



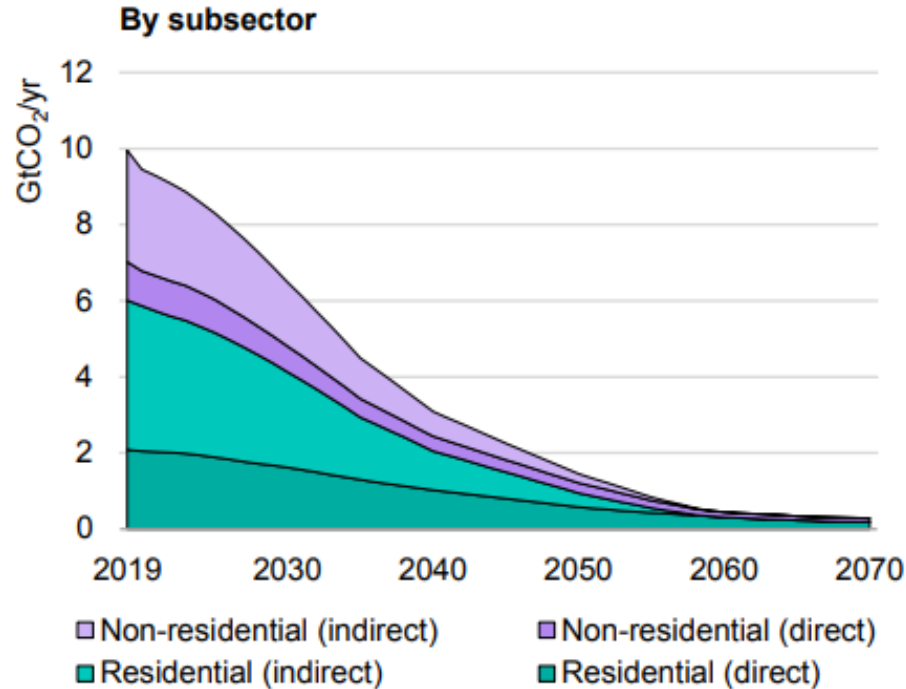
Policy trends for accelerating energy efficiency and renewable energy in buildings

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Paris, 28 September 2020

The emissions reduction challenge in the buildings sector

CO₂ emissions from the use phase of buildings by sub-sector and region in the Sustainable Development Scenario, 2019-70

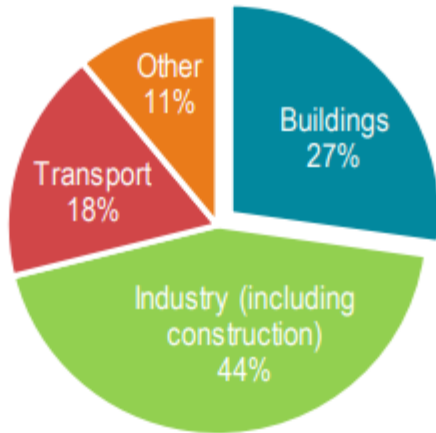


CO₂ emissions in the buildings sector fall to net-zero by 2070 through measures such as high efficiency electric equipment, phasing out fossil fuel use and decarbonisation of heat and power supply

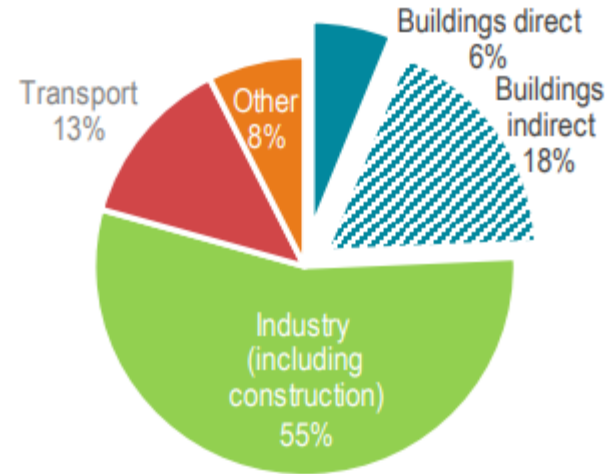
A snapshot of energy use and emissions in ASEAN, China and India

Share of buildings operational final energy use and emissions in ASEAN, China and India, 2018

Buildings' share of total final energy consumption in ASEAN, China and India, 2018



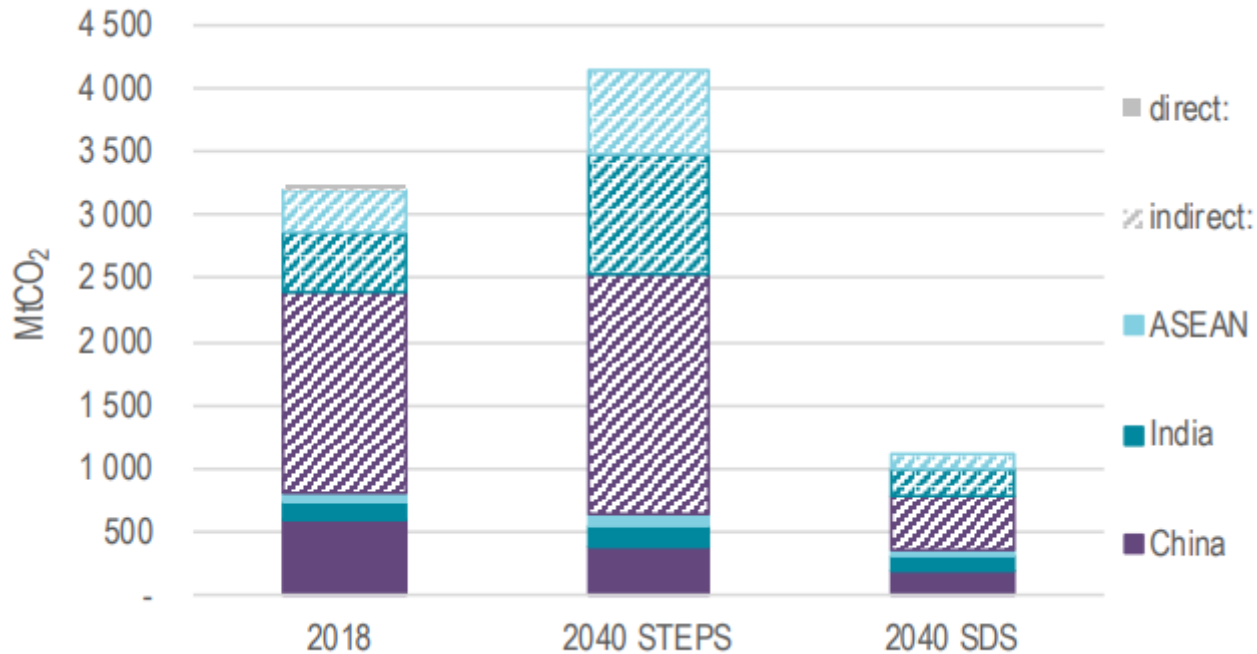
Buildings' share of total CO₂ emissions in ASEAN, China and India, 2018



Buildings and construction are a key sector in the clean energy transition

A snapshot of buildings energy use and emissions

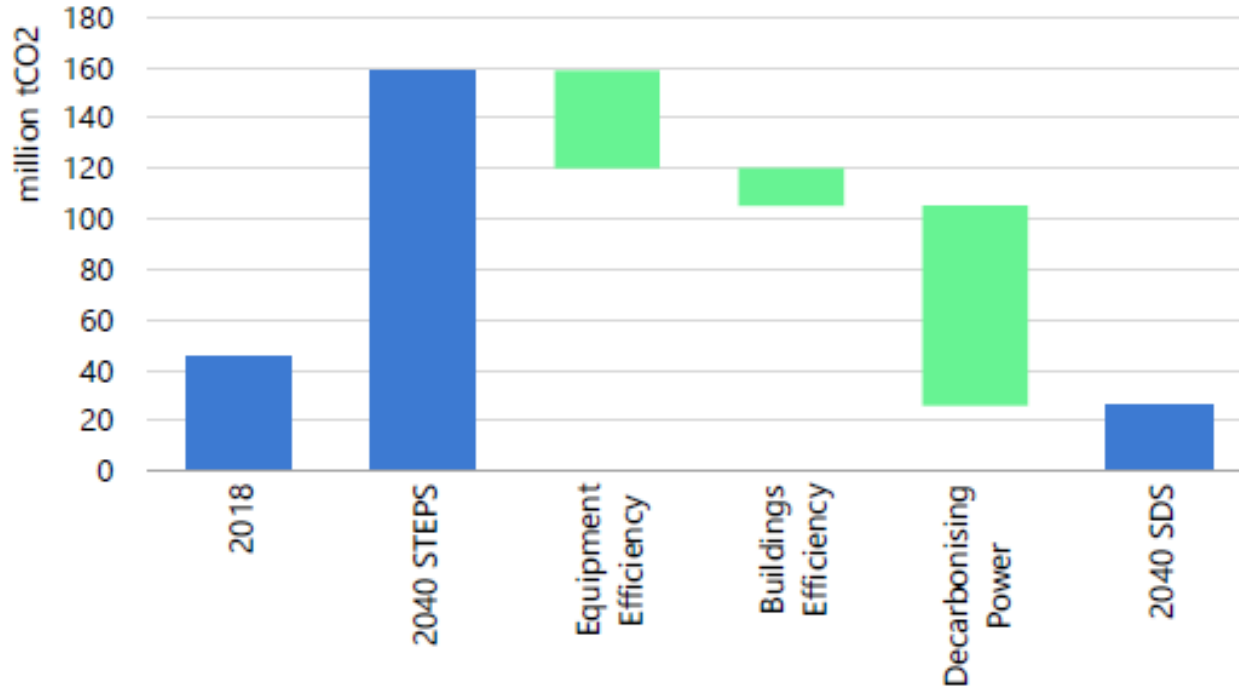
Operational emissions from buildings in ASEAN, China and India 2018 and in 2040 under the IEA STEPS and SDS



The buildings sector offers a huge emissions reduction potential while serving a significant growth in floor space

The path to net-zero emission buildings

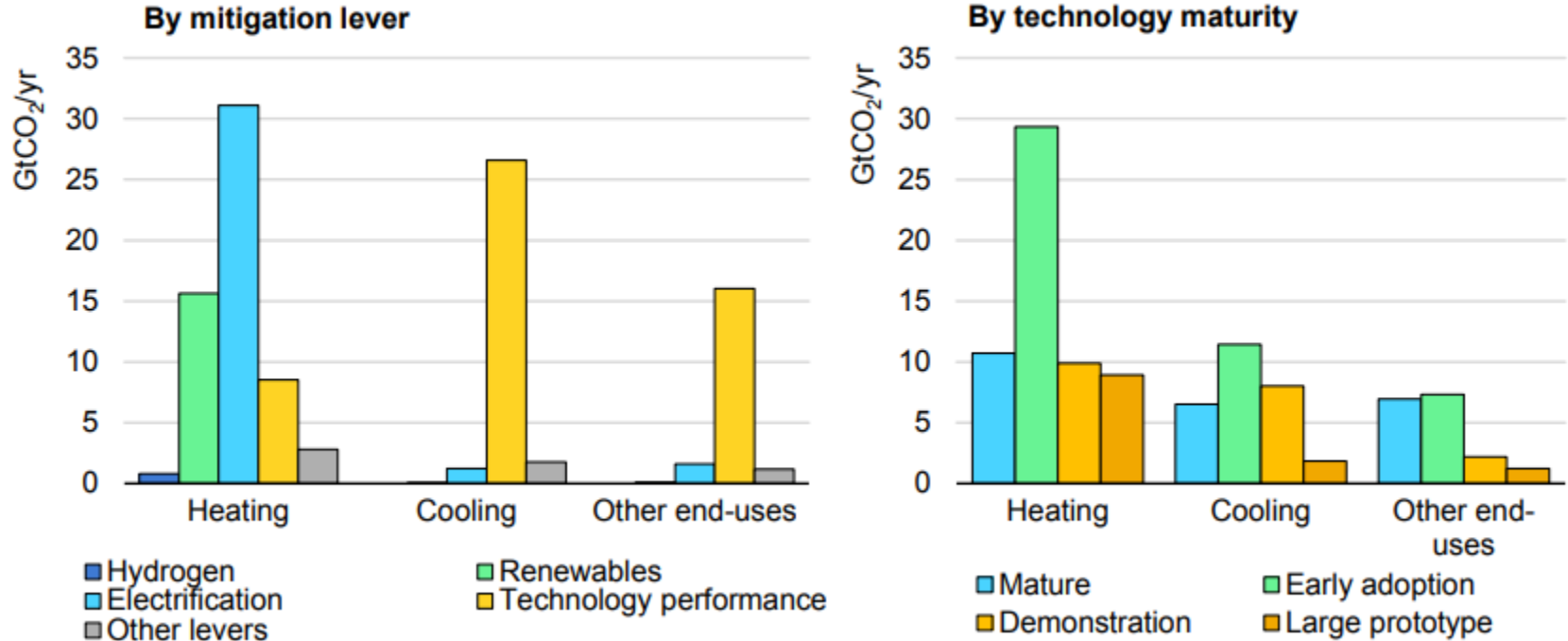
Decomposition of factors for reduction of CO₂ emissions between STEPS and SDS in Southeast Asia



Decarbonising buildings requires reducing energy demand, embodied carbon, and decarbonising heat and electricity.

The technologies to drive CO₂ reductions exist today

Global cumulative CO₂ emissions reductions in the buildings sector by mitigation lever and technology readiness level in the Sustainable Development Scenario relative to the Stated Policies Scenario, 2020-70



Three-quarters of what is needed to decarbonise the buildings sector could be achieved through the use of mature and early adoption technologies: further innovation would bring additional gains.

Some key cooling actions

- Lowest cost way to reduce the need for cooling is in the design stage
- Optimise the use of natural ventilation and assisted ventilation
- Increase the efficiency of room air conditioners
- Explore district cooling systems
- Optimise operations
- Smart controls, digitalisation and flexible demand

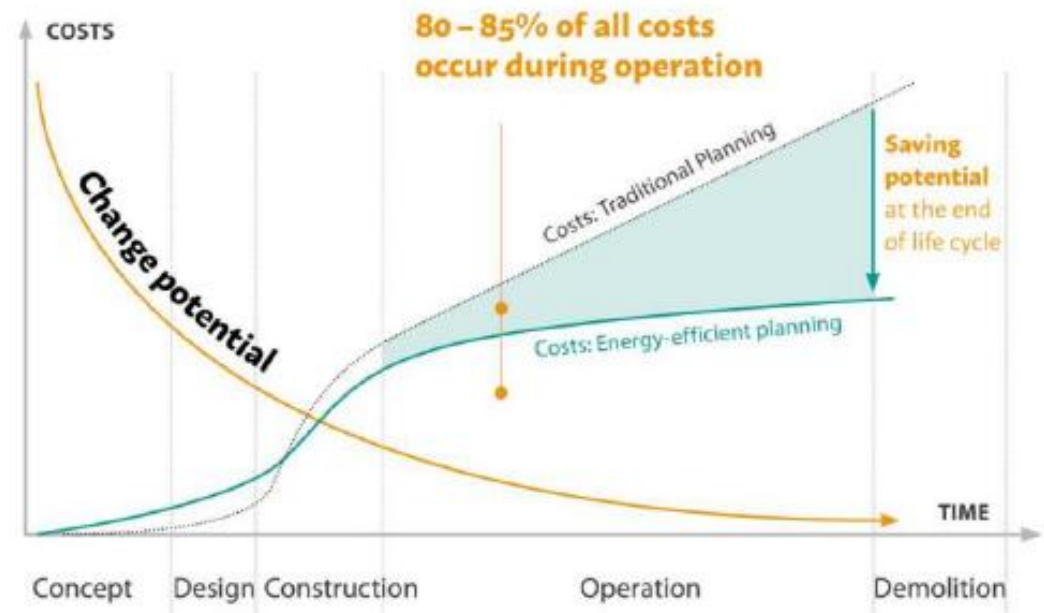
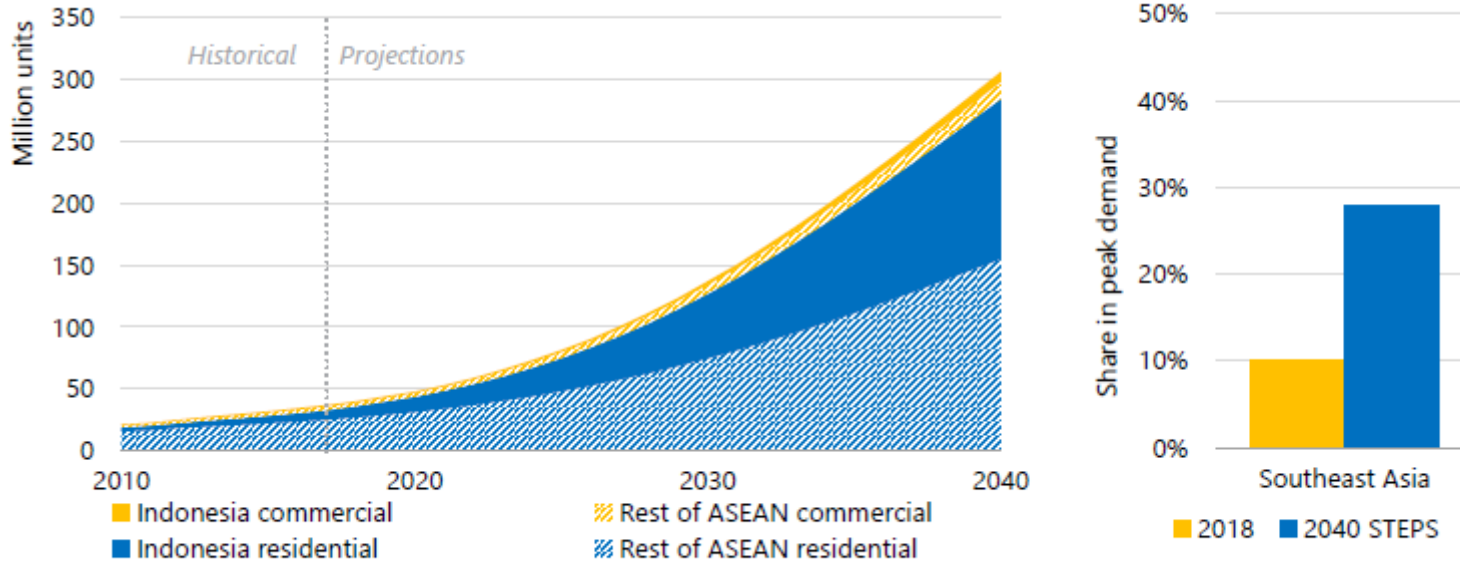


Figure 2: Building design and change potential (Source: PEEB, 2019. Based on: <https://www.sciencedirect.com/science/article/abs/pii/S0360544215003217>)

Source: PEEB (2020), [Working paper on Better Design for Cool Buildings](#)

The technologies to drive CO₂ reductions exist today

Stock of ACs in Southeast Asia in the Stated Policies Scenario (left) and the share of cooling in peak demand (right)



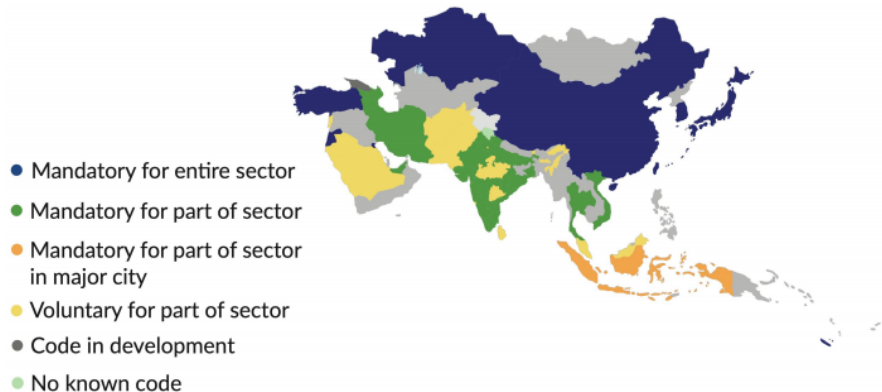
Source: IEA (2019), [The Future of Cooling in Southeast Asia](#)

Efficient ACs, smart controls, and alternative cooling technologies will be critical to avoid strain on energy systems

What policies can deliver improvements?

- **Building codes:** implement, enforce, strengthen mandatory building codes
 - Passive design to reduce cooling demand
 - Resilience and renewables
 - Low-carbon materials
- **Appliances:** implement, enforce, strengthen MEPS and labelling
 - Incentives for consumers and manufacturers
 - Industry transformation grants
 - Green public procurement, bulk procurement
 - Low GWP cooling
- **Operations:** monitor operational performance
 - Benchmarking, EMS, digital technologies, capacity building

Map of building codes coverage in Asia 2017-18



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Note: This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area.

- **Consider shovel-ready options** – deep retrofits of government buildings can deliver improvements to hospitals, schools, social housing and offices.
- **Leverage existing programmes** – supercharging existing programmes and leveraging their administration, contracts, guidelines and delivery partners for faster and safer programmes.
- **Standardise** – whether contracts, designs, or lists of approved technologies reduce costs and risks and can make for a simpler customer journey.
- **Set the right level of ambition** – don't let perfect be the enemy of the good – set the energy efficiency requirements as high as possible while remaining realistic about considerations such as price, supply and demand side constraints.
- **Get the level of incentive right** – Find the right balance between a high enough incentive to drive uptake without introducing significant programme risks or creating boom-bust cycles.
- **Address regulatory barriers** – consider removing or simplifying unnecessary red-tape to support fast rollout of green building stimulus programmes.
- **Turn short-term impacts into long-term transformations** – harness the investment from stimulus programmes to lock-in changes through improvements to building energy efficiency codes.

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