



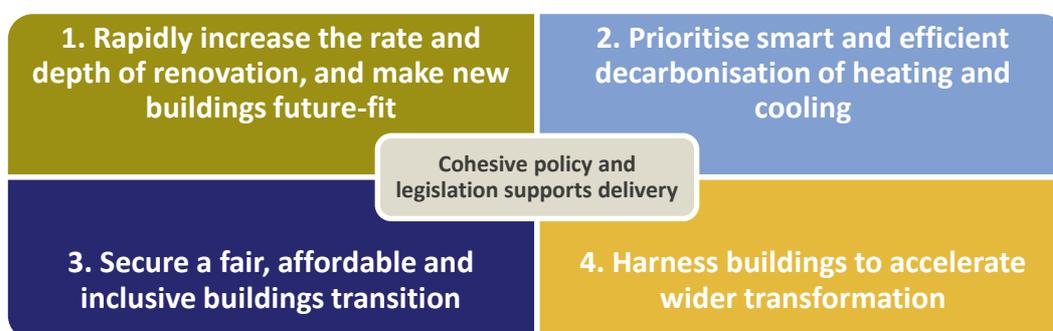
BUILDINGS FIT FOR 55 AND BEYOND: BENCHMARKS FOR A CLEAN, FAIR AND RAPID TRANSITION IN EUROPE

ADELINE ROCHET, PEDRO GUERTLER, VILISLAVA IVANOVA

Buildings are responsible for 40% of the EU’s final energy and 36% of its greenhouse gas emissions – more if the life cycle impacts of construction materials are included. This briefing sets tests for proposed legislation across the Fit for 55 package and beyond for getting on track to climate-neutrality.

Buildings’ energy consumption needs to fall by 14%, and associated emissions by 60%, to meet Europe’s 2030 climate target. The sector is highly complex: fragmented in its value chains, fragmented in the EU’s policy framework. It is currently off the pace – the annual rate of ‘deep’ renovation currently languishes at 0.2% and needs to rise to 3% by 2030¹. An ambitious and cohesive package of policy and legislation is needed to drive buildings’ clean transition at the pace required, in a way that is fair and affordable for households and businesses, and that secures considerable strategic benefits. This briefing sets four overarching benchmarks for numerous proposals – those already published and yet to come – in the Fit for 55 package and other European Green Deal policy currently under consideration:

Figure 1. Four benchmarks for the built environment to get on track to climate-neutrality



¹ BPIE (2021) *The Make-or-Break Decade: making the EPBD fit for 2030*



E3G

Context

In June, European energy ministers endorsed the Commission's 'Renovation Wave'² to help repair the economy and contribute to Europe's green transition. In July, the Commission published its package of proposals for achieving a 55% reduction in the EU's greenhouse gas emissions by 2030. The renovation of Europe's buildings can be an engine for achieving climate neutrality in every sector, in a way that works for people.

The Renovation Wave contributes to core European priorities: not only climate-neutrality, but green and local jobs creation, and healthier, affordable to run homes and workplaces in every part of Europe. Renovation can connect deep decarbonisation with recovery, everyday lives and livelihoods. It envisages the overhaul of 220 million buildings standing today by 2050³. This undertaking will touch a majority of the 440 million living in the EU, involve vast material demands and drive consistent economic activity.

The EU's buildings face the largest climate investment gap in any sector. The Commission estimates that €85-90bn are invested in buildings' energy efficiency each year. The Renovation Wave strategy estimates that the additional investment needed for renovation to make its contribution to the 55% target, including decarbonising heating and cooling in buildings, is €275bn per year to 2030³. Taken together, the investment needed to 2030 is over €3.5 trillion. The EU's Recovery and Resilience Facility of €673bn, a mixture of grants (€312.5bn) and loans (€360bn), is a vital recovery instrument for the next five years and includes a 'Renovate Flagship'. EU leaders have agreed that 37% of this funding should be spent on climate related investments and indicated that one third of the 37% – €83bn over 5 years – should support buildings renovation. While small compared to the scale of what is needed, recovery plans have the potential to kick-start the scale up and are a major opportunity to a) use EU funds to crowd-in private capital alongside Member States' public investments and b) enhance on the ground conditions for the successful implementation of new EU legislation.

Renovation at this scale – whether delivered for individual homes, neighbourhoods, cities or regions – presents an opportunity to drive many mutually supportive facets of deep decarbonisation. These include

² Council of the EU (2021) *Council approves conclusions on an EU renovation wave*

³ European Commission (2020) *A Renovation Wave for Europe*



E3G

decentralised renewables, smart power grids and demand, electric mobility infrastructure, resilience to climate risk, greener and cooler urban environments, finance into small infrastructures, sustainable, circular construction materials helping to drive industrial transformation, and trade in clean products and services. Integral to this is a large-scale opportunity to include people in shaping local, ‘place-based’, transitions.

Seizing this opportunity will be challenging but necessary. First the Renovation Wave needs legs to stand on: to treble the annual energy renovation rate to 3% by 2030, from a rate of just 0.2% per year currently; and ensure those renovations are ‘deep’: achieving over 60% of energy savings. Coupled with the decarbonisation of heating and cooling systems, renovation needs to reduce buildings’ greenhouse gas emissions by 60% by 2030. Policy makers must also prioritise the 50 million people living in energy poverty in Europe⁴ – over 10% of the EU’s population – who struggle to afford their energy costs. With ‘stay-at-home’ orders in many places this year and last, their predicament is likely to have worsened⁵. To meet these challenges, negotiations on the Fit for 55 package and the development of further policy will need a relentless focus on cohesive legislation that translates into successful delivery.

A fragmented landscape needs to be made more cohesive

EU legislation that affects buildings’ transition to climate-neutrality is highly fragmented across policy and legislative files. Therefore, myriad legislative proposals need to achieve coherence and consistency for our four benchmarks to be deliverable. This will require a birds-eye view in negotiations around the Fit for 55 package and ultimately good governance to ensure it delivers results.

E3G has assessed the buildings-related elements of the proposals tabled so far: in the Energy Efficiency, Renewable Energy and Energy Taxation directives, the extension of the EU Emissions Trading System (ETS) to buildings, and the associated Social Climate Fund. In addition:

- > The Energy Performance of Buildings directive, the proposed revision of which is expected later this year, notably plans to introduce mandatory minimum energy performance standards for buildings, will be critical.
- > So too are updates to Ecodesign rules for appliances and equipment, with significant implications for the decarbonisation of heating and cooling, also expected this year.

⁴ www.energypoverty.eu/about/what-energy-poverty

⁵ European Public Service Union (2021) *The right to energy in the EU in times of pandemic*



E3G

-
- > A Strategy for a Sustainable Built Environment – addressing life-cycle impacts of buildings with links back to the Circular Economy Action Plan and the New Industrial Strategy for Europe – is anticipated this year or next, and will guide revisions to the Construction Product Regulation, promote circular economy principles in buildings design and through digitalisation, and consider materials recovery targets for construction waste.
 - > The New European Bauhaus initiative will be a multidisciplinary laboratory fostering a new aesthetic for affordable, comfortable and sustainable design and buildings in Europe, with Bauhaus hubs – potentially outside the EU at a later stage – supported by the Commission.
 - > Numerous other pieces⁶, such as revisions to the Mortgage and Consumer Credit directives to reduce energy efficiency lending risk, are also expected.

To a degree this policy fragmentation is inevitable: it reflects the sector’s fragmentation across suppliers, investors, owners and users. The construction industry is comprised of a multiplicity of economic actors, trades and skills, 95% of which are SMEs⁷ (for a total of 18 million jobs in Europe), touching on materials, energy and infrastructure. The market includes a broad spectrum of ownership and leasing models, and vastly different end uses, from large government buildings to single family houses, with almost half of the stock built before 1970⁸, before early thermal standards were introduced. This creates layer upon layer of different decarbonisation challenges.

The Renovation Wave strategy is the Commission’s attempt to address the fragmentation challenge and bridge the siloes, with Vice President Frans Timmermans presenting Renovation as a “flagship initiative” upon his confirmation as Commissioner in charge of the European Green Deal⁹. But as of now, it is still piloted solely by DG Energy¹⁰ with no clear visibility of how other DGs, such as Internal Market and Industry, will need to become involved. The Strategy for a Sustainable Built Environment has been repeatedly postponed¹¹. As a result, the conversation today is centred on the in-use energy and carbon¹² aspects of buildings decarbonisation, while the internal market, industry and

⁶ European Commission (2020) *The Renovation Wave: key Commission actions and indicative timelines*

⁷ ec.europa.eu/growth/sectors/construction_en

⁸ ec.europa.eu/energy/eu-buildings-factsheets-topics-tree/building-stock-characteristics_en

⁹ Euractiv (25 Nov 2019) *Housing renovation plan will be ‘flagship’ of European Green Deal*

¹⁰ ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en

¹¹ European Parliament (2021) *Legislative train schedule: Strategy for a Sustainable Built Environment*

¹² Meaning energy consumption from use of the building, and emissions associated with that; i.e. not embodied emissions.



E3G

materials dimensions remains low on the Commission’s list of priorities. The Renovation Wave strategy’s silo-bridging mission now needs to be mirrored in Fit for 55 negotiations and policymaking beyond, to focus on overarching outcomes that need to be secured.

Drawing on these opportunities and challenges, **E3G sets out four tests** for the Fit for 55 package and other European Green Deal policy and legislation to meet:

	Rapidly increase the rate and depth of renovation, and make new buildings future-fit	<i>The annual rate of ‘deep’ buildings renovation – which result in energy savings of at least 60% – currently languishes at 0.2% and needs to rise to 3% by 2030 to meet the EU’s 2030 emissions target. In addition, new buildings should no longer add to the decarbonisation challenge, by being built to be nearly zero energy and net zero carbon by no later than 2030.</i>
	Prioritise smart and efficient decarbonisation of heating and cooling	<i>Alongside renovation to reduce the need for heating and cooling (H&C) supply, the EU must prioritise the deployment of readily available H&C solutions to meet buildings decarbonisation targets this decade. This means establishing a governance and regulatory framework designed to scale up markets for heat pumps, other ambient H&C sources, and for the deployment of renewable district heating and cooling (DHC), to drive down their costs while locking out unsustainable solutions.</i>
	Secure a fair, affordable and inclusive buildings transition	<i>Buildings are the realm that directly connects deep decarbonisation with economic recovery, everyday lives and livelihoods. To ensure popular buy-in to wider climate action and success, the policy and legislative framework must drive delivery that prioritises low-income and vulnerable households, ensures everyone can afford to benefit, and enables all to have a say in the transition.</i>
	Harness buildings to accelerate wider transformation	<i>The decarbonisation of the built environment can underpin and accelerate other aspects of the transition to climate-neutrality in every part of the EU. These include decentralised renewables, smart power grids and demand, electric mobility infrastructure, resilience to climate risk, greener and cooler urban environments, finance into small infrastructures, sustainable, circular construction materials helping to drive industrial transformation, and trade in clean products and services.</i>



E3G

Starting from the assessment of proposals tabled to date in the next section, we subsequently set out recommendations for meeting our four tests. If met, proposals will amount to an ambitious and cohesive package of policy and legislation to drive buildings' clean transition at the pace required, in a way that is fair and affordable for households and businesses, and that secures considerable strategic benefits.

Buildings in the Fit for 55 package – assessment of proposals tabled to date

On 14 July 2021, the European Commission adopted a first package of proposals to revise key climate and energy files in line with the new 2030 target¹³. Table 1 sums the main elements of the proposals relevant for the buildings sector. The column to the right provides a snap assessment of the proposals on a 5-point colour scale ranging from detrimental to transformational.

detrimental  transformational

Table 2 briefly sets out, without assessment, major buildings-relevant policy and legislative proposals anticipated in the near-term. Together, these comprise some of the underpinnings for the four benchmarks set out in the next section

Table 1: Main buildings-relevant elements in the Fit for 55 package

Main proposals relating to buildings in July's release of the Fit-for-55 package		Assessment
Energy Efficiency	Headline 2030 energy efficiency target to be made binding at EU level and more ambitious, but not matched to economic potential. The previous EED's target of 32.5% is now proposed at 36% for final and 39% for primary energy consumption by 2030. This is below the upper end of the range in the Climate Target Plan (37% and 41%). No binding Member State targets.	Yellow
	Energy Efficiency First principle clearly defined for the first time in article 3 and to be applied in planning, policy and investment decisions in energy and non-energy sectors (though not 'operationalised' in other elements of the Fit for 55 package).	Light Green

¹³ European Commission (2021) *Delivering the European Green Deal*



E3G

	<p>The annual energy savings obligation on Member States will nearly double to 1.5% from 2024. A certain share of savings have to be achieved among energy poor and social-renting households. The obligation will remain at 0.8% until 2023, during which time energy savings from efficient fossil fuel technology can still be included.</p> <p>Public sector leadership: binding renovation rate of 3% for all publicly owned buildings (including publicly owned housing), extending the current directive’s scope from central government buildings and removing alternative compliance options. Renovation depth is being pegged to Nearly Zero Energy Building standard, which may be strengthened in the revision to the Energy Performance of Buildings directive. This is further bolstered by a new energy saving obligation on public bodies of 1.7% per year. Directive introduces scope for counting lifecycle emissions to assess renovations.</p> <p>Energy poverty is mentioned but without requirements for Member State action beyond a share of the energy savings obligation. Optional National Energy Efficiency Funds now prioritise low-income households and can be financed with topped up with ETS2 revenues.</p> <p>Mandatory energy audits for large businesses: firms covered by ETS who do not implement audit recommendations (or equivalent measures) will have to forfeit 25% of their free allowances. Non energy-intensive large firms will need to implement an energy management system and carry out audits every 4 years.</p> <p>Heating and cooling (H&C) assessments to become part of National Energy & Climate Plans, and should be ‘coherent’ with Long Term Renovation Strategies. MS shall encourage municipalities with over 50,000 inhabitants to prepare local H&C plans.</p>	
<p>Renewable Energy directive</p>	<p>Renewable H&C target – set at an increase of 1.1% in renewable H&C share per year – to be made binding on Member States. MS will be required to ensure all-consumer access to measures supporting implementation, prioritising low income and vulnerable households.</p> <p>New indicative target for renewable energy in buildings set at 49% by 2030. MS shall ensure that minimum levels of renewables in buildings are required by building codes and support schemes.</p> <p>Indicative target for renewable district H&C (DHC) to be raised from 1% to 2.1% increase per year. Distribution system operators to be required to assess DHC potential every 4 years, in support of energy system integration.</p> <p>Long term national H&C strategies – expected of MS based on a mandatory assessment of renewable and waste heat potential for H&C decarbonisation – to be incorporated into NECPs.</p> <p>Certification and training for designers and installers of renewable H&C in buildings to be required of MS to ensure there are enough qualified workers.</p> <p>Forest biomass – apart from a prohibition on wood sourced from 3% of EU forest area that are considered primary forest and a prohibition on MS renewables support for certain arboreal raw materials – will still count towards renewables targets, including for H&C.</p>	



E3G

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Energy Taxation directive</p>	<p>Minimum energy tax levels on different fuels and carriers to be introduced, linked to inflation and energy content instead of volume. Tax exemptions for fossil fuels to be limited and lower tax rates applied to electricity and renewable fuels, which is likely to improve position of smart and efficient decarbonisation of H&C. Member States retain freedom to apply higher tax rates but must respect rate hierarchy.</p> <p>Treatment of hydrogen unclear, potentially leaving the door open for blue (fossil-based with carbon capture) hydrogen to receive tax exemptions as a ‘low-carbon’ fuel for all uses, including deployment for heating buildings.</p> <p>Full tax exemptions for vulnerable households will be open to MS, although below minimum energy tax rates for household heating fuels and electricity will no longer be permissible. Given current taxation levels and heating fuels across MS, the impact on households of new minima will be felt mostly in Central and Eastern and South-eastern Europe. This poses political risks to the unanimous approval the proposed directive requires.</p>	<p style="background-color: #90EE90;"> </p> <p style="background-color: #FF8C00;"> </p> <p style="background-color: #FFFF00;"> </p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Emissions Trading System 2</p>	<p>Heating and transport fuels will be covered by a new, separate ETS. Its target will be to reduce emissions by 43% compared to 2005 by 2030, operating under the Effort Sharing Regulation and somewhat more ambitious than ESR targets overall.</p> <p>Emissions cap starting in 2026 is relatively generous, with allowances auctioned, and could be tightened in a 2028 review; this aims to ensure a low initial carbon price to manage the impact on heating bills.</p> <p>A Market Stability Reserve will be in place to counter large price spikes, though not necessarily to constrain high prices per se. The impact of other policies will be key in determining price.</p> <p>25% of revenue is earmarked for a new Social Climate Fund, Member States’ access to which will need to match-funded (leading to a total of 50% of revenues).</p> <p>All other revenue can be used for a range of climate purposes, including heating, cooling, energy efficiency in buildings, and support to lower-income households. There is significant uncertainty about the additionality of funding as a clause permitting spending of ‘equivalent value’ is also included. This could mean that pre-existing spending plans can be counted.</p>	<p style="background-color: #FFFF00;"> </p> <p style="background-color: #90EE90;"> </p> <p style="background-color: #FFFF00;"> </p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Social Climate Fund</p>	<p>Designed to alleviate energy and transport poverty but includes large infrastructure investments in clean alternatives within the scope of the Fund, already supported in other instruments, potentially at the expense of direct support to households upgrading their equipment. This highlights a possible mismatch between objective and scope</p> <p>Member State co-funding via MFF – trade-offs unclear – corresponding to 25% of revenues from the new EU ETS. The fund is expected to mobilize €72.2.bn of match-funding over 2025-32, with no clarity after that date.</p> <p>Spending commences in 2025, subject to approval of national Social Climate Plans, to enable support before the new ETS commences in 2026. Little time for impact on improving public transport, renovating buildings, decarbonizing heating for target groups.</p>	<p style="background-color: #FFFF00;"> </p>



E3G

	<p>Definition of vulnerable households for SCF includes lower-middle income groups, enabling more people to receive support (including direct energy costs compensation), potentially reducing support for the most vulnerable households.</p> <p>National Social Climate Plans will determine SCF’s impact in Member States. The Commission will review and approve them, but with a risk that national plans lack ambition or long-term impact by focusing disproportionately on direct financial compensation.</p>	
--	---	--

Table 2: Headline buildings-relevant proposals anticipated in the near-term (unassessed)¹⁴

Energy Performance of Buildings directive	<ul style="list-style-type: none"> > Revision of Energy Performance Certificates > Proposal to introduce mandatory minimum energy performance standards for all types of buildings in the EPBD > Consideration of introduction of a ‘deep renovation’ standard
Ecodesign regulations	<ul style="list-style-type: none"> > Rescaling of energy labelling for space and water heating equipment to support sustainable choices > Tightening of minimum energy efficiency requirements for space and water heating equipment to reduce unsustainable choices
Sustainable Built Environment Strategy	<ul style="list-style-type: none"> > To lay out a comprehensive plan, encompassing material circularity, finance, social inclusion and urban planning > To guide revisions to the Construction Product Regulation > Promotion of circular economy principles in buildings design and through digitalisation > Consideration of materials recovery targets for construction waste

Four benchmarks for a clean, fair and rapid buildings transition

1. Rapidly increase the rate and depth of renovation, and ensure new buildings are future-fit

The annual rate of ‘deep’ buildings renovation – which results in energy savings of at least 60% – currently languishes at 0.2%¹⁵ and needs to rise to 3% by 2030 to meet the EU’s 2030 emissions target¹⁶. In addition, new buildings should no

¹⁴ For an official list in relation to the Renovation Wave, see European Commission (2020) *The Renovation Wave: key Commission actions and indicative timelines*

¹⁵ <https://publications.jrc.ec.europa.eu/repository/handle/JRC122143y>

¹⁶ BPIE (2021) *The Make-or-Break Decade: making the EPBD fit for 2030*



E3G

longer add to the decarbonisation challenge, by being built to be nearly zero energy and net zero carbon by no later than 2030.

Proposals tabled so far do not go far enough.

- > Only the Energy Efficiency directive's (EED) provisions for publicly-owned buildings are broadly aligned with the renovation goal – requiring a 3% annual rate of renovation to Nearly Zero Energy Buildings standards from 2024. This is in keeping with the principle of public sector leadership but should be extended to privately owned buildings that provide public services.
- > A higher EU 2030 energy efficiency target than proposed, coupled with binding national contributions in line with national economic energy savings potential can send a stronger overarching signal for Member States to raise their game for increasing the rate and depth of renovation of other buildings.
- > To reinforce this, legislators should seek to more strongly embed reporting on the application of the EED's Energy Efficiency First principle – to governing planning, policy and investment decisions – in the Renewable Energy directive and ETS-backed funds. This can help ensure that opportunities to drive down energy demand through renovation are not missed when renewables and clean heating are deployed in buildings.

The revised Energy Performance of Buildings directive (EPBD), expected later this year, will be pivotal to meeting this benchmark's tests.

- > Plans to introduce mandatory minimum energy performance standards (MEPS) for existing buildings can have a major impact on increasing the rate and depth of renovation. Minimum energy performance standards should be designed and phased in so that, by 2030, they affect and can trigger renovations in all building segments: residential, commercial, public; and across different tenures.
- > To shore up the power of the signal this would send, the EPBD revision should set out a roadmap for raising minimum energy performance standards to 2050, in alignment with climate-neutrality. The transformative impact this could have on demand for and investment in skills and technologies, business models and finance offers across the renovation supply chain can be further strengthened elsewhere in the EPBD.
- > This includes introducing a robust legal definition of deep renovation, aligned with the minimum energy performance standards roadmap, and requiring Long Term Renovation Strategies to set out how to finance and achieve a 3% annual deep renovation rate by 2030. Evolving the legal framework for Energy Performance Certificates towards Building Renovation Roadmaps and



E3G

digital building logbooks would boost consumer and investor confidence in making the right renovation choices, as well as helping to drive the digital transition.

- > For new buildings, there is scope to establish a harmonised Nearly Zero Energy Buildings (NZEB) standard for all new buildings to be net zero energy and carbon with residual energy needs met only by renewable sources from 2030.

Such regulatory ambition is likely to prove politically challenging to secure – given the differences across buildings stocks, and especially smaller Member States’ challenges with energy poverty and financing. It will be key to address political challenges directly and credibly.

- > To secure agreement on ambitious mandatory minimum energy performance standards, it will be necessary to provide renovation funding and technical assistance beyond what the Social Climate Fund and Recovery & Resilience Facility can offer.
- > The job creation potential from renovation will need to be backed up with resources to support requirements for training and skills, for scaling up the workforce in a way that offers pathways to quality jobs for young and long-term unemployed people.
- > It will be important to focus more on the internal and external trade benefits from setting harmonised standards for renovation and new build including through the EU’s Green Taxonomy for sustainable investments (e.g. in construction services and green finance), assist Member States in gaining access to other markets, and facilitate the completion of the market for construction.
- > A reinvigorated EU Building Stock Observatory can monitor renovation progress in real-time to provide evidence of impact on the above and other issues, such as reduced energy import dependence.

2. Prioritise smart and efficient decarbonisation of heating and cooling

Alongside renovation to reduce the need for heating and cooling (H&C) supply, the EU must prioritise the deployment of readily available H&C solutions to meet buildings decarbonisation targets this decade. This means establishing a governance and regulatory framework designed to scale up markets for heat pumps, other ambient H&C sources, and for the deployment of renewable



E3G

district heating and cooling (DHC), to drive down their costs while locking out unsustainable solutions.

The Fit for 55 package extensively addresses energy systems decarbonisation from an energy supply perspective, and energy efficiency in buildings is gaining traction, not least due to the momentum provided by the Renovation Wave strategy and recovery Flagship. Buildings, as the Union's largest energy-consuming sector, are seen as key sector by EU policy makers. But *emissions* from energy use in buildings aren't as strongly represented in the package, while heating and cooling (H&C)-related proposals and opportunities are highly fragmented across numerous legislative files within and outside Fit for 55.

The current approach in Brussels does not tackle H&C decarbonisation in a cohesive way. In addition, there are a wide variety of forces and levers in play – the impact of national recovery plans, MS-level policies and drivers (e.g. gas and unsustainable biomass interests, local air quality, energy poverty, heating and cooling appliance manufacture, exports and imports) – that shape H&C infrastructure and decarbonisation choices. These are perhaps less well understood in Brussels than the dynamics around other elements of the energy transition including coal, renewable power, even energy efficiency in buildings.

This fragmentation benefits business as usual, risking inertia and the lock-in of unsustainable H&C solutions. These include gas (mostly fossil but also risks connected with blue hydrogen), which is still seen as transition fuel as well as a reliable and flexible energy source for H&C, but also the rapid rise over the last decade of biomass for heating, not much of which is likely to be sustainable.

The revised Renewable Energy directive (RED) introduces the right forms of target, but these need improvement to support a good outcome.

- > In introducing an indicative national renewables target for MS buildings of 49% by 2030 and making the annual 1.1% renewable H&C increase target binding on Member States, the right pieces are in place. However, the adequacy of 49% renewables in buildings for meeting the overall 60% emissions reduction goal for buildings in the Renovation Wave strategy relies heavily on increasing the rate of deep renovation. It is also unclear whether 1.1% per year for H&C (not just in buildings) is aligned with the Renovation Wave's goal – this requires greater transparency.
- > Growth in renewable heating in buildings in the last decade has been dominated by bioenergy fuels; this is unsustainable and the RED proposal



E3G

does very little to limit bioenergy, especially forest biomass, this decade. Bioenergy's contribution needs to be stringently capped.

- > To complement a cap and drive sustainable heat decarbonisation to 2030 instead, the renewable content of electricity should qualify, and a multiplier introduced for the contribution of ambient heat (heat pumps, geothermal, solar thermal, waste heat), towards the RED's H&C target¹⁷.

The revised EPBD has significant potential to play a pivotal role in H&C decarbonisation – for this it needs to greatly enhance its focus on reducing buildings emissions to complement its energy efficiency objectives. This means embedding carbon performance metrics across the board: mandatory carbon performance standards as part of proposed minimum energy performance standards for existing buildings; carbon integration into the template for Long Term Renovation Strategies, into a harmonised framework for Energy Performance Certificates, and a future framework for Building Renovation Passports; and incorporating carbon in a harmonised NZEB standard to ensure all new buildings are nearly zero energy and net zero carbon (while prohibiting direct combustion of fossil fuels) from 2030 at the latest.

Proposals, presently in draft, for updates to Ecodesign regulations that govern space and water heating appliances¹⁸, need to align with the International Energy Agency's global recommendation to end the sale of new fossil heating equipment by 2025. New minimum energy efficiency requirements need to be set sufficiently high to push fossil boilers out of the market, while an immediate rescaling of energy labels can create market pull for ambient and low temperature heating equipment. These will be essential for a well-functioning internal market for renewable heating equipment, while shoring up numerous Member States' and sub-national authorities' efforts to phase out fossil heating through regulation¹⁹.

The recast EED can significantly support delivery of the H&C decarbonisation but needs strengthening in key areas. Public sector renovation and procurement requirements will help build markets for renewable H&C, as will provisions to promote the deployment of renewable DHC. The requirement for comprehensive national H&C assessments, to be incorporated into National Energy & Climate Plans, can enhance governance of the H&C transition. Given

¹⁷ See RAP (2021) *Making renewable heating 'Fit for 55'*

¹⁸ Including combined space heating and cooling appliances.

¹⁹ See ECOS (2021) *Member States' ambition to phase out fossil-fuel heating – an analysis*



E3G

how H&C infrastructure choices are often highly dependent on local considerations, the EED's requirement for Member States to encourage local authorities²⁰ to draw up H&C transition plans is welcome, but this requirement should – through nationally appropriate mechanisms – be extended to the municipalities themselves.

The role of these levers under the Effort Sharing and Ecodesign Regulations must retain their primacy for decarbonising H&C this decade.

- > The ETS and its extension to heating fuels will be useful as a source of revenue for the Social Climate, Innovation and Modernisation Funds to support H&C and wider buildings decarbonisation, but the extension's price signal on heating fuels should not be relied upon to drive H&C decarbonisation to 2030. Its impact on heating fuel prices will start low and only from 2026, while political risk around rising heating costs – particularly in Central and Eastern Europe – may keep the strength of the price signal in check, through the proposed Market Stability Reserve, in the years that follow.
- > Similar political risks flow from the proposed overhaul of the Energy Taxation Directive (ETD), which faces the additional burden of requiring Member State unanimity for its adoption. While the ETD's treatment of blue hydrogen needs to be clarified (fossil-based with carbon capture) and is of potential concern, this directive has the potential to redress some of the current imbalance in the economics of heat between electricity and direct fossil fuel combustion in buildings. Therefore, it is key that the principles for the new ETD – lower or no minimum tax rates for electricity and renewable fuels, higher minima for fossil fuels – survive final agreement.

EU proposals for the decarbonisation of H&C are comprised of many moving parts, posing challenges for oversight, a cohesive outcome from Fit for 55 negotiations, and introducing significant risks to successful delivery this decade. Aside from the need for strong, supportive industry and civil society coordination, there is considerable scope for a new EU heating and cooling strategy. This could help guide current and future policy decisions while developing other areas of the H&C transition. The potential for the EU to become a leading industrial hub for renewable H&C equipment and solutions, how to reap the green trade rewards from this, and the need to develop a Just Transition for heating, cooling and gas installers and engineers, are areas for which there is no integrated strategy. A credible plan to tackle these issues will

²⁰ With populations greater than 50,000.



E3G

be necessary to garner the widest possible domestic support for the EU's H&C transition and secure its benefits.

3. Secure a fair, affordable and inclusive buildings transition

Buildings are the realm that directly connects deep decarbonisation with economic recovery, everyday lives and livelihoods. To ensure popular buy-in to wider climate action and success, the policy and legislative framework must drive delivery that prioritises low-income and vulnerable households, ensures everyone can afford to benefit, and enables all to have a say in the transition²¹.

In the spirit of fairness, affordability and solidarity between and within Member States – and to enhance the chance of turning political risks in the Fit for 55 package into support – legislative proposals will need to focus on early assistance for households in, or at risk of, energy poverty. As highlighted previously, the extension of the ETS to heating fuels carries considerable risk – given unequal and likely unfair impacts between and within Member States – of a political and social backlash over rising energy costs. So too, to a lesser extent, does the impact of new energy tax minima through the Energy Taxation directive. The Social Climate Fund has been expressly proposed to mitigate this risk and the impact on households of the ETS extension (ETS2), which the Commission admits will be regressive right away – notwithstanding the intention to phase the price signal in gradually. Regardless of how the ETS extension ends up being agreed, additional concrete steps need to be taken to tackle energy poverty, support lower-middle income households and vulnerable businesses.

- > The revised EPBD can have a pivotal impact here. Its anticipated proposals and sequencing for the introduction of mandatory minimum energy performance standards for all building segments must prioritise the worst-performing buildings with households at risk of energy poverty. These standards need to be applied to social and private-rented housing first, focusing on the lowest energy performance classes.
- > The Social Climate Fund (SCF) is only proposed to be usable by Member States from 2025, one year before the ETS2 becomes operational – too late for a proactive approach to energy poverty. Other flaws that need to be addressed for the SCF to become part of the solution include its modest 25% share of ETS2 revenues and questions over the likely additionality of Member State match-funding (and other revenue use), and ambition in Climate Action

²¹ For a broader set of benchmarks, beyond buildings, across the social dimension of the European Green Deal, see E3G (2021) *Fit for Society: benchmarks for a social 'Fit for 55' package*



E3G

Social Plans used to access it. ETS2 revenues currently earmarked for the existing ETS' Innovation Fund for industry could be reallocated to the SCF, and the latter should be made usable for exceeding mandatory energy performance standards in priority building segments. Across this, agreement on a harmonised approach to measuring energy poverty should serve as the basis for inter-Member State redistribution of ETS2 revenues for the SCF.

- > The existing ETS' enlarged Modernisation Fund is set require that 80% of its resources be directed to renewable H&C, energy efficiency (including in buildings), and households at risk of fuel poverty. Provisions for supporting vulnerable households and businesses should be strengthened to bring forward frontload support prior to the ETS2's introduction in 2026.
- > Improved governance for energy poverty can take some of the political heat out of deep decarbonisation. Enhanced national reporting requirements and an upgraded Energy Poverty Observatory should track a) Member State's annual energy savings needing to be achieved in energy poor households under the recast EED, as well as b) renewable H&C support measures Member States will be required to be make available to low income and vulnerable households for under the revised RED. A revamped Energy Poverty Observatory could deliver independent measurement, evaluation and technical assistance: for energy poverty levels in the EU, EED and RED progress, and national Climate Action Social Plans and their implementation.

The Fit for 55 package needs to create pathways for all stakeholders to be involved in shaping it and its delivery to ensure success. In her introduction to the package, Commission President von der Leyen emphasised inclusiveness, but concrete propositions on how to build on existing participatory processes or reform them remain to be seen. For buildings decarbonisation specifically:

- > European institutions face an open invitation to strengthen the role of local governments and citizens in allocating the Social Climate Fund²². They should be consulted in the development, implementation, and monitoring of Social Climate Plans to access the fund and part of its funding should be directly allocated to local authorities based on a sub-national index of need that includes the incidence of energy poverty. Alternatively – or complementarily – it can also be distributed competitively among local authorities but this will require dedicated technical assistance, potentially through the ELENA programme, to develop proposals.
- > This ought to be strongly complemented, through the Energy Efficiency directive, by asking Member States to require (as previously highlighted), not

²² Open letter from 10 EU city mayors (2021) *Make the Fit for 55 package fit for cities*



E3G

just encourage, local authorities to draw up H&C plans – in consultation with local citizens. Provisions for involving renewable and citizen energy communities in delivery – vital actors in empowering ordinary people in local transitions – are weak, with Member States required to ‘consider’ their role. Should this consideration be required to map energy community geography, capacity and capabilities, the Commission should review this evidence and develop new ideas to harness their potential for citizens engagement and delivery of decentralised and place-based transitions.

- > The EU’s approach to Just Transition should encompass all economic sectors. As mentioned before, there is a need to develop a Just Transition for heating and cooling from fossil to clean, potentially through a new H&C strategy. From the outset in the sector, best practices for open and inclusive Just Transition planning – working to transfer learning from regional coal transitions to more geographically diffuse economic sectors – should be embedded into the approach. This can be complemented by the RED’s requirement for suitable certification, skills and workforce size to provide accessible pathways to high quality jobs in renewable heating and cooling.

The deep decarbonisation of buildings is a frontier climate issue, in which the EU is well-positioned to take a global lead. Development of a robust framework for a fair, affordable and inclusive buildings transition – much of which could be progressed through the Fit for 55 package – would ensure successful delivery, strengthen diplomatic leadership and demonstrate to the EU’s international partners that whole-economy transformation with whole-of-society support is possible.

4. Harness buildings to accelerate wider transformation

The decarbonisation of the built environment can underpin and accelerate other aspects of the transition to climate-neutrality in every part of the EU. These include decentralised renewables, smart power grids and demand, electric mobility infrastructure, resilience to climate risk, greener and cooler urban environments, finance into small infrastructures, sustainable, circular construction materials helping to drive industrial transformation, and trade in clean products and services.

For example, there are considerable shared interests across sustainable heating and cooling decarbonisation – built on smart, efficient electric and district systems – with other green priorities: the need for a larger power system driving more rapid deployment of renewables and coal phase out, smart systems



E3G

integration and and interconnection, green hydrogen investment (and not least energy efficiency and renovation). Buildings decarbonisation, and the need to phase down gas use in the EU, can and must be mutually supportive through the Fit for 55 package and beyond²³.

The Renovation Wave strategy has already recognised many of these synergies, which have been affirmed by the Council of the European Union²⁴, but the Fit for 55 package so far takes few concrete steps to capture them. There are, however, abundant opportunities. This benchmark highlights key areas in construction materials and innovation.

Significant untapped potential for achieving climate neutrality in the EU, and for setting standards for other world regions to follow, lies in reducing embodied emissions in the built environment – creating market ‘pull’ for industrial decarbonisation. These can account for between 20% of life-cycle carbon emissions from inefficient and 90-95% of emissions from highly efficient buildings. With the Renovation Wave aiming for 36 million buildings to be renovated by 2030, and most buildings undergoing energy renovation by 2050, alongside the construction of new buildings across this and the next generation – the volumes of construction materials used will be vast. The emissions embodied in their manufacture are not yet systematically being considered. Nor is the potentially significant positive impact of regulating embodied emissions on demand for sustainable construction materials, and the impact this could have on accelerating industrial process decarbonisation, innovation, development and the circular economy across steel, cement, glass, timber, and chemicals²⁵. Currently, the market for climate neutrality-aligned construction products is very small.

There are several competing methodologies to account for embodied emissions, adding to the challenges for robustly addressing embodied emissions in the EU’s legislative frameworks.

- > The World Green Buildings Council’s #BuildingLife initiative is spearheading efforts in the EU to consolidate best practice in buildings’ whole-life impacts, develop a database of construction products’ full environmental impacts and

²³ See E3G (2021) *Phasing down gas use in Europe: benchmarks for gas in Fit for 55*.

²⁴ Council of the European Union (2021) *Conclusions on a renovation wave that repairs the economy now, and creates green buildings for the future*

²⁵ See also E3G (2021) *From Blockage to Breakthrough: benchmarks for EU industrial transition for Fit for 55 and beyond*



E3G

raise awareness among legislators and industry²⁶. Building on this, the forthcoming proposal for the revised EPBD, expected in December 2021, represents a clear legislative opportunity to address embodied emissions in the built environment that must be grasped.

- > It should establish embodied carbon metrics for the EU, embedding these, alongside operational carbon as previously discussed, into Long Term Renovation Strategies, digital building logbooks and Building Renovation Passports. These should then be applied, beginning with disclosure of embodied emissions in new construction and public buildings renovation with this EPBD revision.
- > The long-awaited Sustainable Buildings Strategy can build on these insights, including impacts on buildings investment, to recommend a pathway for regulating the supply and demand for construction materials' and products' circularity and embodied emissions in line with climate neutrality.
- > Introducing stringent caps on the combustion of wood products, including for heating, through the Renewable Energy directive can help refocus the EU's forestry industries on higher value-added sustainable timber for modern construction, storing carbon instead of burning it. Through its New European Bauhaus initiative, the Commission can seek to develop international competitive advantage for sustainable structural timber.

Consolidating innovation can allow strategic learning, enabling the capture of more synergies while driving new commercial, financial, social, cultural outcomes. Delivery failures, and valuable lessons from them, will be inevitable – but there isn't time for major resets. Institutions at all levels in the EU need to be agile and develop the capabilities to continually course correct while scaling up the quality, pace and integration of delivery. This can and should be led from the top, to consolidate the EU's combined innovation capacities. The Commission should progress with urgency the innovation mission for 100 climate neutral cities by 2030²⁷, place renovation at its heart²⁸ and connect it with the New European Bauhaus and 100 lighthouse renovation district initiatives²⁹.

²⁶ www.worldgbc.org/buildinglife

²⁷ Mission Board for climate-neutral and smart cities (2020) *Proposed Mission: 100 Climate-neutral Cities by 2030 – by and for the Citizens*

²⁸ E3G (2021) *Mission Critical – how mission innovation can address the challenge of deep building retrofit*

²⁹ www.ourhomesourdeal.eu/affordable-housing-initiative



E3G

About E3G

E3G is an independent climate change think tank accelerating the transition to a climate-safe world. E3G builds cross-sectoral coalitions to achieve carefully defined outcomes, chosen for their capacity to leverage change. E3G works closely with like-minded partners in government, politics, business, civil society, science, the media, public interest foundations and elsewhere.

More information is available at www.e3g.org

Copyright

This work is licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 2.0 License. © E3G 2021