

Part II: Policy pathways towards energy efficiency roadmap to 2030 for Ukraine

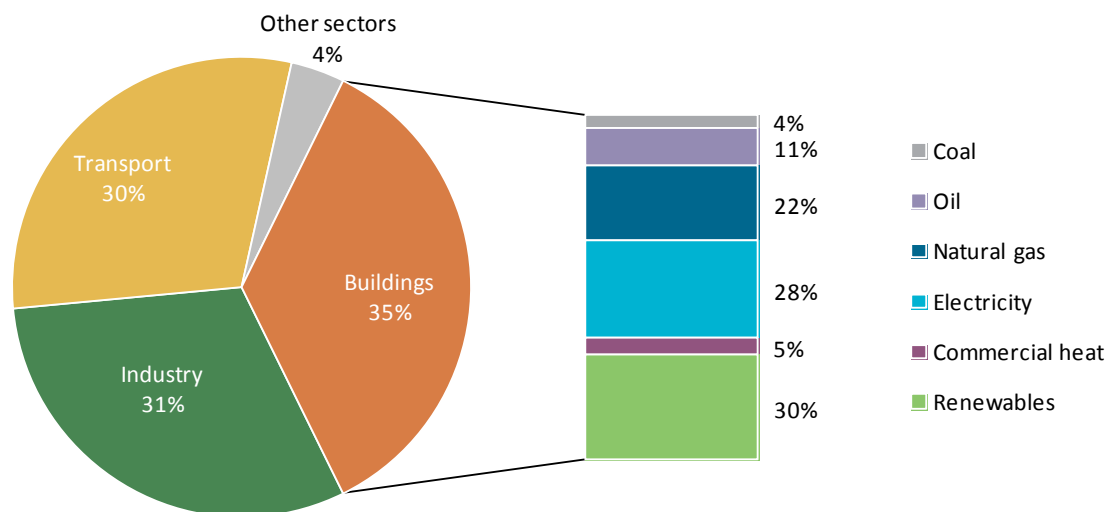
Focus on the buildings sector

*Simone Landolina and Marc LaFrance,
International Energy Agency
Kiev, 5 November 2014*

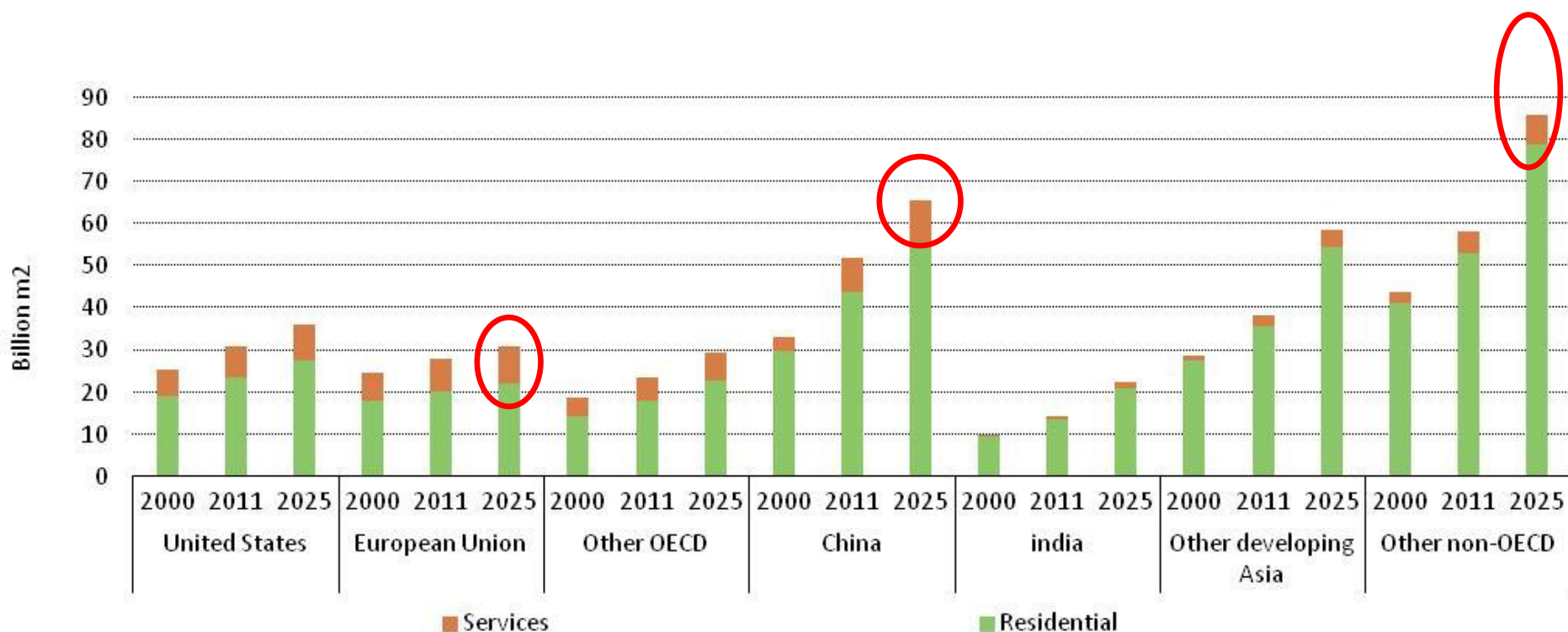
Importance of Buildings Sector

- Largest end-use sector
- 1/3 carbon emissions
- 50% of electricity
- Major portion of GDP
- Stock opportunities:

- 75% - 90% of OECD building stock still in service by 2050
- Large population growth in developing world will drive new floor area that needs to be efficient (2.5 billion more by 2050)

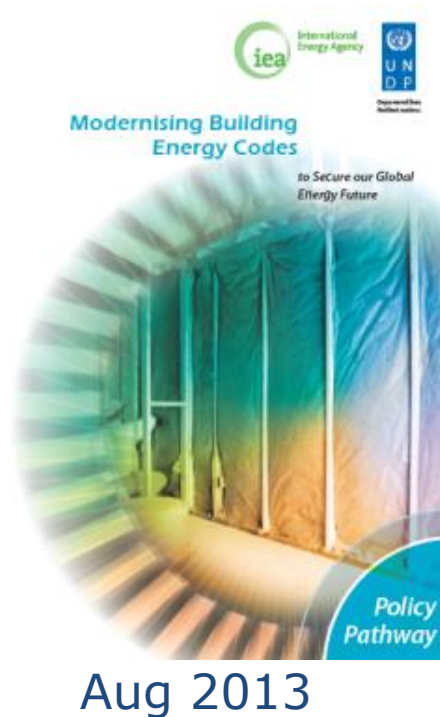
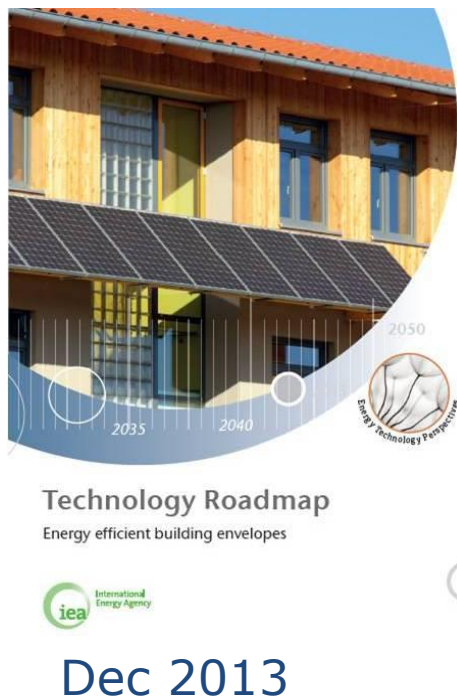


Floor Area: Today and Forecasts



Large growth expected in non-OECD countries!!!

Selected IEA analysis on EE in buildings



Technology Roadmaps and Policy Pathways

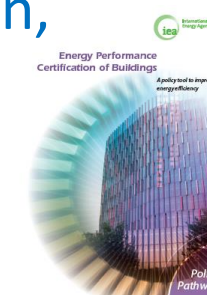
■ Technology Roadmaps

- Define and analyse available technologies
- Develop vision for R&D and technology deployment
- Assess policy, financial, and related needs



■ Policy Pathway

- Based on one of 25 IEA energy efficiency recommendations
- 10 step guide for policy planning, implementation, monitoring and evaluation
- Highlights best experience in countries



TECHNOLOGY ROADMAP

ENERGY EFFICIENT BUILDING ENVELOPES

- Construction transformation strategy
- Provides technical, economic and strategic framework
- Assessment of high priority areas for 12 regions of the world
- Policy criteria and evaluation



Technology Roadmap
Energy efficient building envelopes

Transformation to Low-Energy Buildings

Transforming construction to low energy buildings

Inefficient – still common and old stock

- Single pane windows.
- No insulation.
- High air leakage.

Typical building code in advanced regions

- Low-e double glaze windows.
- High levels of insulation.
- Low air leakage.

Zero-energy buildings

- Highly insulated windows and dynamic solar control.
- Optimised designs and orientations.
- Daylighting.

KEY POINT: *the world needs to shift from very old buildings to modern buildings, and then to low-energy or zero-energy buildings.*

Assessment of advanced envelope components

Countries to
conduct their
own
assessment

Market maturity/ saturation	ASEAN	Brazil	China	European Union	India	Japan/ Korea	Mexico	Middle East	Australia/ New Zealand	Russia	South Africa	United States/ Canada
Double-glazed low-e glass	●	▲	▲	★	▲	●	●	▲	●	●	●	★
Window films	▲	▲	▲	●	▲	●	▲	▲	●	▲	▲	●
Window attachments (e.g. shutters, shades, storm panel)	●	▲	●	★	▲	●	▲	●	●	▲	●	●
Highly insulating windows (e.g. triple-glazed)		▲	▲	●		▲		▲	▲	▲	▲	▲
Typical insulation	★	●	★	★	●	★	●	★	★	★	●	★
Exterior insulation	●	▲	●	★	●	●	▲	●		▲	▲	★
Advanced insulation (e.g. aerogel, VIPs)				▲		▲				▲	▲	▲
Air sealing	●	▲	▲	★	▲	●		▲	▲	▲		●
Cool roofs	▲	▲	▲	●	▲	▲	▲	▲	▲			★
BIPV/ advanced roofs	▲	▲		▲	▲	▲			▲	▲	▲	▲

★ Mature market ● Established market ▲ Initial market

Technology policy evaluation

Policy level	Governance	Energy prices	Infrastructure and human capacity	Materials at commodity prices	Voluntary programmes	Mandatory building codes
Low	No active government agency promoting efficient construction.	Subsidies in place or below market prices.	Limited test capability and knowledge of buildings, unproven buildings programme.	No local access to efficient materials and high price premiums.	Limited to a few demo projects without lasting impacts.	An agency is pursuing or has been granted authority to pursue.
Medium	Shared responsibility between construction and energy departments.	Market-based prices without environment impact.	Ability to test some products and university expertise.	Some products are widely available and cost-effective.	Educational materials and advanced programmes introduced.	Mandatory building codes are in place but lack infrastructure.
High	One agency has responsibility and is active with funding.	Tariffs in place to account for non-energy impacts.	Rating organisations, policy and enforcement personnel, in place.	Mature markets with many cost-effective products available.	Energy savings calculators, simulation tools and incentives in place.	Building codes demonstrate efficient construction.

Thank you for your attention!

Questions?