

PU Europe Input Paper

on the

SET Plan Communication (2015)6317 – Towards an Integrated Strategic Energy Technology Plan)

Action 5: Develop new materials and technologies for, and the market uptake of, energy efficiency solutions for buildings

PU Europe welcomes this timely consultation. The results of the proposed actions should contribute to making the Energy Performance Directive and the Energy Efficiency Directive a real success.

We largely support the analysis in Action 5 according to which existing buildings have to deliver the lion's share of savings if we want to transform our building stock into nZEB by 2050. We also agree that renovation rates need to be boosted and replicable solutions developed. Through economies of scale and learning curves, costs can be reduced and quality improved.

Starting point: Energy Efficiency First principle

According to the Energy Efficiency First principle, the building's energy demand should first be reduced to a minimum. The remaining demand should then be covered through renewable sources of energy to the largest possible extent. If required, highly efficient fossil fuel-burning devices should be added.

Bringing the energy demand close to zero is a prerequisite to making buildings an active part of the energy system. Only highly efficient buildings will be able to supply energy to the grid and participate in demand response.

Research proposal: sustainable high-performance insulation solutions

Thermal insulation is a key enabler in the transformation process of our building stock. An unwanted side-effect of more stringent building regulations is the significantly higher weight and thickness of insulation layers in low energy buildings. This may lead to structural problems in existing buildings and require costly adjustments to existing building design solutions (and product dimensions) in new-build. For this reason, we witness a gradual change towards high-performance insulation products. Polyurethane (PUR/PIR) products belong to the top performers in the sector achieving thermal conductivity values of 0.021-0.028 W/(mK).

Significant further improvements are possible and research work is ongoing. Referring to chapter 7, we therefore recommend that the following two research topics should be included in the research and innovation area "Envelope & Structure" under the heading "Higher performance insulation with e.g. lower lambda values and reduced thickness":

- **Development of polyurethane nano-foams and the principles of their large-scale production offering thermal conductivities well below 0.020 W/(mK).**
- **Increasing the recycled and bio-based content in polyurethane thermal insulation products looking at both MDI and polyols with a view to further reducing the overall product environmental footprint.**

Costs of energy efficiency measures

PU Europe cannot accept the analysis regarding the costs of energy efficiency measures for the following reasons:

- Costs must be compared to benefits. The Heating and Cooling Strategy (infographics) states that "proper insulation reduces heating needs by up to 70%". This should be reflected in the document.
- Considerations must be based on life cycle costs. Hence, costs for a given solution should be compared over a 50-year service life (as common practice in LCA studies). If applied correctly, thermal insulation will save energy over the full life cycle of the building element without any need for maintenance, repair or replacement.
- The cost of additional insulation in new buildings can be kept very low, particularly if high-performance insulation is used which does not require major adaptations in the building design. In the case of renovation, the additional cost can be kept low if the insulation is placed when the building element is renovated / repaired anyway.

As to the cost effectiveness of measures, rules seem to disadvantage energy efficiency measures.

- Investments in supply (generation, infrastructure) usually do not have to prove cost-effectiveness. However, the main question is whether a certain amount of money can be more effectively invested in new supply-side measures or in the reduction of energy demand. In other words, cost effectiveness needs to be (also) measured at this level.
- The building owner can usually decide whether he wants to invest in energy efficiency measures. He can compare costs with expected savings. In the case of supply side measures (pipeline, power station etc.), the building owner has no say at all. He will have to pay his share through the energy bill. In other words, he cannot include all elements of cost-effectiveness in his decision-making. This is clearly against the Commission goal to "empower consumers" and should be corrected.

Brussels, 4th February 2016