

Taking an integrated approach to building decarbonisation in the EU

10 Principles for a successful Renovation Wave

The Electrification Alliance welcomes the upcoming Renovation Wave initiative of the European Commission. We believe that the following 10 principles will help make it a success and speed-up the full decarbonisation of the EU building stock.

1. Acknowledge the multiple benefits for EU citizens and the energy system

This initiative is a unique opportunity that allows to simultaneously tackle the climate crisis while delivering concrete benefits to European citizens – high quality jobs, improved comfort and well-being, cleaner air in our cities – as well as an increased system efficiency. Investments in energy efficiency stimulate the economy, especially the construction and renewable energy industries, generating about 9% of Europe's GDP and directly accounting for 18 million direct jobs (source: EC). Small and Medium-sized Enterprises (SMEs) would benefit from a boosted renovation market as they contribute to more than 70% of the EU's building sector. This is especially important in the current economic situation.

The Renovation Wave should take a system-wide approach and work to fully leverage the potential of highly energy efficient, smart and flexible buildings as a key component of a decarbonised energy system, powered by renewable-based and carbon-neutral electricity. To decarbonise the building stock in the most efficient manner, Integrated Renovation Programmes (IRPs) should combine energy efficiency improvements with policies that boost on-site renewable generation, promote demand-side flexibility and transition away from pure fossil-based heat supply by prioritising direct electrification.

2. Take an ambitious approach to building renovation and electrification

For the renovation wave to be impactful and in order to put the building sector on track with the goal of decarbonizing the EU building stock by 2050, the initiative should strive to both greatly reduce the energy consumption of all buildings and electrify the remaining demand. Energy efficiency and electrification go hand in hand and when taken together offer the greatest possible benefit in terms of achieving decarbonization in a cost-effective manner. High levels of building renovation, targeting a minimum renovation rate of 3% per year, combined with the direct electrification of heat supply could unlock up to 23 bn EUR in savings on consumer energy bills. (Source: [ECF](#)).

3. Prioritise the electrification of heating and cooling in buildings

Heating and cooling accounts for nearly 80% of the energy consumption of buildings, with 83% of this energy currently produced from carbon-intensive fuels such as heating oil and fossil gas. The Renovation Wave should facilitate the direct electrification of heating and cooling of buildings, either at individual building level or at district level (4th generation district heating) as part of an urgent transition away from carbon-intensive fossil-based heating solutions toward full decarbonisation by 2050. While this process will not happen at the same speed in all EU members states due to their diverging starting points and heat markets the renovation wave should set the path for all EU countries. Heat pumps constitute market-ready solutions that can be deployed at scale and which can produce up to 4 units of heat for each unit of electricity consumed. Even higher benefits can be achieved in combination with solar technologies in well insulated buildings. As 15,000 heat pumps a day will have to be installed across the EU (Source: EHPA), a European Heat Pump Strategy and Alliance are needed. An increase deployment of highly energy efficient and sustainable technologies will also enable electrified buildings to act as a flexible resource for a decarbonised energy system. Their cost will be optimised through competitive electricity prices in which the tax component allows clean electricity to be in transparent competition with other energy carriers.

4. Accelerate on-site renewable electricity generation

The Renovation Wave should seek to use the full potential of on-site, cost-effective renewable energy generation. The solar rooftop potential of the EU's buildings is 680 TWh, equivalent to 24.4% of current electricity consumption, two thirds of which (467 TWh) could be generated at a cost lower than today's residential tariffs (Source: [JRC](#)). Meeting this potential would require a total investment of about €330 billion, save 7 million tonnes of CO₂ and create local green jobs (Source: SPE).

Currently, more than 90% of the European rooftops suitable for the deployment of solar are unused (Source: SPE). The Renovation wave should include a pan-European solar rooftop programme that encourages the deployment of solar photovoltaics on all new and renovated residential, commercial, and industrial buildings in the EU. This programme should aim at utilising the full generation potential in each Member State and integrate it within smart grid infrastructure.

5. Deploy e-mobility smart charging infrastructure

The sectorial integration between buildings and transport should be enhanced through the deployment of future-proof smart charging infrastructure in residential and commercial real estate. The Renovation Wave should go beyond the minimum requirement set by the revised Energy Performance of Buildings Directive (EPBD) to reduce administrative burdens also and especially on national level, in particular in multi-family buildings, and foster the integration of electric vehicles (EV) in the power system. To truly tap into the potential of integrating EVs and buildings, IRPs should put emphasis on the possibility to have a charging infrastructure which is able to interact with the smart grid (currently not foreseen by the EPBD). Boosting the number of charging points in the EU will help both the construction and automobile sector at the same time while linking the Green Deal with the EU recovery, they only need to be implemented at large scale.

6. Foster the demand-side flexibility of buildings

The Renovation Wave should contribute to the development of smart buildings which are fully integrated and act as active energy infrastructure elements in the power system. New electric loads such as heat pumps, building load management systems, smart charging infrastructure for electric vehicles and storage solutions in buildings will be essential drivers for this demand-side flexibility, making it possible to smartly and cost-effectively integrate a large share of variable renewables into a decarbonised energy system. The Renovation Wave should also tackle the non-economic barriers that obligated parties encounter when implementing energy saving solutions (incl. EEOs). Electricity tariffs should encourage the use of electricity when this is the most beneficial for the power system and positively affects carbon emission. Electricity pricing is a key strategy to encourage flexibility and deliver economic benefits to consumers, in return for providing such flexibility.

7. Align internal electrical installations with a higher level of ambition and safety

In order to make a success of sector integration, deployment of renewables and installation of more and more connected devices into the house, the first step is to ensure that internal electrical installations can sustain it, in terms of capacity and quality. Yet, a majority of residential buildings in Europe are old and have correspondingly aging installations which were not designed for such innovations. For example, 70% of German buildings have power cable faults (Source: [ZVEH](#)). In France, 2/3 of residential housing built over 15 years ago have electrical safety shortcomings (Source: [GRESEL](#)). This is also a matter of safety. Electrical safety should be one of the requirements (to be implemented, for instance in national legislation or building codes) when renovating of buildings. This will also significantly contribute to mitigate the consequences of energy poverty, as it will reduce the hazard of fire which is currently caused in 25-30% of cases by faulty electrical installations (Source: [FEEDS](#)).

8. Encourage innovative business models enabled by digitalisation

Scalable innovative financing models should be further promoted, to further unlock the potential of sustainable renovation. Energy Performance Contracts, on-bill financing, on-tax programmes, leasing schemes for rooftop solar panels, crowd financing schemes and the aggregation of small-scale projects are proven methods to foster renovations. Energy performance of the building should be improved and more accurately evidenced through strengthened Energy Performance Certificates (EPC), to increase market trust. Sustainable renovation will also be encouraged through the linking of EPCs to the Building Renovation Passports, providing roadmaps for staged deep renovation for individual buildings. Energy savings realized through renovation should be monetized, so as to facilitate the development of Energy Service Companies (ESCOs). The introduction of digital technology to monitor such savings is crucial to facilitate such monetisation, which will contribute to leveraging the contribution from the private sector, considering the limitation of public funds available for the Renovation Wave.

9. Set up up-to-date skills programmes for workers

The Renovation Wave will not happen without the right skills. The construction sector already faces huge shortages in manpower and skills. This is a rising concern with the growing potential of electrification, installation of on-site renewables, smart system integration and digitalisation. In light of the upcoming Recovery plan, there is a need for an impetus in apprenticeship, up-skilling and reskilling for Green works in the construction field.

10. Make the best use of the Clean Energy Package laws

The implementation of the Clean Energy Package will be pivotal to ensure the EU meets its 2030 climate and energy targets and is on the right track to become climate neutral by 2050. The EU energy laws contained in the package also contain several provisions that can support a successful Renovation Wave initiative. Some may require some adaptations when the files will be reopened.

First, the EPBD should be carefully monitored and legally enforced by the Commission. To this end, Member States should submit their Long-Term Renovation Strategies (LTRS) for assessment that should include plans to achieve decarbonisation objectives. In addition, the obligation to renovate 3% of the total floor area of buildings owned and occupied by central governments each year, should be extended to all public buildings, including schools and hospitals.

Second, the Energy Efficiency Directive requires Member States to submit a comprehensive national heating and cooling assessments (the next ones are due by December 2020). These obligations will lead Member States to considerably modernise their thermal applications and should be given more visibility in the framework of the Renovation Wave initiative.

Third, the Renewable Energy Directive sets as non-binding target for Member States a yearly increase of 1.3% percentage points of renewable energy share in heating and cooling. This measure could be made more ambitious or linked with a CO₂ reduction element. Furthermore, to remove barriers to the deployment of on-site renewables, Member States should ensure enabling frameworks self-consumption are in place as soon as possible.

Fourth, when implementing the Electricity Directive by December 2020, Member States should be encouraged to integrate buildings into the power system, to ensure that they bring an active participation in the clean energy transition while increasing system efficiency.

Finally, the implementation – and possible review – of the EU energy laws should be facilitated by dedicated “Concerted Actions” and stakeholder consultations in the framework of the Climate Pact.

