Building Technology Roadmap:

The Chemical Industry’s Contribution to Energy and GHG Savings in Residential and Commercial Construction

Nearly one-third of all the energy used around the world is consumed by the buildings sector. By 2050, the amount of energy used by this sector will increase by more than 62%, and the amount of CO₂ emissions by more than 87%. The ICCA Building Technology Roadmap analyzes and projects out to 2050 the potential for energy and GHG savings achievable through the use of chemically derived building products.

ICCA’s Building Technology Roadmap focuses on energy and GHG reductions from using chemically derived building products, such as: wall and roof insulation, plastic pipe and pipe insulation, air barriers and air sealing products, reflective roof coatings and pigments and windows.

**KEY FINDINGS**

- Combining ambitious building enclosure improvements with lower-carbon fuels and electricity use could lead to a **41% reduction in energy use and a 70% reduction in GHG building emissions by 2050.**
- GHG savings attributed to the products in the report (excluding windows) are 970 million metric tonnes of carbon dioxide equivalent (MtCO₂e) for a moderate renovation of building stock in Europe, Japan, and the United States, and more than 1,100 MtCO₂e for the ambitious renovation of building stock by 2050.
- Use of energy efficient plastic-frame windows adds another 300 to 370 MtCO₂e of GHG savings.
- By 2050, the cumulative GHG savings for chemically derived building products installed in buildings from 2000 and 2050 could be 30,000 MtCO₂e.

These measures result in an average annual saving of 600 MtCO₂e by 2050, equivalent to the emissions from the annual electricity use of 75 million homes. In addition, advances in these chemically derived technologies would likely result in even greater efficiencies and emissions reductions.

**KEY RECOMMENDATIONS**

Policymakers should:

- Ensure that the regulatory environment and building codes support inclusion and enhanced deployment of energy-efficient chemically-derived technologies.
- Provide incentives needed to increase renovation rates and foster new technologies.
- Utilize international forums as a platform to harmonize building standards, exchange key information resources and facilitate dialogue.
- Create greater awareness of the economic and social benefits of high energy efficiency in buildings through collaborative efforts of governments, industry, institutions and associations.