in a study published in May 2023 that the EU needs to invest about EUR 264 billion to establish an equivalent to the IRA. Japan's transformation programme has a volume of EUR 330 billion.¹² While countries like the US and China are forging ahead with their own clean tech investment plans, no comparable investment increase is on the horizon in the EU. This is already affecting commercial investment decisions.

In addition, the landscape of EU industrial policy and available EU and national support schemes is fragmented, complex, subject to frequent changes and difficult for investors to understand. This has already resulted in a much smaller project pipeline, such as electrolyzers in the EU compared with the US, for example. While a clean tech trade conflict would be detrimental to the global fight against the climate crisis, it is important for the EU to adopt a long-term climate investment plan to unleash its clean tech manufacturing potential, and help ensure the speed of the transformation to a climate-neutral economy is not reduced by a lack in the supply of clean tech components.

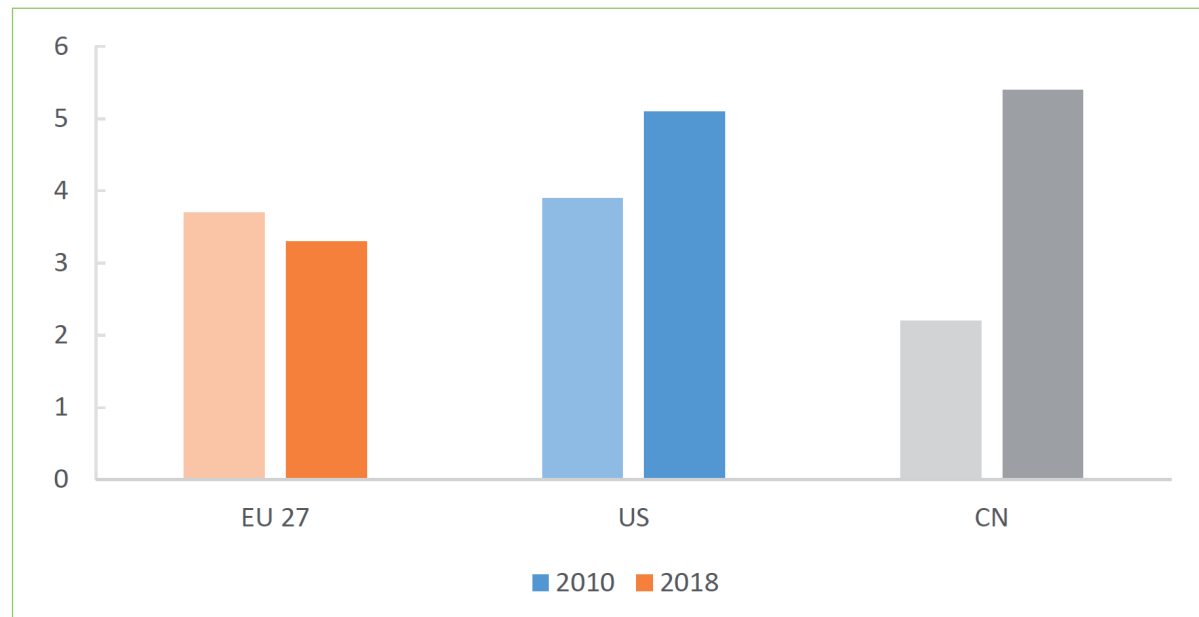
9 <https://www.iea.org/reports/energy-technology-perspectives-2023>

10 <https://www.credit-suisse.com/about-us-news/en/articles/news-and-expertise/us-inflation-reduction-act-a-catalyst-for-climate-action-202211.html>

11 https://www.eib.org/attachments/lucalli/20220211_economic_investment_report_2022_2023_en.pdf

12 <https://background.tagesspiegel.de/energie-klima/eu-souveraenitaetsfonds-loest-sich-in-luft-auf>

Figure 3: Public clean energy research and investment spending (in billions of euros)



Source: Europe needs to innovate to become a front-runner in the global green economy race, Jacques Delors Centre (2021)¹³

The Expert Group therefore makes the following recommendations:

- **The EU should develop a clean tech investment plan, building on the reinforcement of existing funding instruments** like Horizon Europe, the European Innovation Council and the Innovation Fund. Funding for innovation in clean technologies should be uncapped and guaranteed for 10+ years, following the IRA example, to give planning security to investors. No such long-term funding perspectives for clean tech currently exist in the EU, given that the Multiannual Financial Framework only runs until 2027 and NextGenerationEU funding is only available until 2026. The EU should also ensure sufficient funding for riskier clean tech start-ups and scale-ups, for example, by expanding European Investment Bank's venture debt.
- **The NZIA should be refocused on critical components of clean tech value chains and given greater sectoral specificity** to send clear signals to investors.
- **The overarching 40% domestic production objective for 2030 should be supplemented by pragmatic sectoral targets** as it is not equally suited for all the strategic net-zero technologies covered by the act. Domestic production capacity of 40% is likely to be overachieved in wind turbine manufacturing and underachieved in photovoltaics, for example. The European Commission should also be granted the power to regularly update the sectoral targets beyond 2030 by delegated acts to maintain investment security beyond that date, and to identify new technologies to be added to the list of strategic net-zero technologies to adapt to technological developments.

13 <https://institutdelors.eu/en/publications/europe-needs-to-innovate-to-become-a-front-runner/>

- **The NZIA should generally only promote no-regret technologies** that can contribute at scale to the transition to 100% renewable energy. Promoting technologies that are not sustainable at scale according to the DNSH principle creates future problems and risks slowing down the transformation to an entirely sustainable energy system. Scaling up biomethane production, for instance, while likely needed in a limited scope, poses considerable risks to further biodiversity loss if the current sustainability criteria in the revised Renewable Energy Directive is not significantly strengthened.¹⁴ Likewise, carbon capture use and storage (CCS or CCUS) is currently only commercially used in enhanced oil recovery and carries a significant risk of promoting further fossil lock-in. Nuclear energy, including small modular nuclear reactors, also carries significant environmental risks, not least because of still unresolved questions around the final disposal of nuclear waste.¹⁵
- **The NZIA should more explicitly aim at supporting technologies** in the late demonstration or early adoption stages, such as floating offshore wind power, large-scale heat pumps or solar thermal district heating, to bring technologies that are market-ready into widespread use. One possible instrument for this would be offering fast-track permitting for factories where the risk of negative environmental impacts is low.
- **Fossil fuel subsidies should be phased out and shifted to renewable and clean tech investments immediately**, in line with international commitments undertaken by the EU and its Member States. Member States currently provide fossil subsidies totalling more than EUR 50 billion per year.¹⁶ Ending fossil subsidies, except where needed to protect poor households against energy price inflation, would have immediate benefits in terms of accelerating the energy transformation. This would make climate-friendly technologies such as heat pumps and electric vehicles immediately more competitive compared to fossil-fuelled alternatives. Improving the market perspectives of these technologies in Europe would also make it more attractive for investors to locate clean tech manufacturing capacity here, and free up funding to be invested in the energy transformation.
- **The recently proposed Strategic Technologies for Europe Platform (STEP) falls short of the needed scale of public financing and should be radically redesigned to promote the energy transformation and clean tech manufacturing capacity with additional funding.** Originally announced as a sovereignty fund that was supposed to support industrial capacity to accelerate the green transition in Member States, STEP will only make available EUR 10 billion in additional funding and otherwise draws funding from critical EU programmes such as the Recovery and Resilience Facility, the Cohesion Fund and the European

14 https://www.researchgate.net/publication/324515528_Environmental_impact_of_biogas_A_short_review_of_current_knowledge

15 https://www-pub.iaea.org/MTCD/Publications/PDF/TE-1915_web.pdf

16 <https://www.eea.europa.eu/ims/fossil-fuel-subsidies>

Regional Development Fund. It is not tied to positive environmental or social outcomes as funding under these programmes already is. STEP also follows a scattered approach, as investments in green industries make up only a small part of its funding package, which also includes biotechnology, biomanufacturing, artificial intelligence, microelectronics and defence technology, as well as technologies with questionable climate benefits, such as fossil-based hydrogen, CCS and biofuels. The STEP proposal is a missed opportunity to build an economy that respects planetary boundaries and falls short of the ambition of an effective climate and clean tech investment plan. The European Parliament and Member States should radically redesign the proposal so that it can make a meaningful contribution to the objectives of the EU's Green Deal Industrial Plan.

The energy transformation must benefit all of the EU

There are huge differences in EU Member States regarding renewables deployment, as well as income levels. Poorer EU Member States with low renewables and infrastructure (grid, storage, etc.) deployment are politically at high risk of being left behind in the energy transformation and will be hit much more strongly by fossil inflation as the costs of fossil energy rises. A similar situation exists with regard to the rural-urban divide. The NZIA introduces selective state aid exemptions for strategic net-zero industries, which runs a high risk of exacerbating this trend as Member States and cities with greater financial resources will be able to offer more attractive conditions (e.g. to green hydrogen, green steel or renewable energy investors). If this problem is not addressed, high value-adding activities will likely concentrate in North-Western and/or Nordic Member States or city centres, while low-profit, extractivist, resource-intensive, polluting production technologies or steps in the supply chain are more likely to find their way to South-Eastern Europe or rural peripheries. This dangerous trend must be addressed by EU-level countermeasures, or it threatens to undermine EU solidarity at a critical point in time, and also make the energy transformation even less attractive in countries and regions that often already view the project with great scepticism.

The Expert Group therefore makes the following recommendations:

- **The NZIA needs to be accompanied by EU-wide industrial policy instruments aimed at financially supporting poorer Member States** in setting up net-zero strategic projects, which will play a key role in attracting investment into net-zero technology manufacturing capacity. Despite the new STEP proposal, there is still an urgent need for a true EU Sovereignty Fund, as originally announced by Ursula von der Leyen. Such a fund should be designed in the spirit of EU solidarity to enable all Member States to follow a long-term investment and R&D agenda, and be based on own resources or joint borrowing. The Recovery and

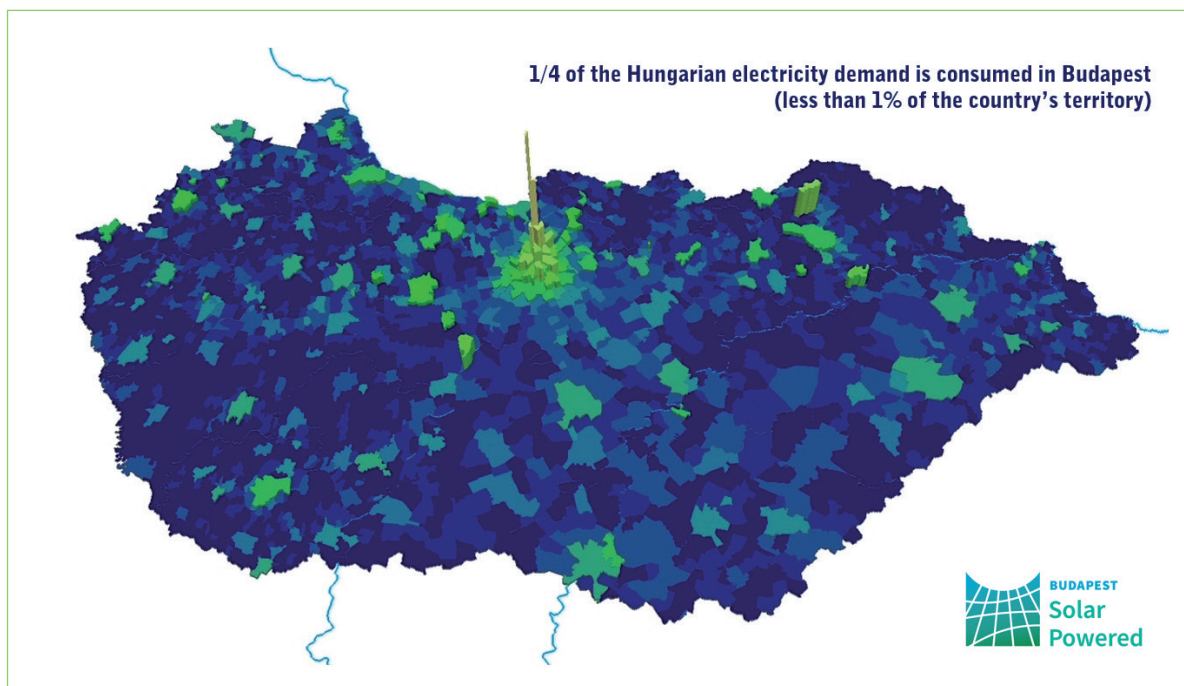
Resilience Fund adopted in response to the Covid-19 pandemic and repurposed for REPowerEU could act as a blueprint for this. However, such funding should be conditional on national energy and climate frameworks being compliant with EU energy and climate targets, as well as the observance of anti-corruption and rule-of-law standards. Otherwise, there is a significant risk that such spending will be misused and actually undermine energy transformation, as well as biodiversity efforts.¹⁷ The proposed STEP initiative, however, threatens to actually make the situation worse as it shifts money away from regions and green public investments (e.g. in electricity grids or public transport) to large companies for purposes that often only tangentially support the transformation to a climate-neutral economy.

- **The NZIA needs a greater focus on promoting joint European rather than national projects.** It could be amended with a provision requiring a certain percentage of net-zero strategic projects to be cross-border projects financed by the Connecting Europe Facility, for instance. This follows the established model of cross-border renewables projects under the Renewable Energy Directive and would help counteract the risks of national fragmentation through selective state aid relaxations promoted by the NZIA. There should also be greater efforts to promote joint- and pan-European renewable energy projects as Important Projects of Common European Interest (IPCEI), such as joint offshore wind parks in the North, Baltic or Mediterranean Sea, and off the Atlantic coast.
- **With a view to the next Multiannual Financial Framework, the EU should also explore setting up a genuine own resources stream to finance the energy transformation across the EU.** Wealth or financial transaction taxes could, for instance, raise considerable capital with minimal socio-ecological impact to help address intra-EU differences in public spending. Funding through national budgets risks leading to inefficient resource allocation, as it binds investment decisions to certain regions: investments in renewable energy and clean technologies need to be made where deployment is the most efficient, rather than based on the fiscal capacity of certain Member States. The EU-wide auction platform to be instituted with the European Hydrogen Bank is a valuable policy innovation in this regard and should be expanded to other new markets and technologies where initial private investment is lacking.
- **Reinforcing the urban–rural nexus of the energy transformation:** urban areas, especially big cities with high density of population, business activity and industry, have a disproportionately high energy consumption compared to surrounding areas, but rely on these areas for power and heat provision. As Figure 4 shows with the example of Budapest, the city concentrates a quarter of Hungary’s electricity demand in only 1% of its area. The power demand of cities is only set to increase with the expected uptake of electric vehicles and heat pumps, which

17 <https://bankwatch.org/publication/energy-insecurity-eu-funds-for-fossil-gas-in-poland-and-romania-contradict-climate-goals>

poses considerable challenges to electricity distribution grids. At the same time, the energy efficiency potential in cities tends to be larger than in rural areas due to their compactness and the potential for renewable power and heat generation in cities being regularly lower. A renewed focus on generating renewable energy within city consumption centres (e.g. through rooftop solar) facilitates the energy transformation as a whole as it eases grid bottlenecks related to supplying cities, especially during peak times, and leads to lower transportation losses.

Figure 4: Relative electricity consumption of Hungary and Budapest



Source: Budapest Solar Powered

Guaranteeing global socio-ecological standards and practicing global equity

Much of the current drive to secure imports of hydrogen and critical raw materials is following a competitive agenda aimed at covering EU consumption. This carries the risk of hampering the energy transformation in third countries, especially in the Global South. The current approach is also largely colour-blind where hydrogen is concerned, which risks incentivizing opening new fossil gas fields for blue hydrogen production, with considerable environmental impacts and fossil lock-in as a consequence. While it is important that the EU forges ahead in creating a decarbonized economy due to its historic responsibility, it must simultaneously facilitate and enable climate action in partner countries rather than inhibiting local energy transformations, since the threat of climate collapse is global.

The Expert Group therefore makes the following recommendations:

- **The EU should put in place a legal framework for energy (and resource) partnerships** to involve and share benefits with local stakeholders and ensure the observation of socio-ecological safeguards. This should put in place EU-level minimum requirements for agreements with partner countries, such as:

- Assessing water availability and thorough EIAs for (green) hydrogen production
- Ensuring meaningful additionality of renewable energy projects for green hydrogen electrolysis
- Putting in place a legal framework to involve stakeholders and share benefits
- Respecting the priority of land-use rights of local communities and putting in place mechanisms to adjudicate land-use conflicts
- Establishing national frameworks that define parameters for local participation in financial benefits and decision making
- Ensuring local stakeholders have legal support avenues available at the EU level
- Supplementing the capacity of local administrations to conduct proper EIAs
- Establishing national participation and benefit-sharing frameworks

- **The EU needs to have a conversation about which segments of its industrial value chains should be prioritized for domestic production in the years to 2030 and beyond, and which would make more sense abroad.**

A blanket 40% domestic production target for clean tech industries in the NZIA is sending the wrong signal to partner countries; there also needs to be a pathway with high targets for value-creating activities in partner countries. Promoting local manufacturing capacity is also a much more attractive offer than partnerships aiming purely at supplying the EU with hydrogen or critical raw materials for further processing, as it boosts local value creation and can serve as the nexus of further industrial development. Due to the high costs of transporting hydrogen and its derivatives, decarbonizing EU energy-intensive industry at the current level by relying on imports is unrealistic, and risks cannibalising local development and the energy transformation in the exporting countries. Regarding green steel, for instance, in many cases it would be more efficient and environmentally friendly for partner countries to use locally produced hydrogen to produce green steel for export to Europe. There would also be a strategic benefit to diversifying clean tech component supply, much of which is currently based in China, by aiding partner countries to build up their own manufacturing capacity in line with EU environmental and humanitarian standards. The alternative to making these strategic choices would be a fragmentation of clean tech and energy-intensive industries, with the risk of underdelivering on climate policy objectives due to insufficient international coordination.

- **The EU needs to avoid promoting unsustainable mining practices in third countries.** The blanket CRMA proposal to import no more than 65% of each strategic raw material from any single country risks kicking off increased mineral mining activity without sufficient environmental and human rights safeguards in many additional countries. This risk is not spelled out in the external dimension of the CRMA and should at least be explored in an impact assessment, with a view to adopting a policy to enforce such standards across the supply chain. The EU Timber Regulation against illegal deforestation could serve as a model in this regard.
- **EU trade policy needs a fundamental redesign to ensure that it supports the EU's climate policy objectives rather than undermining them.** Currently, EU trade agreements primarily serve to open up markets for products and services of European businesses, irrespective of their carbon intensity or environmental harmfulness. These agreements facilitate the export of highly polluting cars, for instance, which do not have to comply with EU emissions standards, or of highly hazardous chemicals such as pesticides that are banned for use in the EU. Once such an agreement is in place, it creates lock-in effects for decades. The current trading regime also limits the space for climate action in partner countries, through extensive rights and enforcement mechanisms for foreign investors, through public procurement provisions that limit trading partners in applying social and ecological standards or through rules that hamper the dissemination of clean technologies, such as intellectual property rights protections and prohibitions against local-content requirements.¹⁸ New EU trade agreements should, as a minimum, be conditional on a prior climate impact assessment and be subject to the Do No Significant Harm principle. The EU should also conduct a thorough review of its current trade agreements, with a view to loosening or striking provisions that restrict the scope for climate action in partner countries.

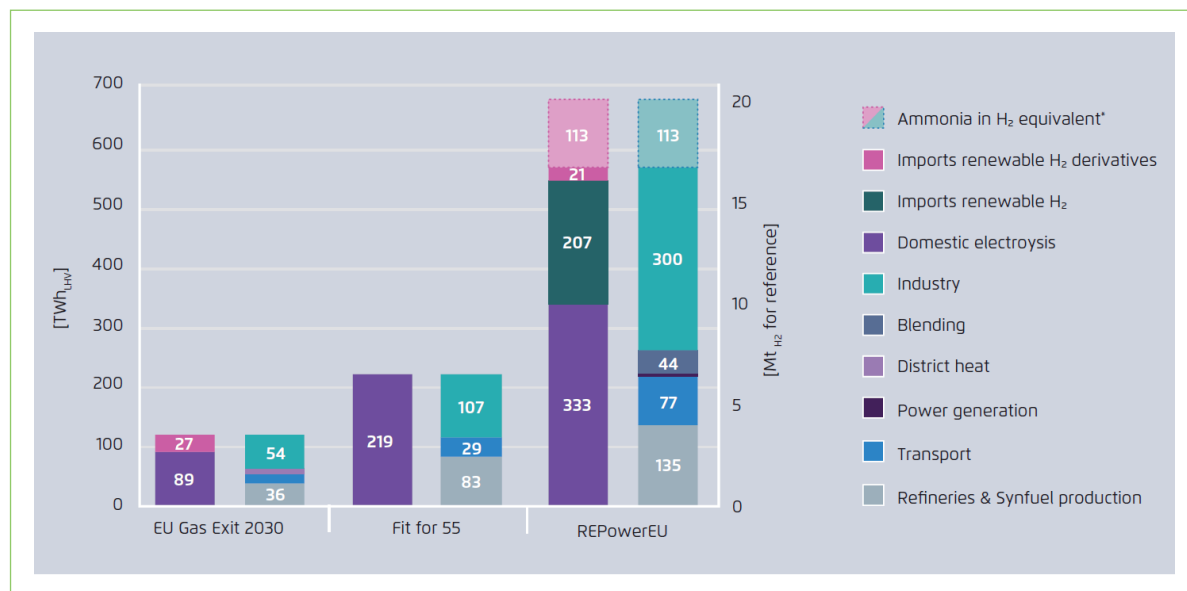
A more realistic approach to the new hydrogen economy

Political targets for hydrogen production and consumption are set extremely high, which is partly explained by the need to replace fossil gas in the energy system following Russia's invasion of Ukraine. The REPowerEU targets foresee a consumption of 666 TWh of hydrogen by 2030, half of which is to be provided by imports. While renewables-based hydrogen will have to play an important part in decarbonizing hard-to-electrify processes, it is far from clear that the EU economy will need anything close to the amounts of hydrogen

¹⁸ [https://caneurope.org/content/uploads/2021/01/CAN-Europe _ Position-on-trade-and-trade-policy2020.pdf](https://caneurope.org/content/uploads/2021/01/CAN-Europe_-_Position-on-trade-and-trade-policy2020.pdf)

currently being planned for. A new study by Agora Energiewende¹⁹ shows that a cost-optimized pathway of hydrogen development in line with climate neutrality by 2050 would require only 116 TWh of hydrogen by 2030, most of which would be produced in the EU, rather than imported (see Figure 5).

Figure 5: EU sectoral demand for green hydrogen and derivatives



Source: Breaking free from fossil gas: A new path to a climate-neutral Europe, Agora Energiewende (2023)²⁰

The EU is planning to have more than five times that amount available by 2030, however, which runs the risk of an oversized build-up of hydrogen infrastructure and ecologically unsustainable production capacities, irrespective of the availability of green hydrogen. In particular, so-called 'hydrogen-ready' fossil gas infrastructure threatens to serve as greenwashing and lead to new fossil gas lock-in. High hydrogen targets for import and domestic production open the door to the use of hydrogen in non-priority sectors and create an artificial need for blue (fossil-based) hydrogen, which has questionable climate benefits at best, or pink (nuclear-based) hydrogen, with all the environmental risks and harm caused by nuclear power generation. These targets also contribute to a rush to secure hydrogen imports, which is often not helpful for the energy transformation in partner countries. Sustainable green hydrogen is limited by the available additional renewable energy capacities and will thus be a scarce resource. It must therefore be considered as the 'champagne' rather than the 'beer' of the energy transformation, and should only be used in sectors in which direct green electrification is not possible.

19 <https://www.agora-energiewende.de/en/publications/breaking-free-from-fossil-gas-1/>

20 Ibid.

The Expert Group therefore makes the following recommendations:

- **The ramp-up of the hydrogen economy should not be pursued as an end in itself, but rather must be clearly designed to support the transformation to a zero-emissions economy.** Hydrogen applications should be clearly prioritized following a model like the clean hydrogen ladder developed by Liebreich Associates.²¹ Technology neutrality, which is often invoked by industry and politicians, is a clear trap in this regard. Due to the energy conversion losses involved, using green hydrogen for heating or road transport is counterproductive, where heat pumps and electric vehicles, along with a shift in transport modes, provide much more efficient decarbonization options. Hydrogen should instead be prioritised to replace fossil hydrogen currently in use, as feedstock for chemical and steel industry, or as an energy carrier only for sectors that cannot be electrified directly or in the near future, for instance in aviation and shipping.
- **Only green hydrogen based on additional renewable energy can be produced with a guaranteed positive climate impact and should receive public support.** Hydrogen production criteria on the basis of the Renewable Energy Directive and the Gas Package must be designed carefully to ensure that they do not lead to fossil power stations seeing increased use to compensate for green electricity used by electrolyzers. Fossil-based blue hydrogen has uncertain climate benefits,²² since it depends on high carbon capture rates and very low methane leakage,²³ which cannot be taken for granted. It should not be promoted via public funds or incentivized through policy as it competes with green hydrogen and creates fossil lock-ins.
- **Hydrogen infrastructure planning should be conducted by an independent body and be subject to supervision by the European Scientific Advisory Board on Climate Change (ESABCC).** The current proposal by the European Parliament to place the crucial task of hydrogen infrastructure planning in the hands of the European Network of Transmission System Operators for Gas (ENTSOG) is ill-advised, given that ENTSOG has a clear conflict of interest in planning infrastructure that its members will then be paid to build and operate. Initial hydrogen infrastructure should be strictly limited to connecting early demand centres, for instance in industrial clusters and ports, with hydrogen production centres. As the hydrogen volumes being planned for in Europe are very unlikely to be needed, plans to build a wide-ranging 'hydrogen backbone' network are misguided and could slow down the heating transition by throwing a lifeline to gas distribution grids which might otherwise be decommissioned and replaced with sustainable heating systems.

21 <https://www.linkedin.com/pulse/clean-hydrogen-ladder-v40-michael-liebreich/>

22 <https://onlinelibrary.wiley.com/doi/full/10.1002/ese3.956>

23 <https://pubs.rsc.org/en/content/articlelanding/2022/se/d1se01508g>

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