Buildings: investment need to 2050

2021-2050 annual average investment Share of total low-carbon investments

\$500 bn

15%

Investment needs

2050 targets	85% of residential and commercial properties have zero-carbon heating and cooling.		
Investment needs	 Retrofits of existing buildings: physical upgrades (e.g., insultation and double glazing) and digital upgrades (e.g., smart controls). Heat pumps: installations in 55% of houses across the world by 2050, decarbonising heating when powered with clean electricity and improving energy efficiency. Other renewable heating and cooking technologies: boilers and stoves relying on "modern" solid biomass (e.g., pellets), solar thermal water heating. 		
	+ Investments in clean electricity generation for buildings of around \$380bn a year – see Power sector.		
Investment milestones	\$200bn/year today \rightarrow \$545bn/year by 2030 \rightarrow \$525bn/year by 2040		
Where?	85% of the investment need this decade is expected to be concentrated in high-income countries and China, where building retrofits will be required.		
Gross or net?1	Investments to existing buildings (e.g., retrofits in high-income countries) are additional to what would have otherwise occurred.		



Outlook to 2030

- Investing in building energy efficiency has become more attractive for policymakers and households in response to high energy bills and fuel disruptions – if sustained, this could mark a turning point after years of slow progress.
- The IEA estimates that around \$90 billion of government spending for efficient building retrofits has been earmarked until 2023
- However, high upfront costs and long paybacks remain barriers to scaling investment.

2030 target



Sources: SYSTEMIQ analysis for the ETC (2022); IIGCC (2022), *Climate Investment Roadmap 2022*; IEA (2022), *Energy Efficiency 2022*. ¹ The ETC's investment estimates differ in approach by sector. Gross investment refers to the total investment required under a 1.5 degree net zero pathway, regardless of how much investment would have occurred anyway. Net investment is the incremental investment required compared to a BAU scenario. Note: All figures are in US dollars

Buildings: how to mobilise finance for residential retrofits

Required real economy policies

	Challenges	Policy needs	Priority policy
Create a clear strategic vision	 Building codes and standards not ambitious enough or mandatory in all countries. Fragmented, regionally- specific standards. Little enforcement of compliance. Information barriers on best- practice retrofit measures – lack of consensus on definition of net-zero buildings. 	 Ambitious and mandatory buildings standards and energy timelines for increases in stringency. Clear national guidance on retrofit solutions, tailored to prolocal regions (e.g., when hybrid or full-electric heat pump). National targets on implementation of heat pumps by 2030 Timelines for bans of new gas & oil boilers. Development of monitoring frameworks. Labelling of materials and building components. Public information campaigns on the benefits to household environmental). 	codes, with clear operty types and). Is (e.g., financial,
Address the "green premium" challenge	 High upfront investment costs and long-term payback periods. Principal-agent problem - split incentives of landlords and tenants, poor sharing of risk and reward. Poor visibility on costs and returns of retrofits - lack of data to demonstrate impact prevents access to low-cost finance and insurance. 	 Subsidies and tax breaks to homeowners to purchase heat activities, and preferential financing to manufacturers of h down costs. Create regional and local roll-out plans. Drive demand through retrofits of public buildings. Mandates for efficiency improvements in any large-scale refinancial products (e.g., property-linked finance where the property not the owner). Promotion of mechanisms to create shared value (e.g., gre Ensuring the costs of electricity and gas favour low-carbor Power). 	t pumps and retrofit eat pumps to drive enovation. r innovation in loan is linked to the en leases). n solutions (see
Reduce downside risks	 Unknown longevity and performance of retrofit improvements under various weather conditions. 	 Identify pilot cities to demonstrate solutions. Collaborate with financial institutions to agree a harmonise and approaches to assess physical and transition risk. Ensure insurance products reflect difference in risk profile (e.g., longer time horizons). 	ed set of metrics
Remove supply bottlenecks	 Complex and slow permitting processes. Lack of skilled workers to make retrofits and installations. 	 Training programmes and qualifications to develop workfor skills shortages. Create a priority or one-stop shop to streamline residentia 	ce and overcome I retrofit permits.

What obstacles cannot be fully addressed by real economy policies?

Significan	t additional	action	required

- Constrained access to finance and high cost of capital for low-income households.
- Lack of financial solutions retail finance products are hard to access and costly, with complex repayment structures.
- Market is highly localised and fragmented, with small project sizes (e.g., household level) which increases transaction costs and makes solutions hard to scale.
- Long payback periods, which exceed many investor horizons and create a high opportunity cost for households.

Additional actions required

- Public finance
 - Grants and low-cost loans to low-income households.

Public investment banks

- Pool transactions (e.g., on a local level) for retrofits to lower transaction costs and create shared value.
- Financial

institutions

- Develop lending strategies for residential retrofits, recognising that for many banks, lending against property accounts for a high percentage of total loan portfolios.
- Design new financial products, such as property-linked finance, mortgage "add-ons" where homeowners borrow additional money to pay for energyefficiency improvements and heat pumps, or loans which are recouped through energy bill savings.