Methodology

Buildings Sector research

October 2021

Buildings Sector

Methodology and approach

The buildings sector is split between residential and commercial segments. Four use cases were profiled for technology in support of lowering emissions covering smart electricity meters for households, smart electricity and smart gas meters in offices and industrial premises, and Heating Ventilation and Air Conditioning (HVAC) systems.

There was a three step process.

1. Forecasts were used from Exponential Roadmap[1] to determine the aggregate amount of CO_2 savings a given industry will need to make over the next 10 years to ensure it remains on track for net zero by 2050. For all sectors, this reduction is equivalent to 50% of 2020 CO_2 emissions

2. For each use case, residential and commercial adoption (e.g. the proliferation of a smart gas meter in office buildings) is based on GSMA Intelligence forecasts for IoT connections in the utility and buildings sectors with some adjustments. Then an average energy saving is assumed for homes and commercial premises with a given connected technology compared to those without. Combined with the electricity emission factor, this then yields an abatement factor for each technology that is extrapolated to scale by multiplying with the adoption forecasts.

3. The use case savings over a ten year period are divided into the aggregate sector reduction (from step 1) to arrive at a contribution share

Research by – GSMA Intelligence and Carbon Trust

---

[1] J. Falk, O. Gaffney, et al. Exponential Roadmap. 1.5.1 (2020) www.exponentialroadmap.org

Key assumptions

Use case	Indicator	Trajectory	Supporting data/sources
Smart meter - residential (electricity)	Smart electricity meters	Assume 80% of smart meter connections are residential. This figure is applied to GSMA Intelligence IoT forecasts for smart meters	GSMA Intelligence
Smart meter - residential (electricity)	Energy savings for smart meter households	Assume average household with smart meter uses 3% less energy per year than those without the technology. This savings is applied to each region. Various studies have estimated energy savings to range between 3-15% for smart meter households. We assume a figure of 3% to be conservative	Various
Smart buildings - commercial (electricity)	Energy savings	Assume electricity savings of approx. 10-15% in buildings fitted with smart electricity meters based on range of studies	Various
Smart buildings - commercial (gas)	Energy savings	Assume gas savings of approx. 20-25% in buildings fitted with smart gas meters based on range of studies	Various
HVAC	Energy savings	Assume energy savings of approx. 15% in buildings and other enterprise settings fitted with HVAC units. This is at the low end of studies which range from 15-30% savings	Various

Source: GSMA Intelligence & Carbon Trust