SOLIDARITY AND RESILIENCE: AN ACTION PLAN TO SAVE ENERGY NOW!

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Putin's invasion of Ukraine reminded Europeans in the harshest way possible of our vulnerability, of the external threats to peace and democracy, and to Europe's energy security. Fossil fuel trade has turned from a business opportunity to a security risk. This development has not been unexpected, and the risk was obvious; today we know that political preparation for it was insufficient.

The Ukrainian tragedy requires reactions on many fronts, and humanitarian rescue efforts must be the priority. But **beyond immediate efforts to help, the EU and its member states need to take strategic actions now to reduce our dependency on energy imports from Russia and other non-EU countries. The actions must avoid quick fixes which might pose similar future risks.**

The question is which short-term alternatives does the EU have at this point in time? Switching energy suppliers is an ad hoc measure but continues the risk of energy import dependency and locks in the continuation and even growth of fossil fuel infrastructure, including its negative impact on greenhouse gas emissions. Finding alternative energy supply might be necessary and acceptable with a short time perspective but cannot be proposed as a lasting solution.

Immediate and mid-term actions:

- Insulating attics and roofs can save up to 14% of residential heating energy
- Checking heating systems and upgrading low cost heating controls will save approximately 10% of heating energy
- Scaling up renovation advice with the Building Renovation Passport will trigger faster and deeper energy savings across Europe
- A solar installation campaign will increase renewable heat and electricity and should be made mandatory on large flat-roof buildings
- Boosting investments in serial renovation and upskilling of the construction labour force
- Using RRF funds, ETS revenues and EIB funds to pay for individual low cost measures
- Ensuring that the Fit-for-55 political decisions are aligned with Europe's energy security and climate mitigation priorities

A longer-term and strategic perspective would speed up the transformation to domestic renewable energy supply, but investments in energy infrastructure are by nature long-term investments requiring significant lead time. While Europe will have to introduce a new dynamic in its renewable energy growth, it is not possible to put up new wind turbines and other necessary infrastructure overnight. This leave us with one other measure which should be boosted immediately: harnessing Europe's energy saving potential.

To decrease energy import dependency, European governments, businesses and citizens have the opportunity to reduce energy demand very quickly. With this paper, BPIE is presenting suggestions to reduce energy consumption in buildings with measures which have a short-term effect. Behaviour changes such as lowering the room temperature by a degree or two, switching off appliances which are not urgently needed and leaving the car in the garage are ad hoc contributions available to almost everyone and are an immediate signal of solidarity with the victims of Putin's aggression. In the long term, individual actions must be replaced by a clever far-sighted EU plan to structurally reduce energy demand.

Today, individual actions should be complemented by initiatives which more substantially reduce energy demand in a structured way and which Member States can launch immediately and support strongly, with the help and guidance of the European Commission.

Here is our list of suggestions, divided into different categories (projects/campaigns, financing, regulation) and three time horizons. All these types of measures are needed if the EU is to decrease its energy import dependency in the long run and boost its resilience.

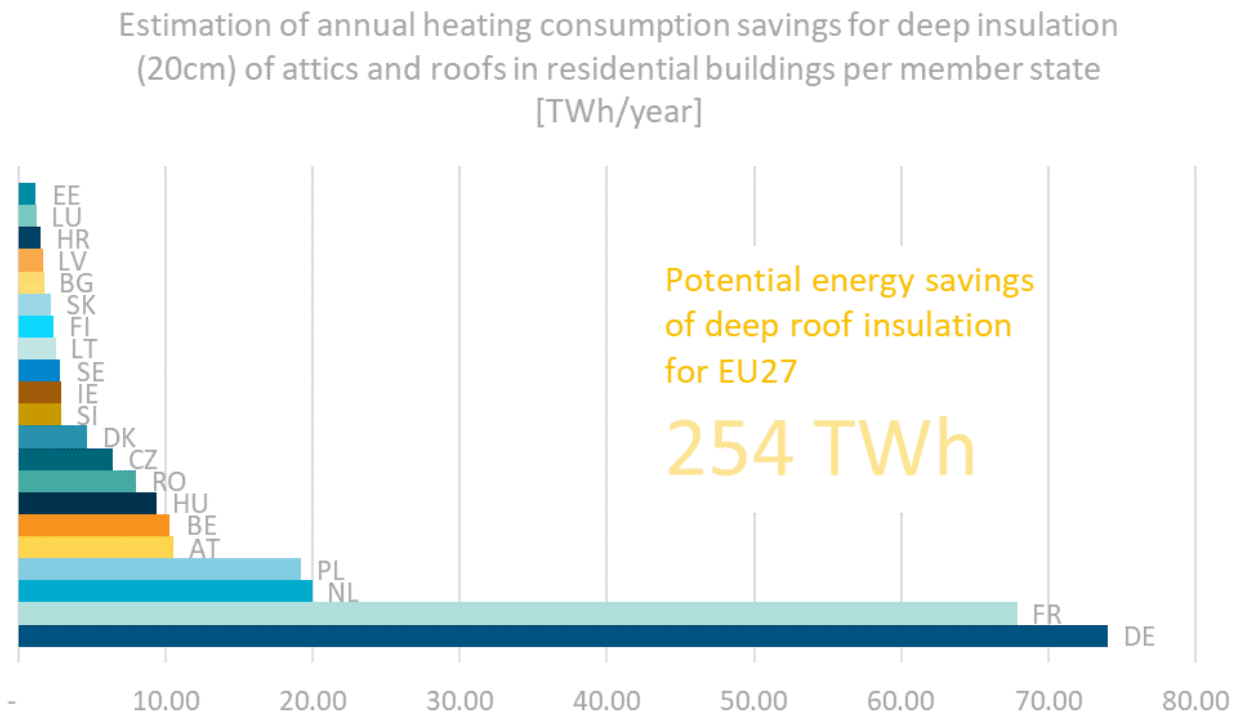
Immediate measures with a six-month horizon to prepare for next winter

- **A European campaign to insulate attics and roofs, led by national governments with support from the European Commission, which will save up to 14% of heating energy in homes.** This is a technically simple measure and can be done by talented laymen with guidance and supervision from expert installers. It is cheap and a no-regret option in uninsulated or insufficiently insulated attics and roofs. The respective investments should be fully covered by national governments using the Recovery and Resilience Funds made available by the European Union as well as ETS revenues and EIB funds. The availability of funding for these measures should go hand in hand with a strong awareness raising campaign to be carried out by Member States, cities and regions. Campaigns should be at least equivalent in ambition to what has been done to raise awareness of safety measures and vaccines to abate the spread of the COVID-19 pandemic.

  We calculated the impact of adding 20 cm insulation in attics and roofs, based on the current performance of these building parts in 21 EU Member States. The expected energy savings amount to 254 TWh/year which is approximately 14% of the 2020 heating energy demand in residential buildings in the EU. Based on the current energy carrier shares of heating energy in Europe, this would reduce gas consumption by 12% and heating oil consumption by 17%.

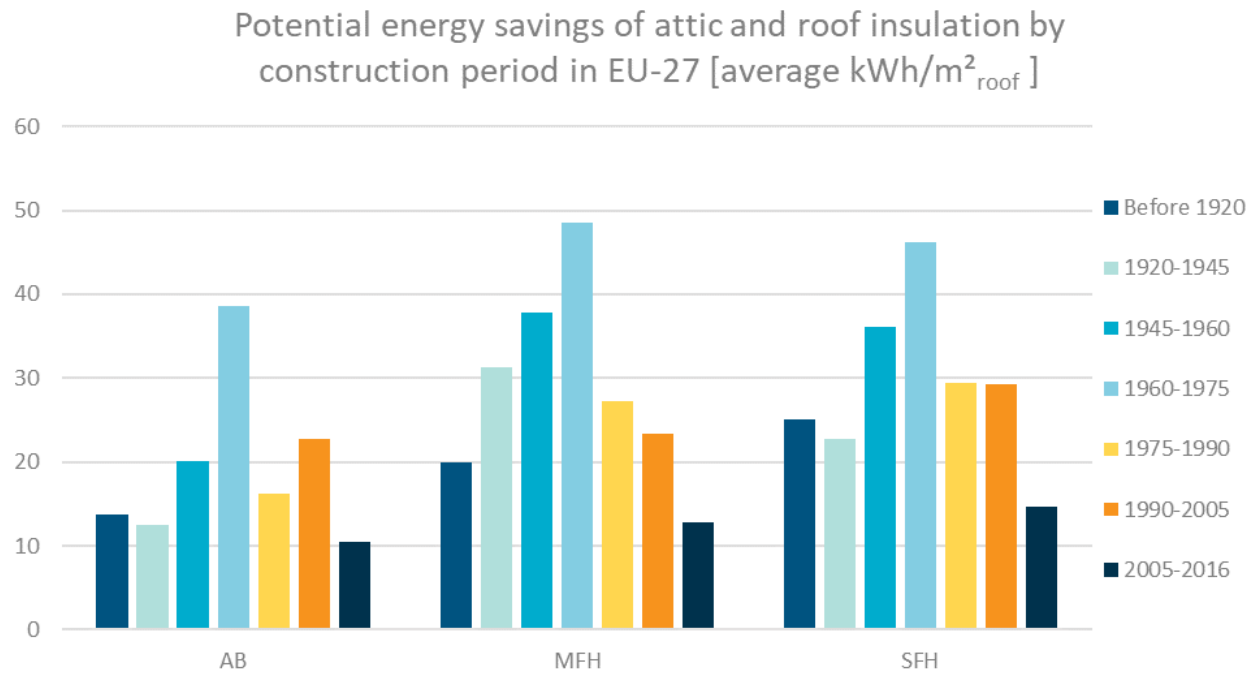
  Figure 1 shows the absolute savings potential of attics and roofs insulation per EU Member State in residential buildings only, with those leading which have the largest surface areas.

Figure 1: Estimation of annual heating consumption savings for the deep insulation (20cm) of roofs and attics in residential buildings per member state [TWh/year]



Targeting buildings from specific age categories will maximize energy savings, as shown in Figure 2. Buildings built between 1945 and 1975 have the highest saving potential per square meter, followed by buildings dating from 1975 to 2005. It would therefore be appropriate to start an insulation campaign in these buildings to maximise immediate savings.

Figure 2: Potential energy savings of attic and roof insulation by construction period in EU-27 [average kWh/m²]



AB – apartment blocks; MFH – multi-family houses; SFH – single-family homes

Implementing an attic and roof insulation campaign is a logistic effort in each Member State, but technical barriers would be low in most buildings. A concerted effort of insulation manufacturers with local craftsmen, SMEs and DIY stores under the coordination of national and regional governments and cities could achieve a significant improvement of buildings within a short period of time.

- **A European campaign to improve the hydronic balancing of heating systems.** This check of heating systems which is low tech intervention needing a few hours per building unit will make sure that the heating system is running properly and efficiently, not wasting expensive and precious fuel. This measure saves 5-10% of the heating energy[1], and would be implemented in a concerted effort by heating installers in every Member State.

- **A European campaign to install thermostatic radiator valves and smart thermostats where they are not in place already.** This allows a more efficient control of room temperatures. This is a low cost intervention which would be implemented by heating installers, potentially at the same time as the hydronic balancing of the system.

- **A comprehensive roll out of the Building Renovation Passport** so that owners have a strategic investment plan at their fingertips to reduce energy import dependence and energy demand in the coming years. This roll out could be supported by a campaign to train emergency experts (ie: architectural/construction engineering students) to issue Building Renovation Passports under the supervision and guidance of professional experts immediately and be implemented in the coming months. A peaceful mass mobilization of energy saving student experts this summer who spend their university holidays providing renovation advice would be a meaningful initiative providing long-lasting results.

- **Tax benefits for large non-private owners of buildings** if they bring forward and make already decided and planned renovation projects more ambitious (e.g. by using thicker insulation and more efficient glazing, installing renewable energy systems rather than fossil fuel based systems).

- **A European awareness campaign** to show voluntary citizen solidarity by reducing room temperatures by at least 1°C wherever possible.

[1] Mailach, B. et al. (2019): Potential Energy Savings and Economic Evaluation of Hydronic Balancing in Technical Building Systems

Measures with a three-year horizon

- **A solar installation campaign** on all suitable roofs to provide solar thermal and solar electric energy. Installation on flat roofs of large buildings should be mandatory and supported financially to trigger large investments. Such measures make sense independently from further efficiency measures and would help reduce energy imports in particular during the summer months. These are effective viable solutions in all climatic zones of Europe.

- **A significant investment campaign that fosters capacity and knowledge for serial/industrial renovation.** Using innovative approaches to façade and roof renovation will reduce intervention time and energy demand on a large scale. Currently, many pilot initiatives exist in Europe which require urgent up-scaling. This renovation solution is suitable for urban areas which are characterized by the same building typologies. Typically, urban quarters built after World War II in a consolidated manner have suitable characteristics for such interventions. The construction industry must be enabled to increase its knowledge, skills and production facilities to make prefabricated renovation solutions the norm for suitable buildings.

- **A Boosting Skills campaign in the construction industry to enable a growth of renovation rates and depth.** The construction sector is largely dominated by SMEs who often have little capacity to invest in growing skills to address new challenges. National governments should support their domestic sector so that skills in deep renovation and zero carbon heating technologies are increasing and enabling the sector to deliver deep renovation at scale.

- **Stopping subsidies and installation of fossil fuel heating.** Many EU Member States still provide financial support for installation of new fossil fuel heating systems. If we are serious about reducing energy import dependence in Europe, these subsidies should stop immediately and funds should instead support energy efficiency measures and installation of renewable heating and cooling.

- **Ensure new buildings are Zero Emissions Buildings with very high energy performance and 100% renewable energy by 2025 already.** Most EU Member States still allow new buildings to be heated by fossil fuel systems and are in many cases ignoring the performance thresholds for new buildings which were defined by the EU[2]. National governments should immediately revise the building standards for new buildings to exclude fossil fuel-based heating. Technologies which lead to a high energy performance and which include renewable energy are cost effective today.

Measures with a 2030 horizon

- **Roll out of serial/industrial renovation programmes in all Member States:** As part of their national Building Renovation Plans, governments should develop a focus on rolling out comprehensive serial renovation initiatives which renovate whole urban quarters. The focus could be on the worst performing building types so that energy savings are maximized in the early years of the initiative.

- **Roll out of deep renovation programmes.** Governments should roll out deep renovation programmes for building types where serial renovation is not feasible due to architectural diversity. The Building Renovation Passport in combination with financial incentives and support programmes should be cornerstones of triggering private investments for deep renovation. State aid rules should be relaxed for deep renovation programmes.

- **Re-assessment of national RRF plans and re-allocations with a focus on energy saving measures**. The European Commission and national governments should re-assess the budget allocations to building renovation which were defined in the plans submitted to the EU's Recovery and Resilience Facility. These plans can provide significant funds to pay for national measures such as the suggested short-term measures suggested above.

- **Align the ambition of the Fit-for-55 policy agreement with the new reality.** The European Institutions currently negotiating the Directives included in the Fit-for-55 package should reassess whether the proposed energy efficiency targets in the EED, the minimum performance standards and renovation measures proposed in EPBD, and the renewable heating target in the RED are still appropriate given the new reality of geopolitical developments and the latest IPCC reports. The increased prices of fossil fuels have modified the cost-effective potential of energy efficiency measures significantly. The recast Energy Performance of Buildings Directive which was proposed by the European Commission in December 2021 must ensure that tools supporting renovation and performance standards for existing buildings effectively reduce energy demand, that legal provisions related to the introduction of mandatory renovation passports are strengthened, that the framework for Minimum Energy Performance Standards applies to the whole building stock and that fossil fuel based heating systems are phased out more quickly.

[2] For details see this BPIE analysis.

CONCLUSION

We have known for too long that fossil fuels are at odds with climate action, and that our dependency on external energy imports poses a geopolitical risk. Europe has already proven a united and strong front against the military aggression, now is the time for bold and immediate action to massively upscale energy efficiency renovations in our buildings and homes, and to quickly wean ourselves off foreign energy imports. This is a long overdue action for the climate and for the health and well-being of all European citizens; it should now also become a central component of any non-violent strategy responding to Putin.

The phase-out of fossil fuels in heating and cooling must therefore be accelerated and the share of renewable heating and cooling must increase exponentially. The political agreement between the EU Member States, the European Parliament and the Commission must be benchmarked against these objectives. Europe cannot afford to agree policies without long-term perspectives. While political cycles and governments many only last a few years, the big challenges are here today and will be for decades. Europe's policy response must be more than adequate with a big safety margin.

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BUILDINGS
PERFORMANCE
INSTITUTE EUROPE

Rue de la Science 23 B-1040
Brussels Belgium

Sebastianstraße 21 D-10179
Berlin Germany

www.bpie.eu

BPIE (Buildings Performance Institute Europe) is a leading independent think tank on energy performance of buildings. Our vision is a climate-neutral built environment, aligned with the ambition of the Paris Agreement, and in support of a fair and sustainable society. We provide data-driven and actionable policy analysis, advice, and implementation support to decision-makers in Europe and globally.