



FINANCING A DEEP RENOVATION WAVE: recovery and beyond

In partnership with



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Opening Remarks

by Jean Jouzel¹ and Frédéric Ménard², Agir pour le climat

Originally created to support a European financing solution to the ecological and solidary transition, called the Climate-Finance Pact and including the establishment of a Climate Bank³, the French citizen and transpartisan association Agir pour le climat (APLC) – Act for Climate – is committed to gather expertise and help formulate a common vision to reach policy makers.

This approach was applied to the energy renovation of buildings, rightly defined as a central element in the European Commission's Green Deal. We therefore initiated an on-going exchange with experts on the subject⁴. A first public expression of this work was the holding of a Web conference on 8 April 2021, entitled « Investing in Deep Renovation for Recovery: a how-to guide for Member States »⁵. The following note takes up most elements developed during this conference and adds new contributions, especially on the financing side.

If not fully aligned, all the experts would agree to say that: climate neutrality cannot be reached without a very ambitious renovation campaign on buildings, energy efficiency and decarbonisation go hand-in-hand but energy efficiency brings benefits that decarbonisation doesn't, those benefits – not the least of which is reducing inequalities – must be taken into considerations by governments to determine where to point the cursor between the former and the latter, such benefits will not happen unless buildings are deeply renovated, and regulation is needed.

In his contribution, Adrian Joyce (Renovate Europe) reminds the central place that renovation can and should occupy in the National Recovery and Resilience Plans submitted by the Member States to the Commission. Stéphane Quefelec (EEA) emphasizes the progressive character of energy renovation policies both in monetary and non-monetary terms. Yamina Saheb (IPCC) explains what a European Renovation Wave truly aligned with our climate commitment should be.

If not the only one, financing is a major barrier to be lifted in order to achieve the transformation of our building stock. The challenge is to stretch the term of the loans and lower their rate as much as possible so that energy savings and the increasing value of the building asset can play their full role, while keeping public subsidies available, primarily for lower income households.

Solutions do exist, as you may see. They can lie in public investment banks – Bettina Dorendorf (KfW) shares the best practice schemes of the KfW energy efficiency promotional programme, updated in July. They can lie in a European Renovation Loan, with nothing to pay for homeowners for 30 years or upon transfer of their property, as Peter Sweatman (Climate Strategy) develops. They can lie in the banking system with a Re-Mortgaging Renovation Loan, as Philippe Ramos (ESG expert) explains. A banking system that could be backed by the ECB with Renovation TLTROs as Uuriintuya Batsaikhan, Stanislas Jourdan and Adua Dalla Costa (Positive Money Europe) advocate.

These tools would enable us to carry out the tremendous renovation effort that is required to reach our climate objectives. We hope you will seize them.

1. A climatologist and former Vice-chair of IPCC Working Group I, Jean Jouzel is the Honorary President of APLC.

2. Frédéric Ménard is the Director of the négaWatt Institute and the Chairman of APLC.

3. Agir pour le climat, *Climate-Finance Pact – The essentials in the treaty project*, 2019.
<https://www.agirpourleclimat.net/fr/14271-2/>

4. Tatiana Bosteels (EIB), Etienne Charbit (CLER), Nicolas Desquinabo (Geste), Nicolas Dufrène (Institut Rousseau), Ralf Goldmann (EIB), Stanislas Jourdan (Positive Money Europe), Benoît Lebot (ex-IPEEC, member of APLC board), Nathalie Lhayani (Caisse des dépôts), Marjolaine Meynier-Millefert (French deputy, President of HQE-GBC), Christophe Milin (CINEA), François Moisan (former ADEME, member of APLC board), Alice Morcrette (Hauts-de-France Pass Renovation), Philippe Ramos (ESG expert in market finance), Oliver Rapf (BPIE), Françoise Réfabert (Energies Demain), Andreas Rüdinger (IDDRI), Olivier Sidler (négaWatt), Davor Simac (ESG expert in market finance).

5. <https://www.youtube.com/watch?v=X1zMmcsXUc> / With interventions by Maxime Pasquier (ADEME), Adrian Joyce (Renovate Europe), Stéphane Quefelec (EEA), Yamina Saheb (IPCC), Peter Sweatman (Climate Strategy), Bettina Dorendorf (KfW) and Kristina Klimovich (then GNE Finance, now IEA).

Introduction

“Now is the time.”

by Lucas Chabaliér, Agir pour le climat

Accounting for 40% of Member States’ total energy consumption and 36% of their greenhouse gas emissions, the building sector is the largest single energy consumer and carbon emitter in the EU. Building is the mother of all battles against climate change.

To fulfill the Paris Agreement (limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C), the European Council, in December 2019, set the target of achieving carbon neutrality by 2050. To be neutral by 2050, Member States, in December 2020, raised the EU’s greenhouse gas emissions reduction target to at least 55% by 2030 compared to 1990. To reduce Europe’s greenhouse gas emissions by at least 55% by 2030, the EU Commission estimated in the “Renovation Wave Strategy” it released in October 2020 that we needed to reduce building’s greenhouse gas emissions by 60% compared to 2015¹.

And to achieve this Strategy, says the Commission, we should reduce the energy consumption of the EU’s building stock by 14% by 2030 compared to 2015. Considering that only 1% of the building stock undergo some kind of energy renovation each year in Europe, averaging a ridiculous 9% energy savings², our efforts should be multiplied by 15 or 16 if we were to achieve a 14% energy consumption reduction³. The Commission

says that we should at least double the annual energy renovation rate by 2030 and foster deep renovations, that is renovations resulting in energy savings of at least 60%. They currently account for one fifth of the energy renovations.

Such a change in volume and performance will not be enough though. The Building Performance Institute Europe (BPIE) estimates that the EU should reduce buildings’ final energy consumption by 24.8%, not 14%, to meet its 60% carbon reduction target in buildings by 2030⁴. Meaning that we need to get 27 to 28 times as many results as we currently do⁵. The BPIE says the average rate of deep renovation should approach 3% of the European building stock as quickly as possible.

Today, there are about 260 million building units across the EU⁶, their floor area representing over 26,000 km². 90% of them will still be standing in 2050, and only 3% of them are rated A. We therefore need to engage a systematic renovation campaign, getting the full energy potential out of the European building stock.

The task ahead of us is Herculean. Virtually no EU country is even close to where they should be: at current pace, it will take France more than three and a half centuries to meet its 2050 target in residential

1. European Commission, *A Renovation Wave for Europe – greening our buildings, creating jobs, improving lives*, 14 October 2020.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1603122220757&uri=CELEX:52020DC0662>

2. European Commission, *Comprehensive study of building energy renovation activities and uptake of nearly zero-energy buildings in the EU*, November 2019.
https://ec.europa.eu/energy/sites/ener/files/documents/1.final_report.pdf

3. Assuming that the energy consumption share of the 2.6 million building units renovated each year is equivalent to their overall “weight”, i.e. 1%.

4. BPIE, *On the Way to a Climate Neutral Europe 2030*, December 2020.
https://www.bpie.eu/wp-content/uploads/2020/12/On-the-way-to-a-climate-neutral-Europe_Final.pdf

5. Still assuming that the 1% of building units renovated each year accounts for 1% of the energy consumed in buildings.

6. Based on the Renovation Wave publication, stating that the more than 220 million building units built before 2001 account for 85% of the European building stock. The European building stock is therefore about 260 million units.

housing⁷, about three centuries for Germany⁸ (the 2 most advanced EU countries in terms of energy renovation). Yet, the magnitude of the task should not be discouraging. The deep renovation of buildings has so many advantages that it would be a very smart policy to implement even if our fate on this planet was not at stake: economic activity, job creation, fiscal returns, health, improvement of the quality of life, social benefits. All benefits that are even more valuable in times of recovery⁹.

It may also seem impossible to mobilise the hundreds of billions of euros (nearly 300 billion according to the BPIE)¹⁰ that are necessary each year to bring our building stock to the « A » label, and make a deep renovation worth tens of thousands of euros affordable for all households. It is not actually: 1) A very significant part of the investments in deep renovation will be single handedly paid for by energy savings and the increasing value of the building assets 2) Governments already spend several billions on so-called energy renovation – in truth maintenance – through public subsidies and loans each year. All that public money is wasted and should be re-channeled exclusively towards deep renovations. Helping people change their boilers or their windows is getting us nowhere 3) The recovery plans are making more money available in the coming years to kickstart the Renovation Wave.

Governments may deplore that they can't do more because there is no skilled workforce on the ground to do the job. This is true today. But they can use part of the recovery funds in the next couple of years precisely to train the unemployed, help enterprises upskill or reskill their workers and help create the ecosystem of technical assistance and Integrated Home Renovation Services (or one-stop-shops) that is absolutely essential¹¹. Furthermore, the European population will likely decrease in the next decades¹², reducing the need for new buildings construction. It is therefore in the interest of the building sector to turn to the energy renovation market. Above all, by making clear their resolve to pursue a long term and systematic deep renovation policy, governments will shape the market and generate supply.

Governments may also be afraid that the European citizens would oppose having their homes renovated and fear of a social outburst, like the one we had in France with the Yellow Jackets. But the French citizens' convention on climate by making mandatory deep renovation of buildings one of their main recommendations (as well as surveys)¹³ clearly shows that people understand the need for a dramatic new course of action and would embrace it if they were given the right financial and technical means for it. Now is the time.

7. Around 50,000 homes are deeply renovated in France each year. This number should be 370,000 for the period 2022-2029, and 700,000 for the period 2030-2050, according to the 2020 National Low-Carbon Strategy in order to reach the objective enshrined in the 2015 Energy Transition for Green Growth Law (LTECV): a national residential building stock at the Low-Energy House (Bâtiment Basse Consommation) (BBC) label, i.e. corresponding to the A and B labels of the Energy Performance Diagnosis (DPE).

8. If Germany had set the same objective as France: getting the consumption of its residential building stock under 80 kWh of primary energy per m² per year.

9. See for instance: Renovate Europe, *Building Renovation: a kick-starter for the EU recovery*, June 2020. https://www.renovate-europe.eu/wp-content/uploads/2020/06/BPIE-Research-Layout_FINALPDF_08.06.pdf

10. BPIE, *Covid-19 Recovery: Investment Opportunities in Deep Renovation in Europe*, May 2020. Taking a scenario in which 75% of the existing EU building stock (residential and non-residential) should be renovated (the remaining 25% are the buildings constructed before 2001 – 15% – and those that will no longer be use in 2050 – 10% –), at a deep level (for 70% of them) and at a medium level (for 30% of them), the Institute evaluates the annual investment needs at €243 billion. Yet, to reach the 2030 GHG emissions reduction target and carbon neutrality in 2050, the Institute finds it necessary to complete a systematic deep renovation campaign of the building stock, meaning a larger envelope, that we can estimate to nearby €300 billion a year by referring to the figures in the table. https://www.bpie.eu/wp-content/uploads/2020/05/Recovery-investments-in-deep-renovation_BPIE_2020.pdf

11. Christophe Milin and Adrien Bullier, *Towards large-scale roll out of "integrated home renovation services" in Europe*, June 2021. https://www.aunaforum.com/wp-content/uploads/2021/07/Integrated-home-renovation-services_MILIN-BULLIER_ECEEE-2021.pdf

12. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=People_in_the_EU_-_population_projections&oldid=497115#Population_projections

13. See for instance: RAC, *Sondage : des Gaulois pas si réfractaires à l'action climatique*, 26 juin 2020. <https://reseauactionclimat.org/sondage-des-gaulois-pas-si-refractaires-a-laction-climatique/>

EU planning for energy renovation as part of post-pandemic recovery

by Adrian Joyce, Renovate Europe

Adrian Joyce is the Secretary General of EuroACE and Director of the Renovate Europe Campaign, a political communications campaign with the ambition to reduce the energy demand of the EU building stock by 80% by 2050 through legislation and ambitious renovation programmes¹ (www.renovate-europe.eu).

INTRODUCTION

Our collective awareness of the negative impacts of climate change has grown considerably in recent years. The various youth movements that sprung up in 2019 calling for urgent action significantly helped and catalysed a sea-change in the approach of the European Commission.

Shortly after taking the helm of the Commission, President Ursula von der Leyen and her College of Commissioners adopted the European Green Deal which proposed that the EU works to become the first “Climate-Neutral” continent on the planet by 2050. This ambition has since been translated into binding law and all Member States of the EU have legally committed to achieve this worthy goal.

Shortly after the adoption of the European Green Deal we were struck by the (ongoing) Covid-19 pandemic. Along with its tragic cost in terms of sickness and death, the pandemic has brought an economic crisis from which the EU and all other regions of the planet will struggle to emerge. The EU plan for recovery and resilience, better known as Next Generation EU is the subject of this presentation, but I concentrate exclusively on how the role of the buildings sector can and should be at the centre of the economic and social recovery to come.

CONTEXT

Buildings are the cornerstones of our lives with most of us spending more than 90% of our time indoors. In the EU, our use of buildings leads to the consumption of 40% of all primary energy produced resulting in about 36% of energy-related CO₂ emissions. Addressing this

wasteful energy use in our buildings has taken on a special significance in our efforts to address the negative effects of climate change.

It is estimated that the number of buildings standing in the EU is around 210 million. Together the heated and conditioned indoor floor area of these buildings is roughly equivalent to the size of Belgium. Around 75% of all these buildings are residential buildings – our homes – and around 80% of all buildings were built before there were any energy performance requirements in place.

Research by the Buildings Performance Institute Europe (BPIE) found that 97% of our existing buildings are inefficient as only 3% have reached an energy label “A” within the EU Energy Performance Certificate Framework that was established under the Energy Performance of Buildings Directive in 2002.

From these factors, we can easily see that undertaking rapid, ambitious action to curb energy use (especially from the combustion of fossil fuels) in our buildings will bring quick and measurable benefits in our race to mitigate the effects of climate change. The good news is that the materials and equipment, together with the knowledge and processes needed, are already with us and well understood. The challenge is to mobilise stakeholders to act now.

THE RECOVERY AND RESILIENCE FACILITY (RRF)

This is where the Next Generation EU initiative comes in as it could be used to deliver the needed financial

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resources to our Member States to permit them to kick-start the Renovation Wave to the benefit of all. In effect, a key element of the Next Generation EU initiative is the establishment of the RRF, a funding facility valued at €672.5 billion. This significant amount of money will be raised by the European Commission on the financial markets with a 30-year payback period. It will be disbursed to Member States based on approved national recovery and resilience plans (NRRP).

The RRF has two main elements:

- An amount of €312.5 billion that can be disbursed as grants,
- An amount of €360 billion that can be disbursed as loans – usually with preferential terms.

In addition, there are rules for what the money can be spent on, and Member States must meet certain ex-ante conditionalities (usually tied to confirmed proper implementation of EU legislation in the Member States) before the money can begin to flow to the identified projects and programmes. The Member States must also introduce necessary structural reforms to facilitate the energy and digital transitions that much recent EU policy developments relate to.

Recognising the urgency to make progress on the energy and digital transitions, 37% of the RRF must be spent on climate-related actions and 20% must be spent on facilitating the digital transition. This means that, in theory, nearly 60% of the RRF could be ear-marked by the Member States to be spent on the energy renovation of our buildings – something that the Renovate Europe Campaign supports.

Here again, the European Commission is not leaving all the effort to the Member States as it has announced the expansion of the provision of technical assistance for Member States. In addition to existing successful programmes like ELENA, a *new Technical Support Instrument* has been introduced that is managed by a new department of the Commission – DG REFORM. It is unique in several aspects, the most attractive of which is that no co-funding is required. Member States apply for the assistance each year and, if approved, receive the assistance in the following year at no cost to the national budget.

These two factors – the RRF and the availability of technical assistance – are designed to encourage Member States to be courageous and ambitious in what they plan to do in the coming years, and they are required to draw up NRRP to fully describe what they intend to do, how they will implement it and how it will be financed. The NRRP are assessed by the European Commission after they are submitted and must be approved by the European Council before funding can be drawn down.

But how good are the plans that have been submitted and do they include buildings?

RENOVATION IN THE RECOVERY AND RESILIENCE PLANS (NRRP)

The Renovate Europe Campaign has engaged E3G to take a detailed look at the NRRP to examine exactly what role buildings are being given by the Member States. The ongoing study will not be published until October 2021, but early indications are that all Member States have included actions to boost energy renovation works in their NRRP. As a percentage of total funding requested, the range of funding being requested for energy renovation varies from a low of 4% to a high near 16%.

Whilst it is encouraging that all NRRP that E3G has reviewed to date have included energy renovation, it is still not clear if this will be enough to kick-start the renovation wave as intended. Further analysis will be needed and, more importantly, implementation of the NRRP on the ground will have to be robust and well monitored. It is hoped that the national partners of the Campaign will be able to influence the successful roll-out, by each Member State, of the energy renovation actions included in their NRRP.

EARLY EXAMPLES FROM THE NRRP

Although our analysis is not yet complete, early indications show that:

Croatia is intending to ensure that at the same time as undertaking energy renovation works, the seismic stability of its building stock will be upgraded. The REC is supportive of this kind of joined up thinking as it is

aware that there are many valid starting points for a country to use as a stimulus for establishing a comprehensive renovation programme for its buildings. It is, in essence, a realisation that each time a building is renovated, it is prudent to ensure that it captures all the relevant improvements that can and should be made to that building to make it future-proof and resilient.

Romania intends to use a higher proportion than many other Member States of the requested funding for the energy renovation of its building stock. This makes sense as the multiple benefits that come with widespread energy renovation programmes can and will raise the quality of life of many more than just those directly engaged in the works.

Italy has established a very promising approach to encourage energy renovation among building owners that is based on providing tax relief on the cost of the works over a ten-year period. The scheme means that qualifying owners benefit from a tax relief worth 110% of the cost of the works over a ten-year period. In addition, the relief can be commoditised and sold to a third party meaning that the owner gets the energy renovation with zero upfront costs, previously a big barrier. The Italian NRRP includes a request to help fund this innovative and highly successful approach.

Spain uses the need to address energy poverty as a starting point for its proposal on renovation in the NRRP. Energy poverty is a significant problem in Spain and the government realises that the most sustainable solution to address energy poverty is to energy renovate the building stock. Its NRRP funding will be channelled very strongly in this direction.

IT WILL BE WORTHWHILE!

To end on a positive note, I would like to highlight that all the efforts we are seeking to mobilise will be worthwhile for both society and for individuals.

For society, we will see a significant economic stimulus as the money begins to flow to energy renovation

works. This is because several studies have found that for every €1 million spent on energy renovation, 18 quality jobs are, on average, created in the EU. The number of jobs varies from a low of 15 in Italy to a high of 29 in Croatia.

The economic stimulus will also benefit national budgets as increased tax income will result from the new jobs created and from the taxes and duties charged on building materials and equipment. For example, one study found that the cost to the Spanish government to create a job in construction is about €14,000 whereas the cost to keep a person on unemployment benefit is about €20,000 per year. This means that for every new job in construction, the government retains €6,000 in its budget in the first year and avoids spending €20,000 each year thereafter.

From an individual perspective, owners immediately benefit from improved comfort in their building, which increases well-being and productivity. This has been shown to lead to less sick days and reduced absenteeism in workplaces. This latter result increases the bottom line for companies and brings prosperity to all.

Finally, the benefits to national health systems can also be measured as the reduction in sick days relieves pressure on health services and findings from several studies show that comprehensively renovated hospital buildings mean that hospital stays are reduced as patients get better quicker. In fact, the average stay time can be reduced by an average of 11% and leads to an estimated saving for health systems in the EU of around €45 billion per year.

CONCLUSION

All the elements that are required to get an ambitious renovation wave going are now in place. What is needed next is strong political will, robust planning and rigorous implementation and evaluation to ensure that the role of energy renovation, where energy efficiency first is applied, can be captured for the achievement of long-term climate goals.

Energy efficiency in residential buildings and related social and distributive outcome

by Stéphane Quefelec, European Environment Agency (EEA)¹

Stéphane Quefelec is a senior Energy and Environment Expert for the European Environment Agency (EEA). The EEA is an agency of the European Union, whose task is to provide sound, independent information on the environment¹ (www.eea.europa.eu).

INTRODUCTION

The topic of energy efficiency is crucial for the current EU climate objectives, and the building sector stands at the heart of the issue². The building sector is also a central topic of the EU Recovery Plan following the pandemic. The current pandemic and its consequences have emphasized the vulnerable social groups in the different EU countries and give an even bigger importance to the “Left no-one behind” principle stated by the EU Green Deal.

Among the different climate mitigation options, one peculiarity of energy efficiency policies in buildings is that, when well designed and implemented, they have the potential to benefit lower income level households more proportionally. This specific aspect is the focus of this contribution.

FROM WELL UNDERSTOOD SOCIOECONOMIC BENEFITS...

From a very quantitative point of view, quite a lot of evidence demonstrates several macroeconomic benefits of investing in energy efficiency in buildings. We can mention for instance effects on GDP, on jobs and on the energy bill of the EU.

The construction sector represents a very significant economic weight in the EU economy. It accounts for around 9% of the GDP and about 18 million jobs. Stim-

ulating a sector of this size would provide significant outcomes in terms of overall economic growth. But, more importantly, because the construction sector is mainly based on local small and medium-sized companies (SMEs), the benefits of boosting this sector cannot be exported. Around 90% of the companies in the construction sector are SMEs. They account for 70% of the total value added of the sector. Supporting energy efficiency in buildings is therefore about developing local businesses and jobs in the construction sector, which is obviously a very crucial outcome in the current context. As construction is a rather labor-intensive sector, the impact on the job market is direct and strong, which has been proven in the past, in Ireland for instance. This country promoted building efficiency to support job creation after the 2008 crisis. In 2009, the home energy saving scheme enabled the upgrade of 88,000 homes and the creation of 5,000 jobs each year from 2009 to 2011³.

The consumption of energy in buildings represents 40% of the total energy consumption in the EU (26% for the household dwellings alone). The European Green Deal Impact assessment (October 2020) states that, regarding energy efficiency, “most savings would need to come from buildings”. Currently, natural gas is still used quite a lot in buildings (accounting for 37% of total gas consumption in the EU). Investing in energy efficiency and low carbon equipment for heating would therefore

1. The EEA aims to support sustainable development by helping to achieve significant and measurable improvement in Europe's environment, through the provision of timely, targeted, relevant and reliable information to policymaking agents and the public.

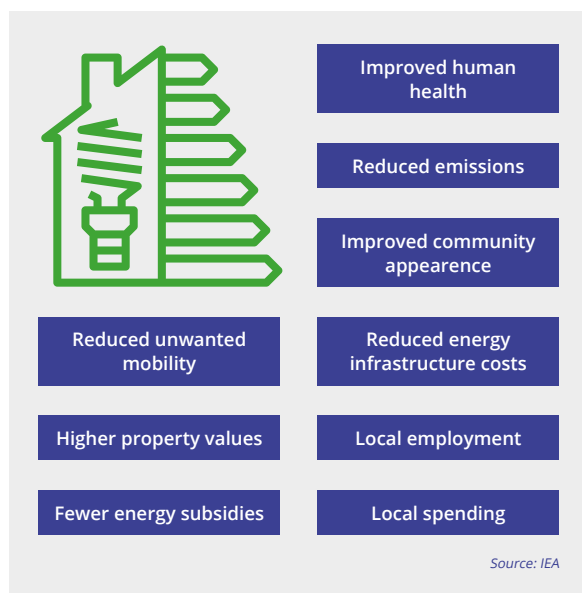
2. The recently agreed (April 2021) European Climate Law writes into the legislation the goal set out in the European Green Deal for Europe's economy and society to become climate-neutral by 2050. It also sets a revised target for the 2030 horizon which consists in cutting by 55% the greenhouse gas emissions (compared to 1990 level). None of these targets can be achieved without a strong and fast improvement of energy efficiency in buildings. It is estimated that reaching the overall -55% by 2030 supposes a reduction of 60% of emissions in the building sector alone. To help in doing so, the EU Renovation Wave – a flagship initiative taking the form of a roadmap to boost energy efficiency in buildings – has been developed since last year and the “Fit for 55 package” (published by the European Commission in July 2021) includes the revision of the EU Energy Efficiency Directive, of the Energy Tax Directive and of the Renewable Energy Directive among others; the revision of the Energy Performance of Buildings Directive (EPBD) is announced for the fourth quarter 2021.

3. https://conference.iza.org/conference_files/neujobs_2014/4.pdf.

mean a reduced gas consumption leading to the reduction of natural gas import, of the energy bill and of the energy dependency of the EU.

The wide array of additional socioeconomic benefits brought by energy efficiency investments is represented in the figure below.

Policies supporting energy efficiency in buildings may therefore bring a lot of benefits. From an equity perspective, the question translates into how these macroeconomic benefits may distribute across the population, the sectors, and the territories.



...TO THE DISTRIBUTION OF OUTCOMES OF ENERGY EFFICIENCY POLICIES IN BUILDINGS

As explained above, among the policies and measures to reduce CO2 emissions, energy efficiency in buildings is an important one both because there is a high emission reduction potential and because it might bring important economic benefits. However, the larger sustainable development objectives, which are reflected at the EU level in the Green Deal, include qualitative dimensions as well. From the social perspective, it is about “leaving no-one behind” and about the so-called “just transition”.

The growing inequalities – which are exacerbated by the Covid crisis – are a concern as well as the social acceptability of climate mitigation policies. The “Yellow Jackets” movement in France demonstrated how much social acceptability of climate policies is connected to a fair social management of the energy transition. Who benefit, who are negatively impacted by mitigation policies and what can be done to compensate the losers is therefore a growing concern from the policy side. The social dimension of the energy and climate policies is also reflected in people’s ability to maintain a proper temperature inside their dwellings: around 34 million Europeans are in situation of energy poverty. This is why the EEA is currently building knowledge on the social impacts of climate change mitigation policies and the consequences in terms of inequalities. The overall conclusion is that most policies are likely to result in negative distributional outcomes. Mitigation policies generally result in higher energy prices, which places more pressure on lower income groups proportionally because they spend a higher share of their disposable income on energy expenses compared to higher income level households. They tend therefore to be de-facto more impacted proportionally by a rise in energy price.

However, within this general picture, policies supporting energy efficiency in residential buildings by different incentives appear to be an exception. These policies tend indeed to bring higher benefits to lower income households. They therefore tend to contribute to reduce income inequality. This is the peculiarity of a so-called “progressive” policy. While less widely studied, non-monetary outcomes of energy efficiency improvements have also been documented. They include health improvements (reduced mortality, improved respiratory and cardiovascular conditions, reduced symptoms of arthritis, rheumatism and allergies⁴) and upgrade of living comfort. It appears that the distribution across the population of these co-benefits also tends to be progressive (they benefit lower income level households more proportionally). This is because, in average, lower income groups are more exposed to environmental hazard (air pollution, humidity, temperatures, etc.). Buildings retrofits can particularly improve the health and well-being of vulnerable groups, such as the elderly, children, pregnant women, and those affected by illnesses⁵. Addition-

4. IEA, *Capturing the multiple benefits of energy efficiency*, 2014.

5. IEA, Workshop report: *Evaluating the co-benefits of low-income energy-efficiency programmes*, 2011. https://iea.blob.core.windows.net/assets/10128d72-2171-4be4-9634-5cb4fcb21feb/low_income_energy_efficiency.pdf

al social benefits from energy efficiency improvements pertain to low-income households specifically, such as better mental health, lower anxiety and depression, lower frequency of moves, improved school/work attendance or lower social exclusion and isolation⁶.

Investing in energy efficiency in residential buildings is therefore also contributing to solve long term social issues and reach social Sustainable Development Goals (SDGs). It is however needed to consider the specific conditions under which energy efficiency policies in buildings can deliver their full social performances.

SPECIFIC ASPECTS TO CONSIDER FOR THE ENERGY EFFICIENCY IN BUILDINGS TO DELIVER ITS PROGRESSIVE POTENTIAL

All the social benefits and distributive effects discussed previously do not automatically stem from support to energy efficiency in buildings. At least five crucial aspects need to be mentioned for policies to be effective:

1. The intensity of the support needs to be adjusted to target specific social groups. If support intensity is increased uniformly for all households, low-income households may still be disadvantaged compared to higher income groups. It is also important that eligibility criteria for investment support do not automatically exclude lower income groups (support targeting only homeowners or requirement of a high upfront co-payment would exclude large segments of lower income households for instance).
2. The access to support should be designed in a way that the non-take up rate is as low as possible. Non-take up occurs when households and individuals are unaware of the benefits they are entitled to. People foregoing the benefits they are entitled to are usually the ones living in the most vulnerable conditions⁷. In that respect, simplicity and transparency of measures are key factors.
3. To decrease energy consumption and energy bill significantly, the energy renovation needs to be of the

“deep renovation” type. The policy supports should therefore target this objective. This is crucial for solving situation of energy poverty in the long term because this is the only way to reduce the energy bill of households significantly.

4. Evidence shows that the rebound effect tends to be higher for low-income households. It might therefore offset part of the potential gains if measures to contain it are not considered.
5. Challenges may occur and offset some of the social benefits (on health for instance). Ventilation systems in highly insulated dwellings need to be taken into account to avoid compromising air quality (e.g. exposition to radon is a concern⁸). Overheating, notable in new homes or recently renovated ones, especially when thermal design has been focussed on keeping the house warm in winter⁹, is another example of health issue related to energy efficiency. It also illustrates the importance of the quality of the energy renovation and the need to consider the change of climate ahead of us when renovating a building in an energy efficient way.

CONCLUSION

Quite a lot of evidence of macro benefits and advantages of energy efficiency in buildings demonstrates the strategical dimension of this domain, both in terms of CO2 reduction and economic/social outcomes.

Less information is available on how these benefits distribute across the population. However, evidence shows that, if well targeted and designed, the benefits of energy efficiency policies in buildings may distribute in a progressive way, contributing to reduce inequalities both in terms of income and environmental risk exposure (health and quality of life). For better policy decisions, these non-monetary benefits need to be better quantified. The gain in overall wellbeing might be more important than the financial one. Addressing energy poverty is essential and the deep renovation of dwellings is a vehicle to solve the problem in the long term.

6. See for instance: Bashir N. et al., *An Evaluation of the FILT Warm Homes Service CRESR*, Sheffield Hallam University, Sheffield, 2014, available at www.shu.ac.uk/research/cresr/sites/shu.ac.uk/files/eval-filt-warm-homes.pdf

7. 219 Dubois H., Ludwinek A., *Eurofound (2015) Access to social benefits: Reducing non-take-up*.

<https://www.eurofound.europa.eu/publications/report/2015/social-policies/access-to-social-benefits-reducing-non-take-up>

8. Symonds P., Rees D., Daraktchieva Z., et al., *Home energy efficiency and radon: An observational study*. *Indoor Air*. 2019;29:854–864. <https://doi.org/10.1111/ina.12575>

9. *Overheating in Buildings: Adaptation Responses*, *Building Research & Information* (2017), 45(1–2); guest editors Kevin J. Lomas and Stephen M. Porritt.

https://repository.lboro.ac.uk/articles/journal_contribution/Overheating_in_buildings_lessons_from_research/9451775

The need for an EU industrial renovation model

by Yamina Saheb, IPCC Author

Dr. Yamina Saheb is Senior Researcher at Lausanne University and WiRe fellow at Münster University. Prior to this, Yamina was leading the building research programme at the European Commission's Joint Research Centre and at the International Energy Agency. Yamina is currently a lead author of the building chapter of the upcoming IPCC report on climate mitigation.

The Renovation Wave is a welcome initiative from the European Commission (EC). However, making Europe's buildings Paris proof requires i) aligning the renovation target with the remaining carbon budget for the EU, ii) introducing mandatory requirements for one-shot zero energy/carbon renovation when public finance is used, and iii) moving towards an industrial approach to energy renovation.

IDENTIFIED LOOPHOLES IN THE EC PROPOSED RENOVATION WAVE:

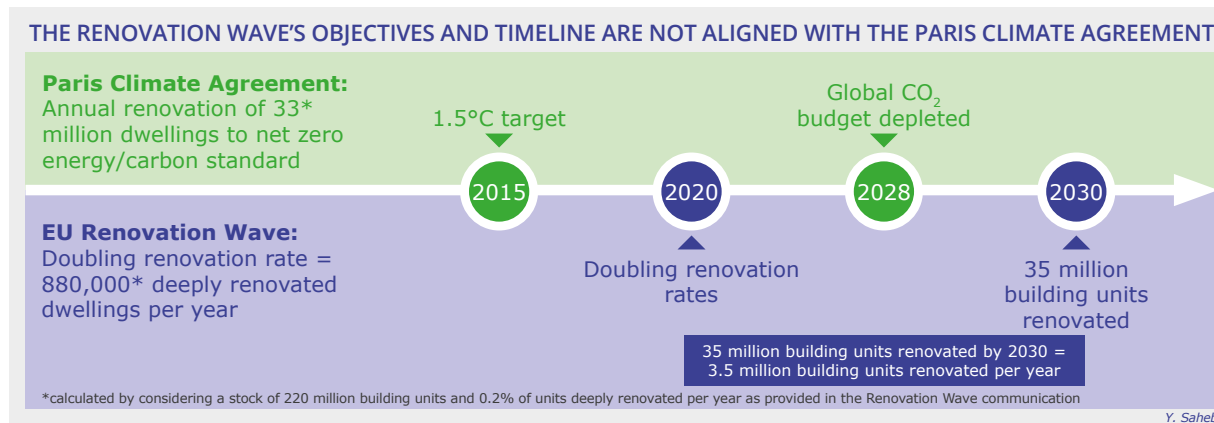
The Renovation Wave proposed by the European Commission (EC) was designed to ensure EU building stock will contribute its share to Paris climate goals. However, an early assessment of the proposal shows that the Renovation Wave, in its current version, is unlikely to lead to a decarbonised building stock. In fact, meeting such objective requires:

- a. an equitable share of the remaining carbon budget to be considered when setting the climate neutrali-

- ty target. This would mean the EU should be climate neutral by 2028 instead of the current target of 2050;
- b. as a result, the overall EU building stock must be renovated to the zero energy/carbon standard within the current decade (Figure 1). This objective is achievable only if one-shot energy renovation is made mandatory and the renovation rates are estimated based on the share of buildings out of the remaining carbon budget. In fact, doubling the renovation rate, as proposed by the EC, will not be sufficient given today's 0.2% annual deep renovation rates, as reported by the European Court of Auditors (ECA);
- c. shallow renovation should be banned from EU legislation and no longer financed. This would mean a full revision of the Energy Performance of Buildings Directive (EPBD) and the other 19 instruments targeting buildings.

Unfortunately, none of the above enabling conditions is currently met. On the contrary, the existing EU climate and energy policy framework locks Europe's buildings

Figure 1: Assessment of the Renovation Wave objectives in relation to the Paris goals



in carbon through the EPBD and its major renovation concept. In fact, according to Article 2 of the directive, energy renovation is required only when:

- a. "The total cost of the renovation relating to the building envelope or technical systems is higher than 25% of the value of the building, excluding the value of the land upon which the building is situated; or
- b. More than 25% of the surface of the building envelope undergoes renovation".

In practice, the major renovation concept cancels the requirement to renovate existing buildings as the two conditions included in article 2 of the EPBD can be easily avoided by building owners when buildings are renovated. Furthermore, the cost of deep renovation is estimated at an average of €1,200 per square metre, which is above the EU average for the construction of new buildings, and public finance is provided for step-by-step renovation project. The combination of the major renovation concept, the cost-abuse by the renovation industry and the availability of financial support mainly for shallow renovation are among the main reasons that prevented the creation of the energy renovation market needed to meet the Paris climate goals.

Furthermore, the Renovation Wave suggests introducing Minimum Energy Performance Standards (MEPS) with the argument that this new instrument will unleash the energy renovation market. However, given the lifespan of buildings and the renovation cycle (25 years on average for residential buildings and 15 years for non-residential ones), it is unlikely that buildings will be renovated more than once during this decade while staying within the remaining EU carbon budget requires a full decarbonisation of the bloc before 2030. Therefore, by mandating MEPS, the EU will mandate the lock-in of existing buildings in carbon and the poorest segments of the population in energy poverty. The only beneficiary of MEPS is the outdated renovation/construction industry, which did not invest in innovation, more than thirty years after the first large scale renovation project was launched in the EU (KfW renovation programme in Germany).

INTO THE FUTURE

The combination of the economic measures implemented after the financial/economic crisis of 2008, and the measures implemented to meet the 3x20 targets by 2020 have led to the creation of an energy renovation market. For the first time, in 2010, the renovation market has taken over the market of the construction of new buildings. However, in the absence of mandatory requirements for one shot zero energy/carbon renovation in the EPBD, the emerging renovation market is in reality a market of shallow renovation at a high cost for EU taxpayer.

The climate emergency, the high share of the EU population facing energy poverty and the scale of the renovation challenge require moving from the unsuccessful current approach to an industrialised energy renovation model. Such a model would require that risks related to renovation are carefully assessed like innovative industries do for any new product or service under development. The Enterprise Risk Management (ERM) framework recommends the creation of a Central Risk Function to facilitate the implementation of innovative projects. The aim is to identify risks, help in the categorisation of risks and their assignment to the most appropriate organisations to be risk owners.

In the case of energy renovation, the facilitator could be an EU energy renovation agency, which should be independent from the existing EU institutions. Strategic decisions should be taken by the board of the facilitator which should be composed of the President of the European Parliament, the President of the European Commission and the President of the European Council. It is expected that the "silo" culture would be reduced if such a facilitator role is established. Similar facilitators could be established at national/regional/local levels as appropriate. Similarly, based on the ERM framework, a risk sharing pool will be needed to bundle existing public finance and allow for scaling-up private one.

The ERM model used for the development of AIRBUS A380, known as Power8 programme, could be adapted to the industrialisation of energy renovation (Figure 2). The management of risks related to the A380 project based on the Power8 programme has resulted in establishing:

1. An Airbus A380 company to lead the project which played the role of a Central Risk Function;
2. An A380 aircraft structure for setting-up an efficient aircraft production, integrating the complex supply chain, and improving and streamlining the assembly of the giant plane when mass production begins;
3. An A380 financial operations structure to manage the financial risk, handle cash and manage cash flow as well as shortening the development time to full production, and solving problems in manufacturing and operations;

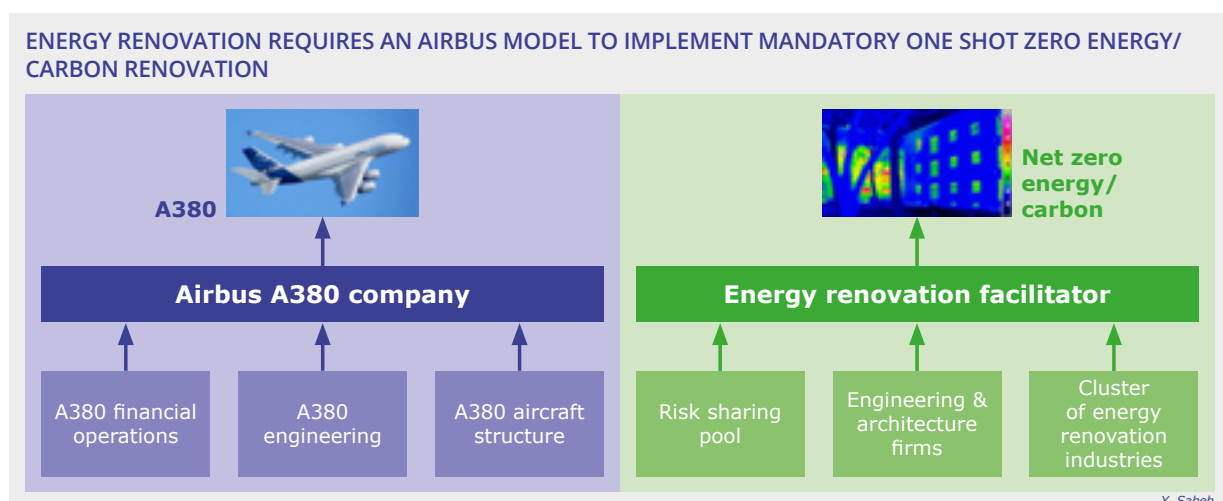
4. An A380 engineering structure to manage technical risks and ensure the supply chain deliveries are of high quality.

By analogy the identification of risks related to the industrialisation of energy renovation using the AIRBUS A380 Power8 programme would require the following structures (Figure 2):

1. An EU energy renovation facilitator;
2. An EU risk sharing pool;
3. A pool of engineering and architecture firms;
4. An aggregator of supply chain.

Overall, buildings are about the daily life of people and the building sector is a major employer in the EU. The Renovation Wave should, therefore, be designed with the EU climate, societal and industrial objectives in mind.

Figure 2: Proposal to adapt the AIRBUS model to energy renovation



For further reading:

- [Energy renovation: trapped in over-estimated costs and the staged approach](#)
- [Energy renovation: it's time for a paradigm shift in policy design](#)
- [Energy transition of the EU building stock: unleashing the 4th industrial revolution in Europe](#)
- [Energy renovation: The Trump Card for the New Start of Europe](#)

Germany – best practice public financing scheme for energy efficiency in buildings

by Bettina Dorendorf, KfW

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 KfW is Germany’s public promotional bank and one of the largest promotional banks in the world (www.kfw.de).

One of the European best practice schemes to support energy efficiency investments in the building sector with public funds has been developed by KfW in 2006.

The German State owned promotional bank KfW was established in 1948 with the mission of deploying financial support programmes on behalf of the Federal Government. KfW holds a AAA/AAA/Aaa-rating due to the Federal guarantee.

Approx. 2/3 of the promotional activities (volume ranging in the past between €75 billion and €80 billion, re-financed on the capital markets) relate to the domestic market and most of the domestic promotional products are deployed via a broad network of financing intermediaries (including regional promotional banks) using the so-called **on-lending model**.

As a consequence, KfW does not maintain its own branch network nor takes the individual customer credit risk in relation to the on-lending business. Other advantages of the on-lending approach include:

- broad local product availability,
- neutrality with regard to competition with financing partners,
- broad risk diversification.

The programme for the building sector is by far the largest targeting energy efficiency in Germany: since its inception in 2006, 6 million housing units benefitted from the promotional support of the programme. Funds deployed by KfW since then reached nearly €180 billion (loans and grants) and triggered investments of over €500 billion, leading to a cumulative reduction of around 12 million tons of CO₂ eq. p. a. and securing hundreds of thousands of jobs each year, primarily with SMEs¹.

The product offer targets all investors into energy efficiency in the entire spectrum of the building sector ranging from residential buildings to commercial and public buildings and covers the construction of highly efficient buildings as well as the refurbishment of existing ones.

As of July 2021, the programme has become the “BeG” (“Bundesförderung für effiziente Gebäude” – “Federal promotional support for energy efficiency in buildings”), under the leadership of the Federal Ministry of Economic Affairs and Energy and now formally ruled by a set of directives².



1. Reference: www.kfw.de/Presse-Newsroom/Pressetermine/JAPK-2021/Presentation.pdf

2. Reference: BMWi - Richtlinien zur Bundesförderung für effiziente Gebäude (BEG) (deutschland-machts-effizient.de, amendments in force as of 21 October 2021).
<https://www.deutschland-machts-effizient.de/KAENEF/Redaktion/DE/FAQ/FAQ-Uebersicht/Richtlinien/bundesfoerderung-fuer-effiziente-gebaeude-beg.html>

BeG introduced a number of structural and organisational changes compared to the original KfW programmes. Notably it bundles the most important German support programmes for the building sector under one single roof.

THE BASIC PRINCIPLES OF THE PROGRAMME SET UP, HOWEVER, REMAIN UNCHANGED COMPARED TO THE KfW MODEL

Main reference point is the prevailing building code

The starting point for determining the promotional support is based on the primary energy demand reduction compared to the requirements set for a reference building in the current building code (Buildings Energy Act, (Gebäudeenergiegesetz, short: GEG), in force as of 1 November 2020)³.

The requirements of the building code, which applies primarily to new buildings, have been tightened over time – the promotional product conditions so far have been amended accordingly.

Scope of financial support linked to energy efficiency level

The so-called **Efficiency House** approach, introduced by KfW in 2009, has since then become a market standard. It reduces the complex legal requirements of the building code to two main components: primary energy demand (PED) and transmission heat loss.

An **Efficiency House 55** (EH 55) for instance means, that the primary energy demand of the building seeking promotional funds is only 55% of the level set in the Buildings Energy Act for a reference building, resulting in a 45% PED saving.

The term **Efficiency House** relates to residential buildings, the corresponding term for non-residential buildings is **Efficiency Building**.

As a basic rule for the promotional approach, the more ambitious the energy efficiency level reached with the investment measures, the higher the level of financial support becomes. This incentivises and rewards higher ambition both for new construction and for refurbishments.

Blending loans and grants

Today, loans bear a very low interest rate and no changes are expected in the near future.

The **main promotional element today thus stems from a grant component blended with the loan**. The size of the grant component is linked to the energy efficiency level reached with the investment measures implemented in an Efficiency House: for residential buildings, it ranges up to 20% for a newly constructed Efficiency House 40 (based on a loan amount of €120,000 per housing unit for residential buildings) and up to 45% for comprehensive residential refurbishments resulting in a Efficiency House 40. In case renewable energy measures are included, financial support increases by 5% (only for Efficiency House 40 Plus). And in case of a step-by-step refurbishment of a residential building over time targeting an Efficiency House level, the grant component increases by 5% for every step, thus incentivising the use of an individual renovation schedule.

The max. promotional support for non-residential buildings is calculated per square metre: max. €2000/square metre, max. €30 million per investment.

For **individual measures in a residential building**, such as the insulation of the roof or the walls, the grant component is of 20% for a max. €60,000 loan amount per residential housing unit. Higher support levels apply for changes to the heating systems, e. g. up to 50% in case of the replacement of an oil heating by a biomass system with hybrid heating with renewable sources of energy with a max. of 2.5 mg/m³ of particulates. Another example is solar thermal heating, which is supported with a repayment grant component of 20%.

For individual measures in a non-residential building, the max. loan amount is €1000/square metre (max. €15 million).

Mandatory involvement of an energy expert

Applying for public financial support for residential as well as non-residential buildings requires the involvement of an energy expert from a dedicated pool of experts, especially created for this purpose in 2012 and managed by the German Energy Agency (DENA) and organised following a detailed rule book which includes regular training measures⁴.

3. Reference: Gesetz zur Vereinheitlichung des Energieeinsparrechts für Gebäude und zur Änderung weiterer Gesetze vom 8. August 2020 (BGBl. I S. 1728, PDF).
<https://www.buzer.de/s1.htm?g=Gesetz+zur+Vereinheitlichung+des+Energieeinsparrechts+für+Gebäude+und+zur+Änderung+weiterer+Gesetze&f=1>
https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&jumpTo=bgbl120s1728.pdf#_bgbl_%2F%2F%5B%40attr_id%3D%27bgbl120s1728.pdf%27%5D__1634560871780

4. Reference: www.energie-effizienz-experten.de

There is financial support available to bear the costs associated with the involvement of the energy expert via a grant component, which is not available on a stand-alone basis, but blended as an integral component into the promotional loan product.

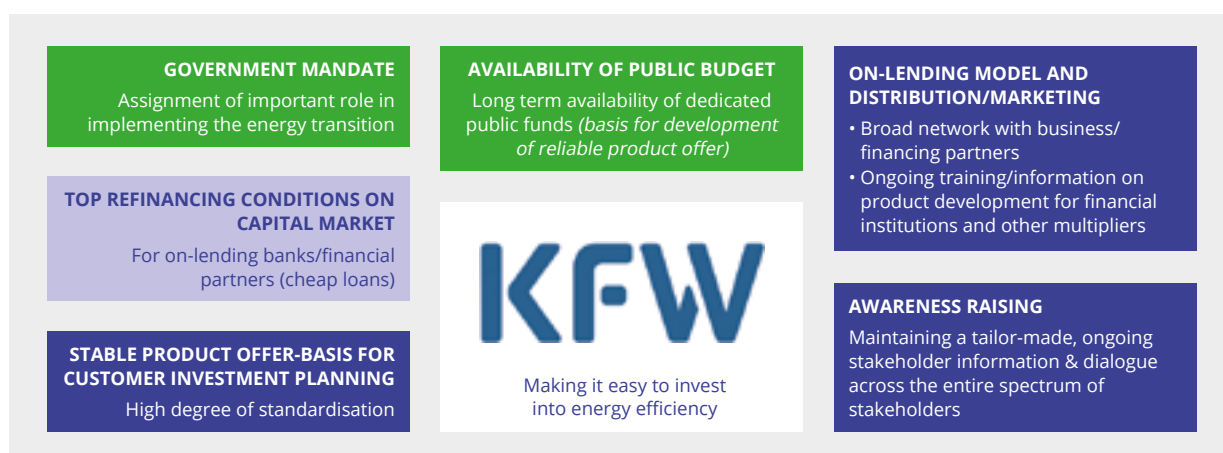
In summary, subsidised loans and grants are available for all building types and investor groups (including for instance energy saving contracting providers) and encompass new construction, comprehensive refurbishment as well as single measures.

THE BEG-PROGRAMME INTRODUCES NEW FEATURES AND PROMOTIONAL COMPONENTS

- there is always **the choice between a loan** with integrated grant component or an investment grant,
- the promotional product set up is largely **identical for residential and non-residential buildings,**
- **renewable Energy package:** including renewable energy measures on top of energy efficiency measures results in an additional 5% grant component for refurbishments and 2.5% for new buildings,
- **sustainability package:** including for instance the provision of sustainability certificates (supporting alignment with the EU Taxonomy).

KfW, as the German national promotional bank, will remain in charge of the promotional loans of the new programme structure. The investment grant part will, as of 01/01/2023, fully be managed by a governmental agency, subordinated to the Federal Ministry of Economic Affairs and Environment, called BAFA (Federal Office for Economic Affairs and Export Control)⁵.

The basis for success:



LESSONS LEARNT

The more transparent and simple the structure of the overall promotional scheme, the better it is to understand for all parties involved and the easier it is to distribute.

A high degree of standardisation supports distribution at scale as well as bundling.

The mandatory involvement of an energy expert from the beginning of the application process until completion of the construction or refurbishment project is very important to:

- provide comfort to the investor regarding his energy efficiency project,
- assure a high degree of quality and reliability regarding energy efficiency level reached,
- assure target-oriented use of public funds,
- assure high degree of reliability regarding the promotional effects.

The systematic measurement of promotional effects is an important step in order to show economic and climatic impact as well as the contribution to the fulfilment of the goals of the Federal government.

5. Reference: www.bafa.de

The European Renovation Loan: a new instrument to fund the Renovation Wave

by Peter Sweatman, Climate Strategy

Peter Sweatman is chief executive of Climate Strategy (CS)¹. Peter has worked for 30 years in finance, and of which the last 18 years were in climate with a focus on energy efficiency and buildings renovation finance. He's rapporteur to the Energy Efficiency Financial Institutions Group (EEFIG)². This article is just provided in a Climate Strategy capacity (www.climatestrategy.com).

INTRODUCTION - EUROPE FACES A BUILDINGS' RENOVATION CRISIS

The EU has established climate objectives in line with its zero emissions target and climate law, where buildings' energy efficiency plays a central part. Yet we are also in a buildings' renovation crisis, where renovations are insufficiently frequent and insufficiently deep. We are yet to fully comprehend the true dimensions of this problem and implement the proposed solutions to deliver relevant actions.

Climate Strategy proposes the implementation of a plan that takes root in the approach of the Marshall Plan for Europe in the late 1940s, to better articulate policy solutions and direct assistance to stimulate Europe's economy, deliver benefits to its citizens, and meet its climate objectives.

A TRILLION EUROS FOR THE RENOVATION WAVE

The energy performance of most buildings in Europe is poor, as three quarters were built before construction codes even considered energy performance. These older buildings are a legacy that will remain standing, well beyond the point to which EU economies need to be emissions negative.

Launched in late 2020, the EU Renovation Wave Strategy to improve the energy performance of buildings calls for doubling the renovation rate to cut emissions, boost recovery and reduce energy poverty.

More specifically, this strategy intends to see 35 million buildings renovated in the next decade with an estimated total investment need of nearly a trillion euros (€900 billion). Experts assert that achieving these objectives requires the EU to more than double the renovation headline rate of 1% per annum and increase the number of "deep" renovations by a factor of ten (as, at present, only one fifth of buildings renovations are designed to deliver substantial energy savings, meaning over 60% of prior energy use).

HOW TO ADDRESS 35 MILLION BUILDINGS IN 9 YEARS

The 1947 Marshall plan was designed to revitalise European economies and worked with recipient countries in straight-forward steps. In the context of our generation's Covid-19 recovery plan, a Renovation Wave needs to be presented to European citizens and buildings stakeholders in three simple steps: Identify/Finance/Execute. Each step requires complimentary policy support and instruments from EU institutions as well as Member States together with appropriate instruments to support the already strong allocation of recovery funding in the renovate flagship area.

Member States will also need to help support the matching of the right set of stakeholders with the correct cluster of buildings, and projects with the adequate mix of grants of finance to ensure the success of individual renovation works.

1. CS is an unregulated consulting firm offering strategy and business consultancy in areas related to Clean Energy, Clean Technology, Energy Efficiency, Sustainability and Climate Change and related Policy work. Climate Strategy is not a financial advisor and it does not provide nor promote financial investment, fundraising nor financial advisory services. This year, CS published an important piece on the six financial levers for buildings decarbonisation "Strategic Debrief: Six financial-policy levers to decarbonise EU Buildings" (video and PPT available).

2. EEFIG was established by the European Commission's DG ENER and the United Nations Environment Programme Finance Initiative (UNEP FI) to accelerate private finance to energy efficiency. EEFIG's current policy focus is on the European Green Deal and within the EU Recovery Plan frameworks.

Identifying what needs to be done

European buildings need to be assessed using two criteria:

- A building physical state; and
- The occupants' eligibility for funding or finance support (grants, loans, or tax breaks).

These criteria are not unknown and – for most building owners or occupants – should not be unknowable. The problem is one of communication and technical competence. The general information of state, ownership, and occupancy of buildings is good in most Member States, and this data (in aggregate) is provided in their long-term renovation strategies.

Energy Performance Certificates (EPCs) are also essential components of renovation efforts. EPCs have been around since 2002 and are a partial answer to the absence of physical building energy performance data, as they make energy use more visible especially during sale or rental transactions.

Nevertheless, currently only 11 Member States upload EPC data to public databases and fewer of these EPC related datasets are made available to owners and the members of the renovation industry in those 11 countries. Best practices are found in the Netherlands, whose government has produced visualisation tools for renovation works, and leading Dutch banks provide apps that flag energy efficiency with their banking and mortgage customers. Other countries, including France, Italy and Germany, help buildings owners by providing access to certified renovation professionals, and – in fewer cases – confidential access to buildings' energy data directly to renovation professionals.

Nevertheless, buildings' owners, occupants, and contractors still lack the tools to quickly identify and price a cost-optimal renovation, and to promote the benefits of deep renovation to households and buildings owners where public support is available.

Finally, in the case of vulnerable communities, the energy poor, and communities in transition, the competent local authorities can be engaged in their identification and support through one-stop-shops and a nationwide exercise of priority assessments with transparent grant eligibility criteria. Transparency here is critical to provide visibility on the eligibility for these grants as – in most cases – they are just one component of the renovation funding package.

A programmatic response from banks

Many building renovations are currently self-financed by owners. This may of course account for their shallow depth and their infrequency. Home improvements such as boiler replacements are easy and often necessary to fund from savings accounts, or even suppliers.

However, the deep renovations identified by the Renovation Wave will cost the same as a new car, and – order of magnitude – up to 10% of the building's value, depending on market and local factors. Furthermore, these deep renovations do not currently benefit from the myriad of competitive lease financing packages that a car dealership offers its clients.

Despite this, significant amounts of money will be available to promote deep renovations in the form of technical and project development assistance, and to pay for some components whose return takes more time, like insulation or heat pumps. Renovation contractors have called for a "Renovation Dealership" where they can go with a deep renovation project plan and get a best available package of grants and low-cost loans to finance an energy efficient renovation.

The multiple benefits of near-zero energy bills, healthier living, and onsite power production is passed by "word of mouth", and studies have proved that the public recognition and eventual adoption of renovation works is based on "seeing is believing". Unlike the purchase of a car, or financing a mortgage, there are few entities that offer pre-financed deep renovation packages in a way that is both easy to understand and simple to execute. This is a particular challenge for SMEs (employing under 50 workers), organising Europe's 19 million construction workers that contribute 9% to Europe's GDP. The developing market for deep renovations needs to offer financing-approved and certified renovation project managers in local buildings renovation firms to deliver against this challenge.

Successful buildings renovation funders, like KfW in Germany, Kredex in Estonia, VIPA in Lithuania, the Czech Renovation Fund, IDAE in Spain, have built a trusted network of agents and collaborators who are able to identify qualifying buildings renovations projects, undertake the work, and provide the necessary information to apply to blended financing packages.

Germany has a network of over 11,000 government accredited energy experts that work with the State bank KfW

and Germany's energy agency Dena that can prepare renovation plans. Much like an independent financial advisor, these independent renovation advisors and project managers have the proper backgrounds to prepare a technical project and arrange its financing. Likewise, they are required to co-sign the loans as a testament to their technical inputs, and their interest as a reference in case the project does not deliver against the owners' expectations.

Over the years, retail business models have expanded resulting in entire renovated communities/neighbourhoods, yet the overall renovation process, related business models and finance supply chain remain complex to articulate. This points to a revolutionary new instrument which can rationalise the supply chains of finance and renovation together.

New instrument: an EU Renovation Loan

European residential buildings are estimated to be worth €17 trillion and are home to 220 million households. There are around €7 trillion of mortgages in Europe, and hence, by subtraction, there is €10 trillion of home equity against which owners can borrow for deep renovation.

Converting this equity into energy savings and local jobs is the essence of the EU Renovation Loan we envisage. At a time when energy prices have spiked up, quickly unlocking just 10% of the €10 trillion of home equity, often in the hands of the older generations³, will stimulate renovation jobs, increase comfort and lower their energy costs – and deliver the Renovation Wave.

In May 2020, Climate Strategy developed the "EU Renovation Loan" (ERL) which allows a homeowner to cost-effectively unlock home-equity for a deep renovation with nothing to pay until sale, transfer or after 30 years.

The EU Renovation Loan is long-term (30 year) financing with a zero coupon structure⁴, where homeowners borrow the amount they require to transform their home through a deep renovation and do not have to pay cash interest until the property is sold or transferred (or the loan matures).

Interest on an EU Renovation Loan would accrue at EU borrowing costs, and could be provided (as EU guarantee) in place of the underutilised loan component of the recovery plans by Member States.

Customers cannot default on a zero-coupon loan, as there are no interest payments to make (which makes them very cheap to manage), and all the cash savings (from lower energy bills and associated operational costs) and home improvements will be realised immediately.

This is particularly attractive to those with restricted incomes (e.g. pensioners) and clearly all the non-cash thermal, comfort, accessibility and acoustic benefits would also start immediately.

This zero-coupon financial instrument will be backed by a junior lien on the property (so as not to reduce collateral available to the existing mortgage) and can benefit from central bank liquidity – so that there will always be a secondary market for this asset for originating banks. Banks can make fees through ERL origination, they will improve the creditworthiness of their clients, green their mortgage books and align their assets more quickly with the Paris Agreement. This is genuinely a win-win-win.

As example, if the deep renovation of an EU semi-detached home costs €20,000 and the zero-coupon interest rate was set at 1% (above EU borrowing costs), then the borrower would have to pay back around €27,000 plus distribution fees in 30 years. It is hard to imagine that the value increases due to renovation and overall market increase would not cover this amount over that time.

Clearly, EU Renovation Loans are not a replacement for grants due to the vulnerable and energy poor. Nevertheless, their attractive structure allows homeowners without savings and with tight budgets address affordability from a cash perspective by delivering cashflow savings directly and rolling up interest payments until the end. Grants and renovation loans should be compatible instruments and used in conjunction when addressing the less able to pay segments of society.

3. <https://www.economist.com/special-report/2020/01/16/home-ownership-is-in-decline>

4. <https://www.investopedia.com/terms/z/zero-coupon-mortgage.asp>

CONCLUSIONS

- **We must deliver at scale:** Almost none of the current instruments, programmes nor approaches are able to deliver at the scale required (€900 trillion through the deep renovation of 35 million buildings in just 9 years).
- **We need to train 350,000 qualified renovation project managers:** If each can deliver 10 deeply renovated buildings per year, as a result, the Renovation Wave would require 350,000 accredited project managers in the EU to solve a possible “capacity bottleneck” across countries. A €900 billion renovation market where project managers expect to earn 10% of an executed project leads to potential aggregate salaries of €9 billion for the 350,000 trained people.
- **The EU Renovation Loan can solve the renovation finance gap at the right scale:** At present, there are no banks in the EU offering a zero-coupon accrual renovation loan product. The EU Renovation Loan is unique in its ability to guarantee cash savings immediately alongside all the multiple benefits of undertaking a deep renovation. Additionally, the junior status and EU guarantee makes the ERL accessible to all homeowners who demonstrate their home is not in negative equity. At EU-borrowing rates the rolled-up cost is probably lower than the house price inflation over the next 30 years. So it “pays for itself”.
- **Retail banks can be more engaged to convert their existing mortgage portfolios to green:** The existence of a bank distributed ERL that provided customers enhanced credit (positive cash from day 1) and did not impact the expected recovery of the existing mortgage, and yet earned distribution fees is a strong way to engage retail banks to deliver millions of renovations.

In 1947, at Harvard University when describing the rehabilitation of Europe, General Marshall said: “[T]he problem is one of such enormous complexity that the very mass of facts presented to the public by press and radio make it exceedingly difficult for the man in the street to reach a clear appraisal of the situation⁵”. He might have been describing how many Europeans and their policymakers view buildings renovation today.

The Marshall Plan did not seek to provide explicit instructions for Europe’s post-war recovery, but it offered jointly developed policy solutions and aid in a coherent package to stimulate Europe’s economy. This is what the EU Renovation Loan is and how we can mobilise citizen engagement in delivering a net-zero emissions built environment.

5. <https://www.oecd.org/general/themarshallplanspeechatharvarduniversity5june1947.htm>

The Re-Mortgaging Renovation Loan: a financial solution for the massification of deep renovation – the French example –

by Philippe Ramos, ESG expert

Philippe Ramos is an ESG expert in market finance and a former executive in several major investment banks. He is the chief executive and co-founder of INUA, a production company dedicated to positive impact contents.

NB: In France, the residential home loans market is divided into 2 types of secured loans:

- Guaranteed loans (*cautionnement*) which represent the major part of home loans,
- Mortgage loans (*hypothèque*).

In this paper, we will use the term re-mortgaging for both types of loans.

I. CONTEXTUALISATION OF THE ISSUES

Buildings are responsible for 28% of greenhouse gas emissions in France, taking into account indirect emissions related to the production of electricity and heat. The French housing stock is particularly poorly insulated, resulting in high energy needs and a major problem of fuel poverty. Of the 29 million primary residences, 17% have obtained an F or G label during the Energy Performance Diagnosis (Diagnostic de Performance Énergétique) (DPE), while only 7% have obtained an A or B label¹. In addition, a significant proportion of the heating systems, the most important consumption item in buildings, is carbon-based (natural gas or domestic fuel). According to the Trémi Survey dating from 2017 on construction works done between 2014 and 2016, it was found that 75% of the works done by partial refurbishment had not improved the DPE. In addition, according to a MinesParisTech study conducted by Matthieu Glachant in 2019², for 1000 euros spent, these works have reduced the energy bill by only €8.4 per year. The cash balance, essential to encourage the French to renovate, is therefore even less achievable with the renovation by stages because it leads to insufficient savings. This financial waste of public and private funds is accompanied, in addition, by a lack of support and verification.

All the specialists in the sector agree that only a Global or Deep Renovation, with support, will enable the entire housing stock to obtain the Low-Energy House (Bâtiment Basse Consommation) (BBC) label, which corresponds to the A and B labels of the Energy Performance Diagnosis (DPE). According to the negaWatt association, bringing the residential housing stock up to BBC level (Low-Energy House) requires the renovation of 21.7 million homes dating from before 2000 (before the introduction of the Thermal Regulations - TR 2000), i.e. 700,000 Deep Renovations per year until 2050, bearing in mind that the longer this scaling is delayed, the higher the number of homes to be renovated annually. The overall annual cost of the 500,000 housing units/year renovation programme is estimated at €17.7 billion and that of a 700,000 unit programme at €24.8 billion. The latter would represent a financial effort of about 1 percent of GDP per year for France, and this for 30 years. The cost per m² of Deep Renovations is estimated at an average of €450 including VAT for single-family houses and at €270 including VAT for multi-family houses³. The average cost of a Deep Renovation in France is estimated at €40,000 per dwelling. So, despite State aid, there is a significant remaining cost for owners, to which must be added the inconvenience of a Deep Renovation. However, renovation stakeholders, as well as the Convention Citoyenne pour le Climat (The Citizen's Convention on Climate) and the Haut Conseil pour le Climat (The High Council on Climate), agree that there must be an obligation to renovate, otherwise we will never achieve the set objectives.

1. Figures from 1st January 2018, Service des Données et Études Statistiques (SDES), ministère de la Transition écologique et solidaire, *Le parc de logements par classe de consommation énergétique*.
<https://www.statistiques.developpement-durable.gouv.fr/le-parc-de-logements-par-classe-de-consommation-energetique>

2. Matthieu Glachant, "La rénovation thermique réduit-elle vraiment votre facture d'énergie ?", *The Conversation*, 18 novembre 2019.
<https://theconversation.com/la-renovation-thermique-reduit-elle-vraiment-votre-facture-denergie-126850>

3. Association negaWatt.

To achieve this:

- each household must have full financing (subsidies + loans) covering the entire energy renovation works, and this financing must be obtained before work begins,
- in the vast majority of cases, there must be a cash flow balance between the energy savings following the works and the monthly loan payments – at least for the most modest households.
NB: the Deep Renovation of an F or G class house divides heating bills by 4 to 8, excluding the rebound effect and with stable energy costs;
- the works must be carried out at the most convenient time for the occupants and on the most relevant buildings to renovate with an energy performance objective.

The obligation to renovate could thus be concomitant with triggering events such as transfers of ownership or façade renovation for co-ownerships. There were 1,046,000 such cases between February 2020 and February 2021⁴. Most of them concern dwellings dating from before 2000, and therefore with little or no insulation. Consequently, the annual pool is sufficient to trigger a dynamic process and force the sector to organise itself. As soon as Deep Renovations become substantial in volume (500,000 to 800,000) and in value (€30,000 to €50,000 per renovation), the costs could reach €25 billion per year. Although there is a lot of aid for renovation works, it is not enough to meet the needs (see MaPrimeRenov' which represents €2 billion over 2 years). It is therefore necessary to have a financing offer for the remaining costs, an offer that is industrial, competitive and capable of absorbing the outstanding amounts over the long term.

II. CURRENT FINANCING SOLUTIONS

Unsuitable banking solutions

To date, credit institutions finance renovation in several ways:

- consumer loans, which have a short maturity and high interest rates, leading to high monthly payments,

- loans for construction works (following purchase of a property), with a maturity of less than 15 years, reserved for quality borrowers as there is no property as collateral,
- supplementary loans to the residential home loan (at the time of purchase of the property): this additional financing for construction works is rarely included in the initial loan offer. The low interest rate and long maturity are identical to the loan that finances the asset taken as collateral (mortgage or guarantee) since the guarantees are the same. This loan is granted subject to compliance with the borrowers' solvency ratios (recommended debt ratio of 33%),
- Eco-PTZ (zero-interest eco-loan)⁵ for the twenty or so banks that have signed the agreement with the State and the SGFGAS⁶: this zero-rate loan is "off-market". Despite the very competitive financing terms of this type of loan for borrowers, banks have granted few eco-PTZs⁷ because there are few requests for renovation, but also because they are reluctant to make this type of loan (cannibalisation of their other loan offers, complexity of the process of a regulated loan, etc.).

In any case, today, there is no banking product that aligns the interests of the borrower and those of the bank.

The Sociétés de Tiers Financement (STF) inherently constrained

STF are third-party financing (TPF) companies. The first ones came into being in 2015. They were created following the application of the ALUR law or Duflot II law of 24 March 2014. They benefit from a funding package of €400 m, offered by the European Investment Bank (EIB) for the period 2016-2020. Their existence is a response to the lack of long and inexpensive financing offered by commercial banks. After a few years of existence, these companies are nevertheless facing some difficulties:

- STF are regulated institutions but, having no resources or income of their own, their necessary recapitalisation (beyond the minimum of €2 m) is therefore recurrent if they wish to continue their lending activity,
- the debt of STF is consolidated with that of the local governing authorities (their main shareholder), which has the effect of weighing on public debt,

4. CGEDD based on CGDD/SDES, DGFiP, notary databases, INSEE.
<http://www.cgedd.developpement-durable.gouv.fr/prix-immobilier-evolution-a-long-terme-a1048.html>

5. Eco-PTZ is used to finance energy renovation work in homes. The maximum amount of the eco-PTZ is between €7,000 and €30,000 depending on the work financed. This loan can be granted under certain conditions to landlords, occupiers and co-owners' associations until 31 December 2021.

6. SGFGAS: Guarantee fund for social home ownership.

7. As of 31/03/2020: 35,574 zero-interest eco-loans were issued in 2019 for a total loan amount of €474.6 million, i.e. an average amount of €13,342. The total amount of work is €593.9 million. Source SGFGAS *Statistical review of 0% eco-loans* issued in 2019.
<https://www2.sfgas.fr/documents/100157/2129693/EPZ+-+Bilan+de+production+%28Annuel%29htm/a24f85f2-9dd0-9660-2ea7-ef009c0058c7>

- as they are not banking operators, local authorities have neither the vocation nor the experience to manage “mini-banks”. It is difficult for them to develop expertise and to create highly specialised information systems *ex nihilo*.

It should be noted that the conditions for granting loans by TPF companies – excluding eco-PTZ – are between approximately 2 and 2.5%, i.e. a rate equal to, or even higher than, the rates for housing loans.

The above-mentioned problems underline the difficulties of STF to develop their activities. Of these, refinancing seems to be the most constraining today, and it is difficult to imagine that local authorities, or the State as a last resort, would recapitalise these mini-banks as soon as they have used up their financing capacity. The desirable change of scale in terms of the creation of renovation loans presupposes a financial player capable of keeping its commitments over time.

State power under constraint

Given what is at stake, one could imagine that, rather than just giving subsidies and grants, the State would finance the renovation of the entire housing stock, i.e. approximately €25 billion per year, for 30 years. This would lead to a deterioration of public accounts and, at the same time, to a failure to comply with the Maastricht criteria. Nevertheless, the management of the Covid-19 pandemic has shown that when the stakes are high and the emergency visible, the State finds ways to mobilise public funds on a massive scale. This was made possible by the decision taken by the European Commission (with the agreement of the Member States) to suspend the budgetary rules, at least until the end of 2022, by invoking the exceptional circumstances clause provided for in the treaties. While the pandemic is a major crisis for our societies, it is nothing compared to the effects of future climate change if we do not act quickly. Nevertheless, it must be noted that the climate emergency is not perceived in the same way by the public authorities, and we cannot be certain today of a comparable commitment.

Another solution, more acceptable from a budgetary point of view, would be for the State to finance the renovation in full and for this to be refinanced without counterpart by the European Central Bank (ECB). This monetary creation would be complementary to monetary creation by the banking system, not a substitute for it. Its sole objective would be to implement a major part of the ecological transition. Endogenous money

creation by the banks would continue to finance so-called “normal” activities. However, this circuit is not permitted by the current EU treaties and is far from being unanimously supported by the member countries, particularly Germany.

In conclusion, if the number of Deep Renovations in the residential sector increases significantly, the financing and refinancing of such renovation may become problematic because neither the State, nor the local authorities, nor even the banking sector have put in place an offer that would enable them to meet needs on the order of €25 billion per year. If this has not yet been made explicit, it is as much due to the low number of renovations as to the relatively low average cost of renovations, as most of those carried out to date are partial renovations.

III. THE RE-MORTGAGING RENOVATION LOAN

The banking system is the great absentee party of renovation financing, even though it has resources that no other player in the market can replace: a network of branches, trained personnel, robust information systems, experience in optimising resources and analysing risks, financial clout, access to financial markets and Central Bank money. Moreover, the annual cost of renovation, estimated at €25 billion, is largely absorbable, corresponding in fact to the monthly creation of residential home loans alone and to 2% of the total outstanding residential home loans.

The need to secure the loan by the renovated asset

The monthly payment for the renovation loan should be as low as possible, ideally equal to or even lower than the savings made on the energy bill. A low monthly payment is the combined result of a low rate and a long maturity. The residential home loan is the bank product allowing the best conditions as:

- the capital charges are low because of the existence of a collateral,
- it is an attractive product that generally allows the borrower’s salary to be held with the lending bank, giving it an accurate view of the client profile,
- it also helps to build customer loyalty over the duration of the loan, so that other profitable financial services (insurance, investments, etc.) can be sold.

Obviously, there is renovation if there is a property to be renovated. The owner of this property can therefore

put it up as collateral for the renovation loan (mortgage or guarantee). The credit institution granting the renovation loan thus has a security and, in so doing, benefits from reduced regulatory capital charges. The fact that a borrower can choose from different banks for his or her renovation works is an important element in getting the best conditions at any time. The mechanism is similar to the situation where a household takes on debt at the same time to buy a property and to finance the works. The only difference is that here, the loan will be only for Deep Energy Renovation and can be granted at any time, not only at the time of a property purchase. It is also desirable that this package be offered at each transfer of property, when the obligation to renovate comes into play.

We have spoken with a major law firm in Paris which has confirmed that there are no legal obstacles to (re) using the property to secure a loan. The only obstacles are financial, i.e. the costs of registering the mortgage if the property has not yet been taken as collateral or the costs of discharging and then (re)registering the mortgage if the property is already taken as collateral. These fees are high but the State can legislate to reduce them. In the case of guarantees, which account for the bulk of collateral taken out for residential home loans in France, the fees are contractually agreed between the bank and the guarantee company (called société de cautionnement), which generally belongs to one or more banks. Given the environmental issue, it is to be hoped that the financial ecosystem will not charge any fees in the event of an amendment to the loan. Ultimately, the State can legislate in consultation with the FBF (French Banking Federation).

It should be noted that the system of residential home loan top-up already exists in the Netherlands in several forms, the “further advance” being the most widespread. After a residential home loan has been taken out, households can take out an additional loan extension at any time to carry out renovation, conservation or extension works on their property. The lender is obliged to accept the loan extension provided that the criteria for granting it are met. The maturity is similar to that of a home loan, i.e. 30 years.

A cash flow balance facilitated by the combination of the re-mortgaging with other schemes

Even if the cost may be high in the event of a standardisation of Deep Renovations, the State may neverthe-

less wish to encourage the development of the **eco-PTZ** scheme in order to facilitate the cash flow balance of borrowers, at least concerning the most modest households. **It is quite possible that banks will grant an eco-PTZ secured by property. They will be less reluctant to do so** because this will have a lesser impact on their regulatory capital charges, which, as a result, should reduce the amount of the State tax credit.

It is also possible to imagine a mortgage refinancing scheme with no monthly payments, the so-called **zero coupon loan**. The interest and principal are repaid in one lump sum at the maturity of the loan. Since there are no monthly repayments, cash flow management is obviously made easier. This solution has the added advantage of avoiding any default by the borrower on the renovation loan. As the bank has the property as a security, it is assured of repayment of the loan amount, either at the time of either sale or inheritance.

The Mortgage refinancing scheme can also be coupled with the Fonds de Garantie pour la Rénovation Energétique (Guarantee Fund for Energy Renovation) (FGRE) instituted by article 20 of the Law n° 2015-992 of 17 August 2015. This guarantee scheme concerns individual and collective eco-PTZs granted by the banks that have signed the agreement. At the end of 2020, only Banque Postale and Crédit Agricole had signed the agreement, and the fund was topped up by EDF to the extent of €14m for the individual segment and €5m for the collective segment for a total of 35,000 individual loans and 6,500 group loans with respective ceilings of €10,300 and €140,000. Given the small volume of the scheme and the matching funds, it seems difficult for it to respond to the massification of renovation, but if the scheme were to be maintained, the change of scale could be achieved through the **European Investment Bank** (EIB), which has set up a similar mechanism consisting of guaranteeing the first losses of energy renovation loan portfolios (**Private Finance for Energy Efficiency** – PF4EE), from which the STF and certain «pilot» banks can benefit. One could therefore imagine the same arrangement, with the difference that the loan would be secured by the property.

Finally, **by subsidising** energy and thermal renovation, **the State** has a powerful lever to achieve cash flow balance for households or at least for some of them. Indeed, for each household there is a cash flow balance. In other words, if the monthly payment is too high, then an amount of State aid can be calculated which equates the monthly payment with the estimated financial gain

on the energy bill. This amount depends on the financial and energy consumption situations of the borrowers, as well as on the maturity of the loan granted. The choice of favouring a particular borrower or category of the population is a political choice that is not for us to determine here.

Nevertheless, if we reason from the perspective of the State, its available budget, without calling into question its budgetary balance, includes:

- existing aids: eco-PTZ, reduced VAT, MaPrimeRénov', etc., i.e. about €4 billion,
- the reduction of the trade deficit, as a consequence of Deep Renovation, which should have a positive impact on the reduction of resource imports and therefore ultimately on public finances,
- the collateral benefits on the health system (respiratory diseases, asthma, etc.) and social issues (sick leaves, etc.), as a result of the numerous deep renovations,
- the additional revenue resulting from the jobs linked to the renovation is estimated at 278,000 FTEs⁸.

All else being equal, i.e. reasoning on an iso-budget basis for the State, it is in the State's interest to favour Deep Renovations, which are the only ones capable of providing additional budgetary latitude (less expenditure and more revenue). It can then allocate this budgetary surplus to favour the cash balance of households.

A solution that takes advantage of the financial ecosystem

As long as this loan allows for high-performance renovation works that significantly improve the energy efficiency of the home, the bank can consider that this loan is a "green" loan, as it meets the current standards of what the financial ecosystem considers "green". The European taxonomy (currently being drafted) will apply the same treatment if one is able to demonstrate a minimum of 30% energy efficiency improvement and/or if there is a "Major renovation" as specified in the Energy Performance of Buildings Directive (EPBD).

Once the property is renovated, the original residential home loan (if any) can also be considered a green loan as it is financing a home that is now highly energy

efficient. This classification is not merely "cosmetic"; it is not greenwashing, as some initiatives in the financial world can be accused of. Indeed, it allows lending banks to refinance themselves through what is known as green bonds (Senior Green Debt, Covered Green Bond, Green Securitisation), or even Social Bonds if they concern renovation loans to the poorest households. By issuing such bonds, banks can benefit from improved refinancing conditions compared to the conventional market, due to the persistent imbalance between supply and demand for Green Assets. It is conceivable that this spread in favour of the bank, known as **Greenium**⁹, could be **passed along to the borrower** by improving the rate of her/his renovation loan, or even that of her/his initial residential home loan, as already is done in the Netherlands. This improvement in conditions for the borrower is a further step towards cash flow balance.

As part of its activity, the European Central Bank (ECB) can take part in refinancing by repurchasing (LTRO) or buying (QE) these Green Bonds or Social Bonds. Even if the latest monetary policy review of 8 July 2021 indicates that abandoning monetary neutrality is not on the agenda, it is conceivable that in the future the **ECB will make an ideological transition on its own and reconsider its interpretation by buying all or part of the issued Green or Social Bonds**, which would have the effect, at the very least, of perpetuating, or even accentuating the Greenium. Moreover, in practice, the current pool of potential Green or Social Bonds would remain marginal compared to the current stock on the ECB's balance sheet, and it is to be hoped that the ECB will take this first step without fundamentally changing the notion of monetary neutrality.

A solution that can be duplicated in Europe

The solution of taking the property as collateral for a renovation loan to reduce regulatory capital charges is derived from the prudential rules that apply to all regulated European banks, i.e. almost all credit institutions.

In most European countries, residential home loans are subject to a mortgage or its equivalent in local law. Therefore, banks elsewhere in Europe that would make re-mortgaging renovation loans could also benefit from

⁸. ADEME ThreeME 2020.

⁹. A Greenium or Green Premium is the spread in yield between a standard bond and a Green Bond of the same maturity and issued by the same borrower.

reduced regulatory capital charges, as their loans could be categorised as Green and/or Social subject to substantial and material energy efficiency improvements. In doing so, they could benefit from the same ECB refinancing channel.

In many European countries, the main determinant of the quality of a borrower is the Loan to Value (LTV) ratio (percentage that the loan represents in relation to the value of the property) and not the Loan to Income (the affordability ratio) as in France. Thus, all else being equal, a Deep Renovation will have as a direct consequence on an increase in the price of the asset and therefore in the financial profile seen through the LTV ratio.

In addition, the electricity generation fleet in Europe is generally more carbon-intensive than in France, so Deep Renovation will have an even greater impact on reducing greenhouse gas emissions on the European continent.

CONCLUSION

Without having to wait for a possible relaxation of budgetary constraints, or even for a modification of the ECB's operating treaties, there already exists an operational financing solution – a solution that is competitive, scalable and sustainable. The Re-Mortgaging Renovation Loan and its variants have the great advantage of being integrated into the current ecosystem. Far from serving only the banking sector, it allows the alignment of each of the actors:

- all borrowers benefit from competitive financial terms, equal to or even better than the home loan due to the existence of the Greenium,
- all or part of the borrowers can benefit from a zero interest rate (eco-PTZ), or even no monthly payment (zero-coupon) for the poorest and/or oldest borrowers (if State aid proves insufficient),
- the banks, which are essential to the industrialisation of financing, save on regulatory charges due to the guarantee and can deepen – and thus “make profitable” – their banking relationship with the borrower throughout the loan,
- the State benefits from an efficient banking system that compensates for its current lack of budgetary flexibility,
- the EU and the ECB do not have to fundamentally change their operating rules, or even abandon their budgetary and monetary orthodoxy, at least in the short term.

As financing is no longer a problem, neither in its amount nor in its complexity, the massification of renovation can take place. The obligation to carry out Deep Renovation – with its inherent inconveniences – remains, however, a prerequisite, which must be assumed politically. Moreover, given the environmental and social stakes, we can hope that the next French government will make Deep Renovation a priority in terms of public action and that it will lobby its European partners so that the institutions provide the necessary support for the ecological transition of our societies by making a major budgetary and monetary transition.

Unlocking the Renovation Wave: the case for ECB green discount rate

by Uuriintuya Batsaikhan, Stanislas Jourdan, and Adua Dalla Costa, Positive Money Europe

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INTRODUCTION

The EU Green Deal clearly defines climate neutrality as one of the major goals to achieve by 2050. To meet the 2030 midway target of 55% reduction in greenhouse gas emissions (GHG), the European Commission (EC) has rightly identified building renovation as a key priority of the decarbonisation challenge. Buildings, in fact, are responsible for 36% of the EU's GHG emissions from energy. By launching the "Renovation Wave" initiative, the EC aims at cutting up to 60% of building emissions by doubling the pace of renovation up to 35 million buildings by 2030⁵.

To reach these ambitious objectives, the EC estimates an investment gap of around €275 billion per year⁶. It has also identified different financial instruments available to fund renovations and catalyse private investments. However, public funding remains insufficient to boost the overall volume of renovations, despite the existing forms of public-private partnerships that support credit institutions in providing this type of funding, and the significant pool of resources set aside by the Recovery and Resilience Facility for climate-related expenditures.

As a result, private funding will have to step up to close the current funding gap and match the size of the challenge. Bank lending, in particular, can effectively respond to this need due to the decentralised and elastic nature of its credit operations. However, households and businesses lack incentives to take up loans for renovation purposes, and it is often not profitable enough for banks to offer renovation loans at an affordable rate given the high transaction costs for small-sized loans. Fortunately, the European Central Bank's (ECB) Targeted Longer-Term Refinancing Operations (TLTROs) is a tool capable of unlocking bank lending towards energy efficient (EE) housing renovations to support the objectives of the Renovation Wave⁷.

BARRIERS IN BANK-BASED FINANCING

Commercial bank lending already represents the main channel of financing of home and commercial real estate purchases. Yet, challenges to bank-based financing for renovation purposes are still significant for both customers and banks.

1. Prior to joining PMEU, Uuriintuya worked at Bruegel, DIW Berlin and UNDP. She has two Master's degrees focusing on macroeconomics, banking and monetary policy, and sustainable finance.
2. Before joining Positive Money, Stanislas used to cover the euro crisis as a journalist and ran a blog where he helped spread knowledge about money creation and new economics. He has also coordinated the European Citizens' Initiative for basic income and co-founded the French movement for basic income. Stan holds a Master's degree in Entrepreneurship.
3. Adua holds a bachelor's degree in Political Science from the University of Padua and an Erasmus Mundus Joint Master Degree in Global Markets, Local Creativities.
4. PMEU scrutinises the European Central Bank and develops policy proposals to reform the Eurozone monetary system. Since 2015 it has been successfully championing campaigns to get the European Central Bank address climate change. In 2020, Positive Money Europe started promoting the use of green credit guidance and differentiated interest rates (e.g. green TLTROs) by the ECB in order to enable households and SMEs to benefit from affordable financing to carry out energy efficient building renovations.
5. European Commission (2020) Renovation Wave: doubling the renovation rate to cut emissions, boost recovery and reduce energy poverty, https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1835
6. EC, Q&A on the Renovation Wave, https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1836
7. This paper is a short-version of the extended policy paper Batsaikhan and Jourdan (2021) *Money looking for a home. How to make the ECB's negative interest rates pay for building renovations*, http://www.positivemoney.eu/wp-content/uploads/2021/02/2021_Building-Renovation-TLTROs.pdf

On the customers side, major obstacles emerge from high borrowing costs and stringent collateral requirements for renovation loans. As a consequence, the vast majority of individuals prefer to invest their own capital to fund EE building renovations, which delays the process and makes it conditional to the availability of personal funds (EC, 2019). When existing smaller-scale public subsidies are available, homeowners are often incentivised to carry out only incomplete renovations, which are unlikely to make a real difference in terms of lower utility bills and GHG emissions.

As identified by the 2018 ING international housing survey on energy saving investments, 70% of homeowners sought to carry out energy-saving investments but only 10% planned on acting immediately, mainly because of limited access to funds⁸. Indeed, according to a EC public consultation, lack of private financing came on top as the main obstacle to building renovations with 92% of respondents having so responded⁹.

From the commercial banks' perspective, EE renovations entail long-term commitments with low returns due to high administrative and transaction costs on smaller-sized projects (Olmos et al, 2012, Bertoldi et al, 2020).

Slow progress is further exacerbated by the lack of technical expertise on EE renovations from both sides. Households and businesses are not sufficiently aware of the direct and indirect benefits of carrying out such renovations and struggle with information on the administrative/regulatory requirements such as building certifications (Filippidou et al, 2017). At the same time, bank employees are just as energy illiterate as their clients, and lack the expertise to design affordable EE products or to offer the necessary assistance to conduct energy audits and prepare technical documents (Olmos et al, 2012, Bertoldi et al, 2020).

Lack of legislative requirements is another factor holding back the potential speed of building renovations at the EU level¹⁰. In response to this the EC is currently working on a revised Energy Performance of Buildings Directive (EPBD), which should include a more robust

framework for Energy Performance Certificates (EPC). It is also working on minimum energy performance standards (MEPS) to accelerate the pace of renovations¹¹.

These financial, technical and legislative barriers deter consumers from taking on additional debt for EE renovation purposes. If the pace of renovations is to triple to meet the EU's 2030 interim and 2050 climate neutrality targets, bank-based funding needs to step up immediately. Luckily, the European Central Bank (ECB) has the adequate policy tools to effectively address this challenge.

TLTROs: ECB'S SECRET WEAPON TO PROPEL THE RENOVATION WAVE

The toolkit available to the ECB to fulfil its mandate and maintain price stability of 2% expanded significantly after the global financial crisis. Among the unconventional measures designed to incentivise commercial banks to increase lending to the real economy is the so-called Targeted Longer-Term Refinancing Operations (TLTROs).

Through TLTROs the ECB provides banks with loans at interest rates ranging from -0.5% to as low as -1.0% in the hope that these favourable borrowing conditions are then extended further to households and businesses. In contrast to conventional refinancing operations by central banks, TLTROs are long-term in the sense that they are provided for long durations, up to 4 years.

The first TLTROs were launched in June 2014 and since then, its importance in terms of the ECB's monetary policy has only grown. In total, around €2.5 trillion have been borrowed by banks since 2014¹².

In September 2019, the ECB introduced a new key feature to the TLTROs. It differentiated the interest rate that banks have to pay depending on how much they lend to the real economy over a certain period. If banks can demonstrate that they have increased their lending volume to a certain "lending performance threshold", then they get a preferential interest rate on their TLTROs borrowing. Currently, the preferential rate is set

8. ING (2018) Sustainable housing too expensive, <https://www.ing.com/Newsroom/News/Sustainable-housing-too-expensive.htm>

9. EC (2020) Renovation Wave Communication, https://ec.europa.eu/energy/sites/ener/files/eu_renovation_wave_strategy.pdf

10. See Riley B., Rockwool, <https://www.reutersevents.com/sustainability/why-buildings-are-linchpin-eus-climate-and-green-recovery-plans>

11. EC, Energy Performance of Buildings Directive (EPBD), https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildingsdirective_en

12. ECB, Tender operations, https://www.ecb.europa.eu/mopo/implement/omo/html/top_history.en.html

at -1.0%, that is 50 basis points below the ECB's deposit rate facility (the interest rate applied on banks' reserves at the ECB).

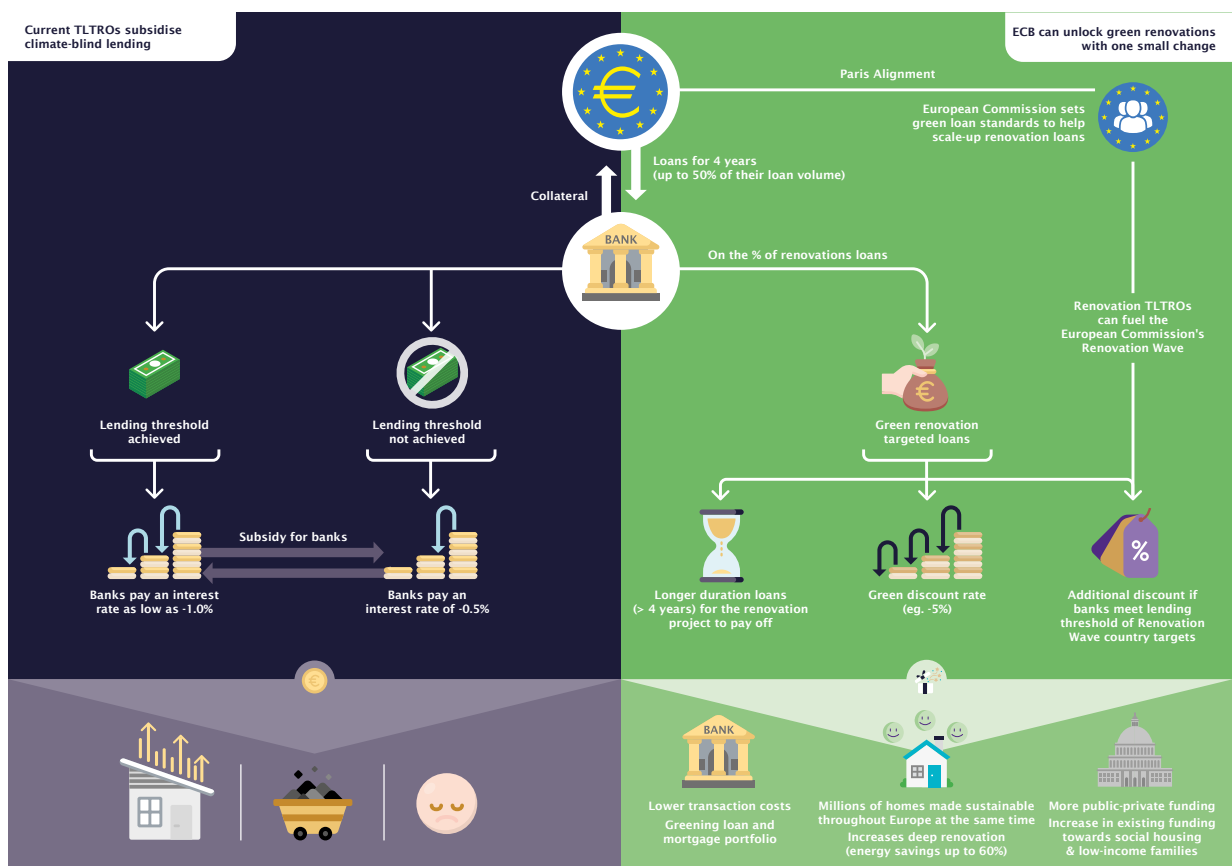
Importantly, the fact that the current rate on TLTROs is lower than the deposit facility rate means that banks which are eligible for the preferential rate benefit, in practice, from a net transfer from the ECB, which is estimated to be around €5 billion¹³. Currently, and in the context of Covid-19, banks can qualify for the preferential rate by achieving a lending performance threshold of 0%, meaning that they simply need to prove that their lending volume has not decreased during the reporting period. If banks do not fulfil the lending performance threshold, they "pay" the normal rate of -0.5%.

With almost €2 trillion allocated since the onset of the pandemic, the TLTROs are ECB's secret financial bazooka. Through this mechanism, the ECB is effectively giving banks a subsidy, with no climate and environmental strings attached.

We propose to align the TLTROs with the EC's transition objectives. In other words, to use it as an incentive for commercial banks to provide households and SMEs with cheap loans to carry out EE renovations. By doing so, we could overcome some of the current barriers to renovation that affect both banks and customers - mainly complexity and affordability - and provide the financial firepower needed for the Renovation Wave to succeed.

R-TLTROS: POLICY DESIGN AND BENEFITS

Under the Renovation-TLTROs (R-TLTROs) pilot programme, the ECB could tweak the current programme by granting a green discount rate (below the current -1.0%) to banks on their portfolio of loans that is destined for EE housing renovations. To incentivise banks even further, the ECB could extend the duration of the R-TLTROs loans towards the average maturity of EE renovation projects. To incentivise banks even further, an



¹³ Bloomberg (2021) The ECB is no longer a reliable cash machine for governments. <https://www.bloomberg.com/news/articles/2021-01-14/the-ecb-is-no-longer-a-reliable-cash-machine-for-governments>

additional discount on the overall TLTRO rate could be offered in case banks achieve a certain lending threshold for EE renovation, in line with national objectives for housing renovation.

The R-TLTROs proposal goes far beyond the creation of a reward for well-performing banks, it would bring substantial gains to all the parties involved.

Consumers can benefit from cheaper loans and reduced energy bills, as well as improved health and well-being

In principle, a green discount rate granted by the ECB to banks would translate into a lower interest rate for customers when borrowing for renovation purposes. Considering that the lack of private financing is often perceived as the greatest barrier to building renovations¹⁴, lower borrowing costs may offer an incentive to take up EE renovation loans. From a personal finance perspective, lower energy consumption not only entails reduced energy bills and thus higher savings, but it also increases the overall market value of the house, which becomes significant especially when it is pledged as collateral. These benefits will have a positive direct and indirect impact on consumers' financial standing as well as overall improvements in health and well-being¹⁵.

The operational and transaction costs of banks will decrease and their retail portfolio will become increasingly sustainable

The net transfer that banks benefit from can be used to cover parts of the administrative and transaction costs that characterise renovation projects. At the same time, the prospect of higher earnings should encourage banks to expand their portfolio of renovation loans, which will ensure that their operations become cost-effective through agglomeration, hence increasing their profitability even further. By increasing green renovation loans, the portfolio of loans (as well as mortgages) of commercial banks will also become more sustainable, thus tackling the issue of accelerating climate change and the balance sheet risks associated with it.

The EC's Renovation Wave is equipped with the financial firepower to reach its targets

Clearly, public funding alone does not match the amount of financial resources needed to meet the Renovation Wave targets. Private financing through the R-TLTROs offers the financial firepower needed using a decentralized network of local banks, which can unlock real economies of scale instead of requiring complex centralised planning.

Customers can be incentivised to take out EE renovation loans at pivotal moments, such as when taking up a mortgage, renegotiating the interest rates on their current mortgage or when planning non-energy related renovations. Thus, the banking sector occupies a central role at this juncture, namely in reaching out and incentivising customers to take out EE renovation loans. Given the aim of the banking sector to transition their retail activities to become more sustainable, and the fact that they hold a large mortgage portfolio, banks can start this sustainable transition by reaching out to existing mortgage customers with attractive financing options for EE renovation works. This way banks are incentivised to persuade homeowners to conduct deep renovations with the maximum energy- and cost-saving potential.

Moreover, a green discount rate on R-TLTRO loans should decrease the unit cost of individual loans, ensure higher returns for banks, which will then provide incentives to expand the volume of EE loans, thus creating a virtuous cycle.

The ECB has better chances to fulfil its primary and secondary mandate

The ECB, the engine that could jump-start this monetary instrument, also benefits from R-TLTROs. Its revised monetary strategy adopts a symmetric 2% inflation target over the medium term. Even with the implementation of unconventional monetary policy tools, the ECB has not been able to consistently get anywhere close to the 2% target in the past 10 years. The adoption of R-TLTROs will improve the transmission mechanism of monetary policy by extending loans to households and injecting money directly into the real economy. In-

¹⁴. European Commission (2020) Renovation Wave Communication, https://ec.europa.eu/energy/sites/ener/files/eu_renovation_wave_strategy.pdf

¹⁵. For studies on the effect of renovations on health and well being see HEAL (2018), BPIE (2018).

vesting in buildings has direct macroeconomic effects of boosting employment and related manufacturing supply-chains, which represent a significant underlying condition for a rise in prices. On top of that, the ECB has the possibility to introduce ambitious and impactful steps to tackle climate change beyond what is reflected in its recent climate action plan¹⁶.

Furthermore, bound by the requirements of its own mandate enshrined in the Treaty on the Functioning of the European Union (Article 127), and without prejudice to price stability, the ECB has an obligation to support the general economic policies of the EU related to sustainable development and environmental protection. By attaching green conditions to its refinancing operations, the ECB supports the decarbonisation challenge set out by the EC. Aligning monetary policy to the goals of the Paris Agreement, moreover, represents a binding framework for the ECB. The implementation of R-TLTROs, therefore, could be the first concrete step towards the fulfilment of these commitments and could protect the ECB from the legal challenges that could otherwise arise from non-action¹⁷.

FINAL RECOMMENDATIONS

With the adoption of its climate change action roadmap, the ECB has committed itself to considering how to move from market neutrality to market efficiency^{18, 19}.

We believe that the current state of affairs in the building renovation industry is illustrative of a market inefficiency, that is renovation projects are only profitable on a long term basis. This leads to short-term investment decisions given the present market conditions and the lack of long-term incentives.

Introducing a green discount rate in the ECB's monetary policy strategy has the potential of increasing the profitability of green projects, not only for renovation,

but also for any sustainable investments whose profitability goes beyond the expected short-term returns²⁰. In the Eurosystem context, we believe that a pilot project focusing on reducing the investment cost of loans for housing renovation would represent a pragmatic and feasible step in this direction.

However, the implementation of a green discount rate by the ECB will require a robust framework for identifying which loans and renovation projects should be made eligible for the discount. Indeed, currently there is a gap in this area, as mortgages that include renovations are classified as mortgages and thus excluded from the TLTROs. Meanwhile, non-mortgage bank loans for the purpose of housing renovation are classified as standard consumer loans²¹. As things stand, it is very difficult to identify how many bank loans are allocated for energy-efficient renovation projects.

Creating a green loan standard would help separate the pool of consumer and mortgage loans that should be made eligible to the TLTRO green discount rate (or to any other public subsidy schemes for that matter). This would also provide clarity for all actors, including banks and one-stop-shops, on the approach they should follow. In addition, it would improve the EU's statistical framework aimed at tracking the progress towards the Renovation Wave objectives.

Setting up eligibility criteria for loans is inherently political and falls beyond the scope of competence of the ECB. However, other EU institutions have already taken steps in this direction.

In July 2021, the EC asked the European Banking Authority (EBA) to develop standards for green loans and green mortgages, as part of its renewed sustainable finance strategy²². Based on the ECB's recommendations, the Commission will also examine "how to promote more use of energy-efficient mortgages in the

16. ECB (2021) ECB Climate Action Plan, https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210708_1~f104919225.en.html

17. Greenpeace (2021) Legal analysis finds ECB and Bundesbank cannot dodge climate action <https://www.greenpeace.org/eu-unit/issues/climate-energy/45711/legal-analysis-finds-ecb-bundesbank-obliged-to-protect-climate/>

18. Schnabel I. (14 June, 2021) <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210614~162bd7c253.en.html>

19. Pricing climate risk correctly in central bank refinancing operations will also lead to a lesser likelihood of financial instability and more optimal allocation, see Böser and Colesanti Senni (2021).

20. Grandjean, A., Lefournier, J., and Giraud, G. (2021) *L'illusion de la finance verte*, ISBN 9782708253735.

21. European Central Bank, Letter from ECB President to MEP Ernest Urtasun (18 November, 2020) https://www.ecb.europa.eu/pub/pdf/other/ecb.mepletter201119_Urtasun~e834423206.en.pdf

22. European Commission (2021) Renewed Sustainable Finance Strategy, Action plan, https://ec.europa.eu/finance/docs/law/210704-communication-sustainable-finance-strategy-annex_en.pdf

upcoming review of EU mortgage credit rules²³. It will be key for the EBA to propose green loan standards in a way that ensures greater impact, uptake and scaling-up of loans beyond the prudential and reporting requirements of banks. Green loan standards should also ensure a high degree of consumer protection across the EU in accordance with the Revised Consumer Credit Directive²⁴.

Meanwhile the **Energy Performance of Buildings Directive (EPBD)** is expected to be reviewed by the end

of 2021 and will deliver high-standards for deep renovations. Ensuring that future green loans standards proposed by the EBA are aligned with the new EPBD criteria would help prevent greenwashing and should provide a certification framework for renovations paid by the R-TLTROs.

Policy consistency across the ECB, the EBA and the Commission, therefore, will be key to unlocking the financial firepower that the Renovation Wave needs to succeed.

²³. Dombrovskis, Valdis, 9 July 2021, https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_21_3506

²⁴. European Commission (2021) Impact Assessment Report on Consumer Credit, <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SWD:2021:0170:FIN:EN:PDF>

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