1. How can the credibility of work on the transition to a low-carbon energy system in 2050 be ensured? (for example regular updating of projections using energy system models, focus on developments in technologies, level of expertise needed in each sector, ...).

Three elements are needed: clear and ambitious targets, roadmaps to track progress and - above all- a logical way of proceeding: the demand side of the energy equation must be addressed first. Lowering demand means easier energy generation, transmission and distribution. Enormous investments in the energy supply system, without addressing demand, mean more wasted energy. Technology is already available to ensure significant reductions in energy consumption -especially in buildings.

2. Looking forward, EU energy policy may be increasingly influenced by developments in global energy supply and demand, international cooperation on climate and initiatives taken outside the EU. Which developments should be considered in the Energy Roadmap 2050? On which do you think a stronger EU line is necessary? (Pick three most important ones)

- global energy efficiency and
demand developments price developments in global fossil fuel markets
- other (please specify)

Which other developments should be considered?
Coupling of RES with ambitious energy savings (with strong political priority given to the latter)

3. What societal challenges and opportunities do you think are likely in Europe over the next decades as a result of changes in the EU and global energy system? On which ones do you think a stronger EU line is needed? (Pick three most important ones)

- public acceptance of need for increased energy efficiency increases in energy prices and
- energy poverty
- other (please specify)

Which other societal challenges and opportunities?
More responsibility of individual citizens/households as proactive energy savers, not just consumers
4. The EU’s approach to energy policy is founded on regulation and an internal energy market providing competition, innovation, energy efficiency and development of resources including renewables, environmental sustainability, energy security and solidarity, and effective relations with external partners. Which are the main areas which you think might need further policy development at EU level, in a 2050 perspective? Please specify what you think is needed, references to supporting analyses welcome. (Pick three most important ones)

- energy efficiency
- financing,
- other (please specify)

Which other main areas?
Policy focus on EU building stock; Ad-hoc policies on financing and innovation

5. Which milestones would you see as most useful to specify at this stage for the transition to a low-carbon energy system in Europe? References to supporting analyses welcome.

Within the transition to a low-carbon energy system, the EU should concentrate on these sectors that offer a biggest potential for reducing emissions. It has repeatedly been demonstrated that Europe simply cannot afford to ignore buildings, and particularly the existing building stock, if we want to achieve a truly low-carbon future (Buildings represent 36% of EU’s CO2 emissions and 40% of its energy use - 67% of it in space heating). This is why the most important milestone to specify at this stage for the transition to a low-carbon energy system in Europe is: - A EU overall binding target for reducing energy consumption of buildings by 80% on average in 2050. This overall goal would be central to reaching the EU 2050 climate targets while creating jobs, protecting consumers from high energy bills and ensuring EU energy security of supply. 2- This must be accompanied by national roadmaps for the deep renovation of the building stock by 2050, fixing intermediate targets in 2020, 2030 and 2040. 3- This would imply immediate action starting with the least-performing buildings, and focusing on deep renovation as the most cost-effective way to effectively cut energy consumption in the longer term. It is essential, at this respect, that “shallow” building renovations (providing less than 50% energy performance improvement) are avoided, as they would very seriously hamper the achievement of long-term goals. Buildings are renovated only once every 30 years, and “quick and dirty” renovations, although they seem a more attractive option in the short term (immediate savings) lock-in definitively longer-term (wiser) savings. In order to avoid this, specific policies need to be put in place immediately: energy supply obligations must be adapted to deep renovations, and financial conditions to ESCOs must be established for encouraging ambitious energy savings projects (usually the ones with longer payback periods).

6. What are the most likely key drivers for the future energy mix in the EU? (Pick three most important ones)

- long term security of supply
- political decisions by Member States
- other (please specify)

Which other key drivers?
Ambitious energy savings will make strategic essential decisions less dependent on external factors
ADDITIONAL SUGGESTIONS AND THOUGHTS

7. Do you have additional suggestions or more specific thoughts on the Energy Roadmap 2050?

Energy savings require that the EU applies conditionality and progressiveness criteria in its funding schemes. Conditionality means to ensure that EU funds are provided only for projects ensuring a certain minimal amount of savings. Progressiveness means that no or little incentive is given for meeting minimum requirements (shallow renovations of 25% improvement); while increasingly larger incentives are given if a building renovation is deeper (economic potential of an 80% to 90% improvement). Decoupling of economic growth and profits from energy use and energy sales is essential. Instruments are also needed to put a financial value on energy savings and link the profits of utilities (suppliers or distributors) to energy efficiency and savings rather than to the volume of energy delivered. Also, in the short and medium term, higher deep renovation rates in the EU building stock require more skilled craftsmen in the building construction industry, the design phase (architects and engineers) and certification (technicians). Innovative approaches to training are needed, with the adequate financial commitments from EU Institutions, as well as involvement by the construction and construction materials industries. In what respects buildings, energy performance certificates are essential. Investment-grate audits and high quality energy performance certificates must be encouraged -and in fact required--as a way to get measurable and ambitious energy savings in buildings. Improving the energy efficiency of EU's existing building stock is also a huge opportunity to improve on health aspects of our existing building stock. Deep renovation of buildings significantly improves the indoor climate and air quality by providing controlled ventilation and heating for buildings. Living comfort of the tenants in the buildings concerned is thus greatly improved. Energy efficiency measures through deep renovation, is also an investment in health, the social dimension of sustainability.