

## Specific inputs on context and prioritisation steps

- Have a more balanced (residential --- non-residential) evidence base i.e. figures and tables (currently it is mostly residential): although non-residential buildings represent one third of the energy consumption of the building stock, these buildings are more energy intensive due to the more complex building services offered. The potential in energy performance improvement is higher at building level, thus makes it higher at building stock in absolute value (more than one third of the potential savings). Furthermore, improvements in non-residential buildings (e.g. office building), usually raise awareness of occupants and have a spill over effect on the residential side.
- Include information from the latest Commission report on the progress of Member States (**3<sup>rd</sup> paragraph in 2.Context**)
- Energy efficiency alone is not enough to convince the market. The energy performance improvement of the European building stock should include other aspects (such as energy flexibility, on-site renewable integration, health, comfort and productivity of the occupants, consumer/occupant empowerment) for fully reaping the energy savings potential. Technologies with multiplier effect (e.g. building automation and controls) that enable all the before mentioned aspects are essential for quantifying the so called multiple benefits of energy efficiency. (**paragraph Other benefits**)
- Enlarge the approach from envelope + generation side (heating) to a holistic approach by including all energy uses and technical buildings systems, both passive and active measures. Otherwise, suboptimization and rebound effect (e.g. energy efficient envelope + energy efficient generation products → opened windows + products running non-stop) will be a consequence. This would be the way the multiple benefits of energy efficiency can be quantified. Furthermore, this would virtually create a social pressure. Include information on building automation and controls status at European level in residential and non-residential buildings. (**Prioritisation – step 1, Existing buildings Prioritisation – step 2, General Prioritisation – step 3**)
- Currently, there is a lack of collection of actual energy performance of buildings. A 1<sup>st</sup> step for existing buildings would be continuous monitoring and benchmarking. This would constitute an evidence base for continuously improving the energy performance and at the same can quantify the multiple benefits of energy efficiency. Energy Performance Contracting is a good business model in which the EPC provider and the client have the same objectives to improve the energy performance of the building. This could virtually solve the split incentives barrier. (**Existing building Prioritisation – step 2**)
- Always consider the life cycle costs and not only the CAPEX. (**New buildings Prioritisation – step 2, New buildings Prioritisation – step 3**)



- A more generic view on technological inertia – Habits (behaviour) created along the construction process. The collaboration between the disciplines should include conception, design, construction/installation, commissioning, and operation. The performance gap is also due to behaviour of occupants. If this is included in sub-optimal operation and use then it should be better highlighted. **(Cross-cutting barriers Prioritisation – step 2)**
- Deployment is crucial because multiplier effect technology is available for which an innovative selling proposition is necessary. The packaged solutions should have a modular approach in order to respect the individuality of each building e.g. in historic buildings passive measures are not so appropriate. Continuous monitoring and benchmarking should underpin each packaged solution. **(Existing building Prioritisation – step 3)**
- Collaborative building renovation/construction process involving all stakeholders in all stages conception, design, construction/installation, commissioning, and operation. Necessity to trigger renovation and develop easy 2 steps tools for the pre-feasibility stage of the process (owner level + building professional level) e.g. request2action EU project. Not only material (envelope mind set), but also technology with multiplier effect (before mentioned). BAC not only more intelligent, but more user friendly to better engage the occupants with the energy performance of the building (interface with the technical building systems). **(Cross-cutting barriers Prioritisation 3)**

## Inputs on the targets

- Modular approach of the refurbishment packages in order to be applicable for each building type. Necessity to develop easy 2 steps tools for the process (owner level + building professional level) e.g. request2action EU project. Continuous monitoring and benchmarking of all energy uses (holistic approach including all technical building systems) shall underpin each package. Such a measure would create an evidence base that would help the continuous improvement of the actual energy performance of buildings (inspections, energy audits, energy performance certificates) and occupants/consumer energy use behavioural change. **(Existing buildings)**
- Proposal to have x% continuous monitoring and benchmarking of all energy uses in buildings by 2025. Proposal to have a twofold percentage of failed i.e. 5% + implemented continuous commissioning CX **(Cross-cutting themes)**