



Beyond foundations

Mainstreaming sustainable solutions to cut emissions from the buildings sector



2023 Global Status Report for Buildings and Construction



WHAT IS THE 2023 BUILDINGS-GSR?

A global reference document:

Eighth edition of this annual snapshot on the progress of the buildings and construction sector globally towards achieving the Paris Agreement goals:

- An update on the drivers of **CO₂ emissions and energy** demand globally,
- Status of **policies, finance, and key actions** that support a zero-emission, efficient, and resilient buildings and construction sector,
- An updated method and **findings of the global Building Climate Tracker**

2023 Global Status Report for Buildings and Construction

A collaborative effort, building a global community

This year's Buildings-GSR presentation features contributions from:



Center on
Global Energy Policy
at COLUMBIA | SIPA



The analysis was produced by teams of UCL's Bartlett School of Environment, Energy and Resources and the Buildings Performance Institute Europe (BPIE) under the leadership of Professor Ian Hamilton and Oliver Rapf.

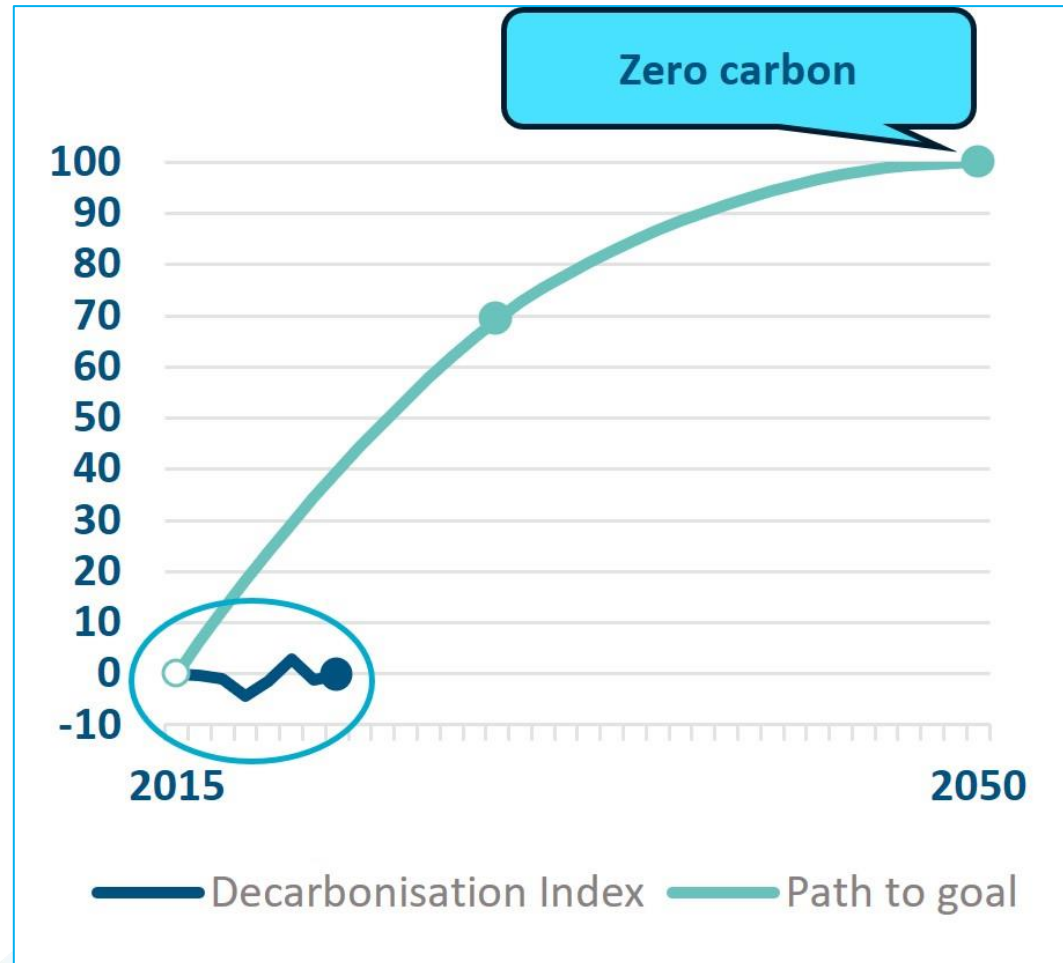
With special thanks to our many authors and contributors from around the world.



Global Alliance
for Buildings and
Construction

**Growing global buildings and
construction emissions
and
slowing investments and
policy efforts highlight
that we are not on track.**

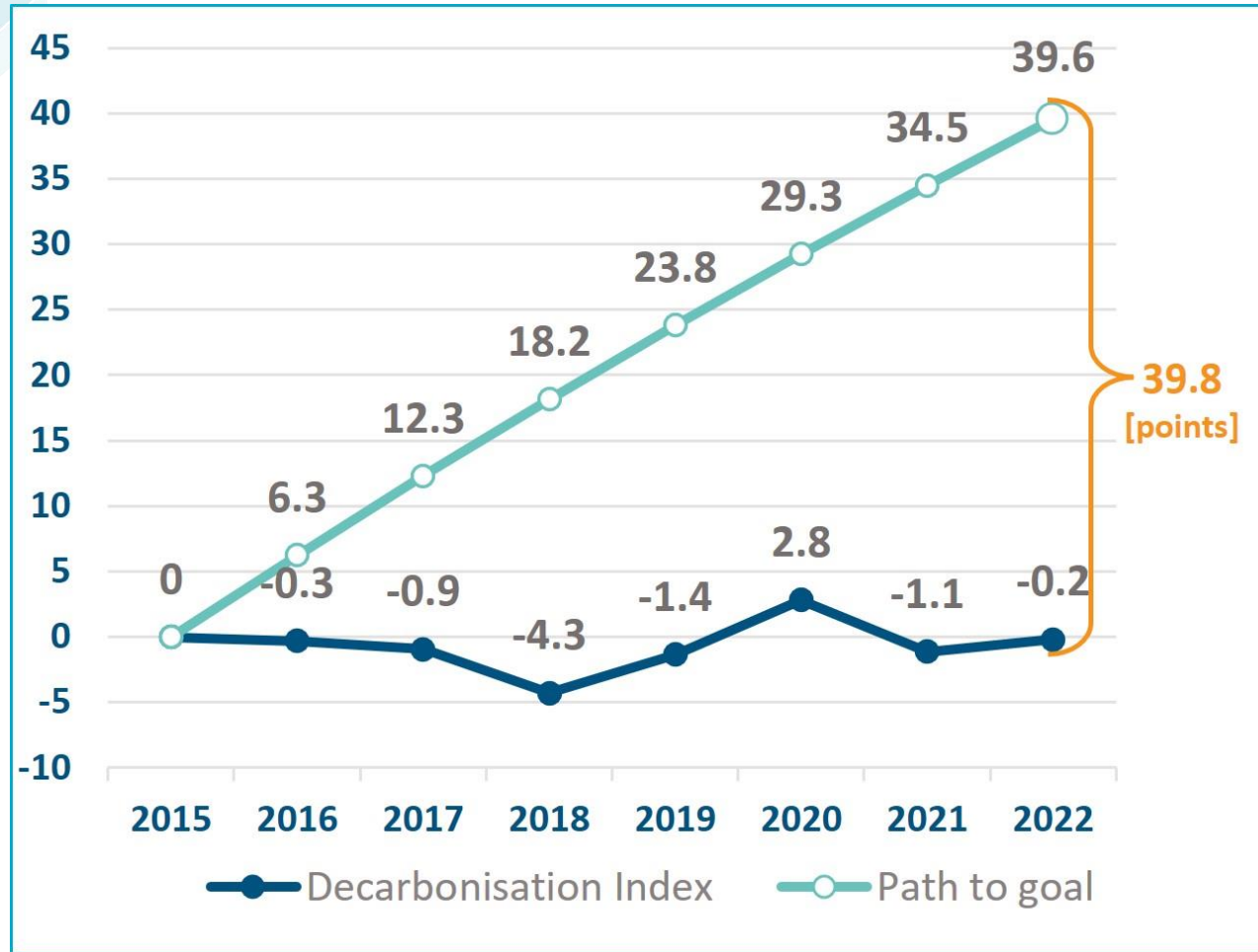
THE QUESTION: WHERE DO WE WANT TO GO?



*The path to goal corresponds to the weighted aggregation of the path to goal for all the indicators multiplied by the CO₂ emissions indicator.

Source: Adapted by the Buildings Performance Institute Europe (BPIE).

AND HOW FAR HAVE WE COME?



*The path to goal corresponds to the weighted aggregation of the path to goal for all the indicators multiplied by the CO₂ emissions indicator.

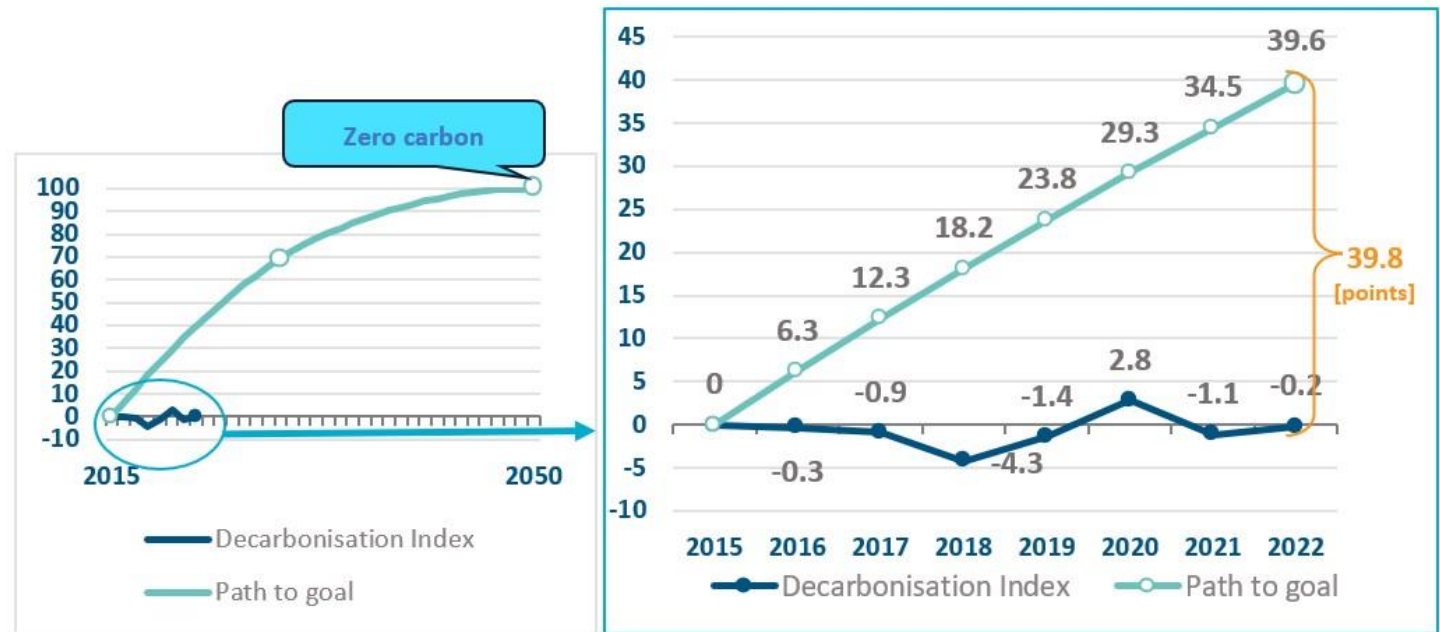
Source: Adapted by the Buildings Performance Institute Europe (BPIE).

2023 Global Status Report for Buildings and Construction

KEY MESSAGE:

The Global Buildings Climate Tracker indicates that the buildings and construction sector remains off track to achieve decarbonization by 2050.

- With a newly updated method, the 2023 BCT shows a **stagnation of progress since 2015**. **Since 2021, less than 1 decarbonisation point was achieved**. The building sectors path to decarbonization has still a long way to go.
- This lack of progress is linked to **the significant gap** in progress of indicators for **building energy intensity, NDCs with extensive detail on buildings, and building energy codes aligned to net-zero emissions**.
- Critically the **building sector emissions have not reduced over the past 7 years**. In 2022, emissions are higher than 2015 levels.



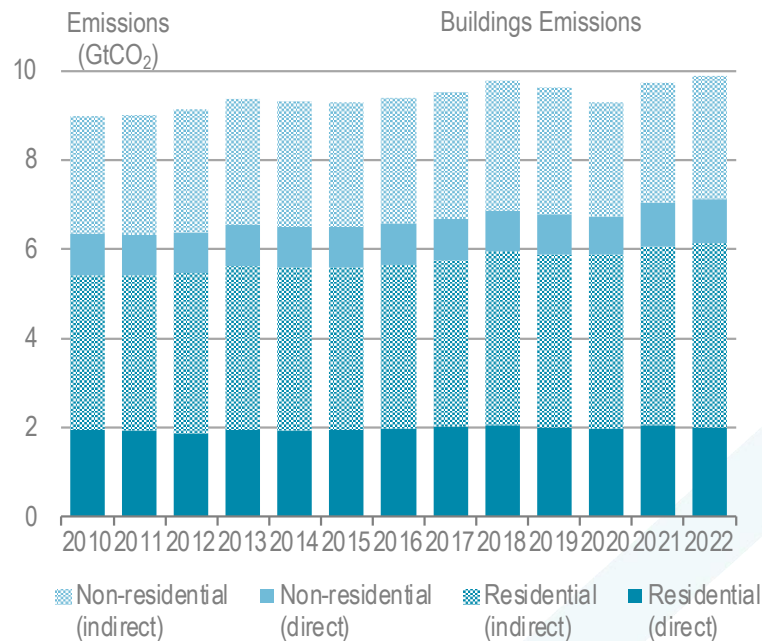
*The path to goal corresponds to the weighted aggregation of the path to goal for all the indicators multiplied by the CO₂ emissions indicator.

Source: Adapted by the Buildings Performance Institute Europe (BPIE).

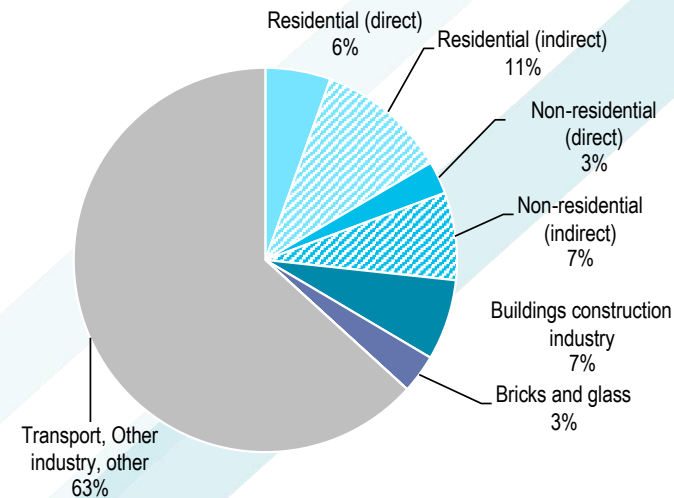
KEY MESSAGE:

Compared to 2021, operational energy-related CO₂ emissions have increased by around 1%, reaching the highest emission levels since 2018.

Global share of buildings and construction operational and process CO₂ emissions, 2022



Emissions by sector 2022



Operational energy-related CO₂ emissions from buildings grew by around 1 % in 2022 compared to 2021 to just under 10 GtCO₂, exceeding the previous 2018 peak.

Buildings energy-related energy demand represents around 27 % of global emissions in 2022 and a further 7-9% is estimated to be due to the manufacturing of buildings materials.

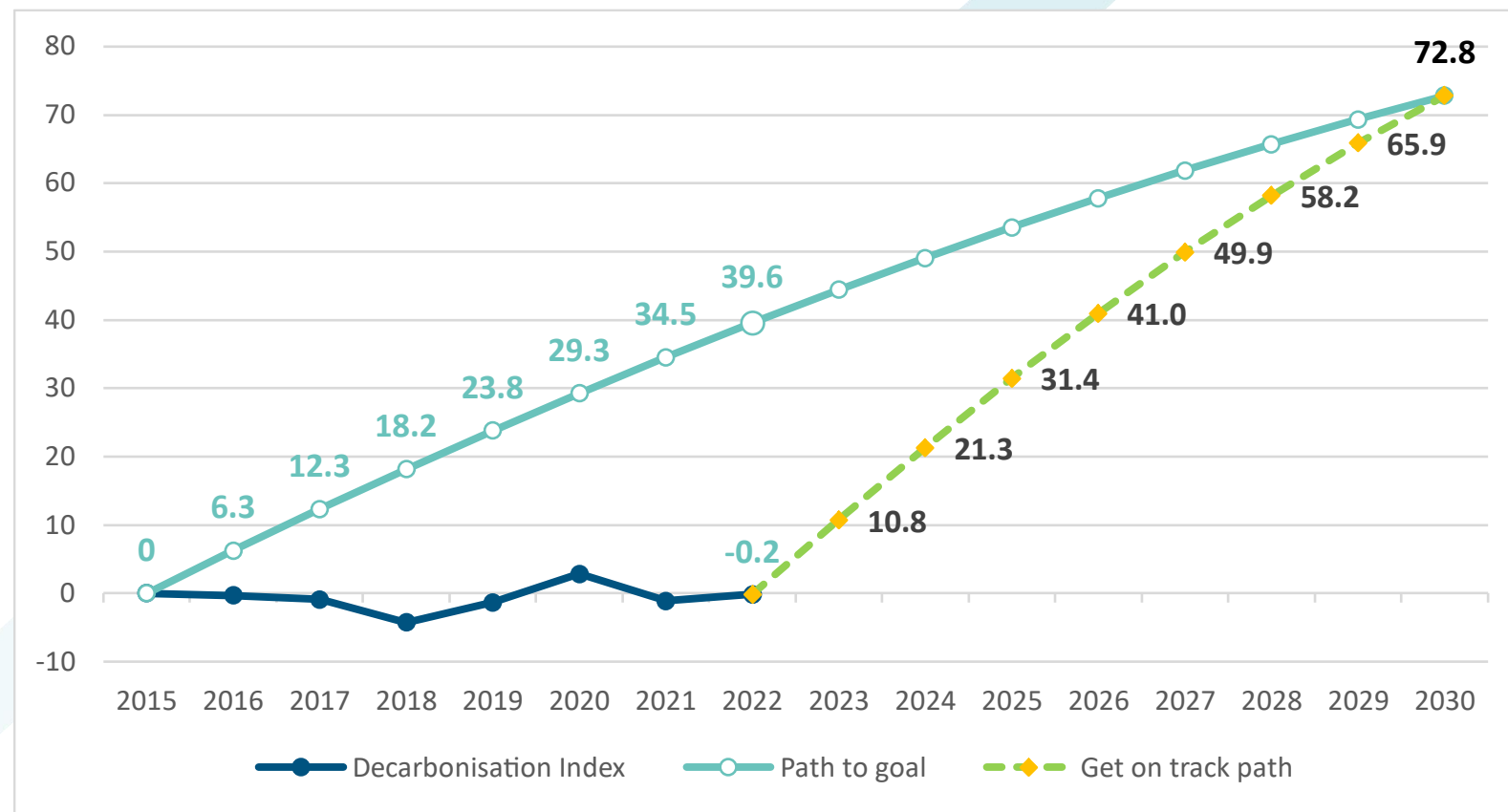
Source: International Energy Agency (2022). Tracking Clean Energy Progress. Paris.

2023 Global Status Report for Buildings and Construction

THE BIG QUESTION:

How to get on track towards the decarbonization of the building sector?

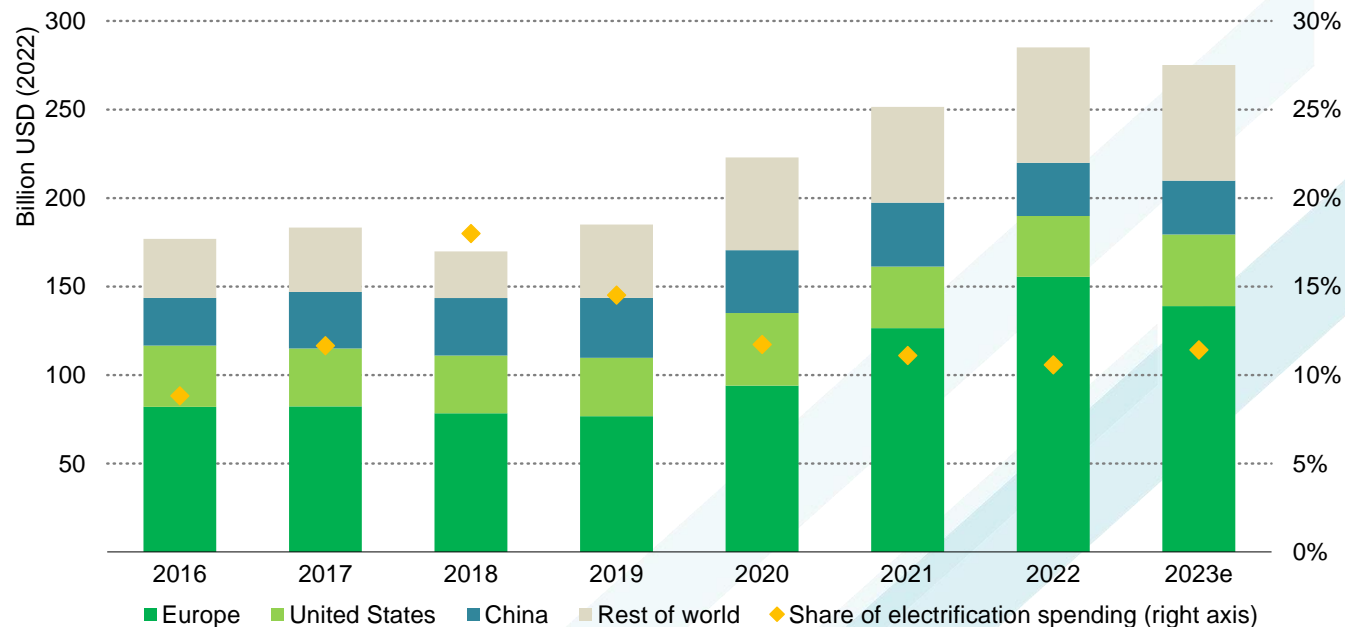
Starting in 2015, around 6 decarbonization points were required every year to follow the reference path. However, due to the slow progress achieved until 2022, around 10 decarbonization points are now necessary every year to correct the current situation and get on track by 2030



Source: Adapted by the Buildings Performance Institute Europe (BPIE).

KEY MESSAGE:

Efficiency investment grew in 2022 but was under pressure in 2023 as economic challenges affect construction activities and make investing more costly

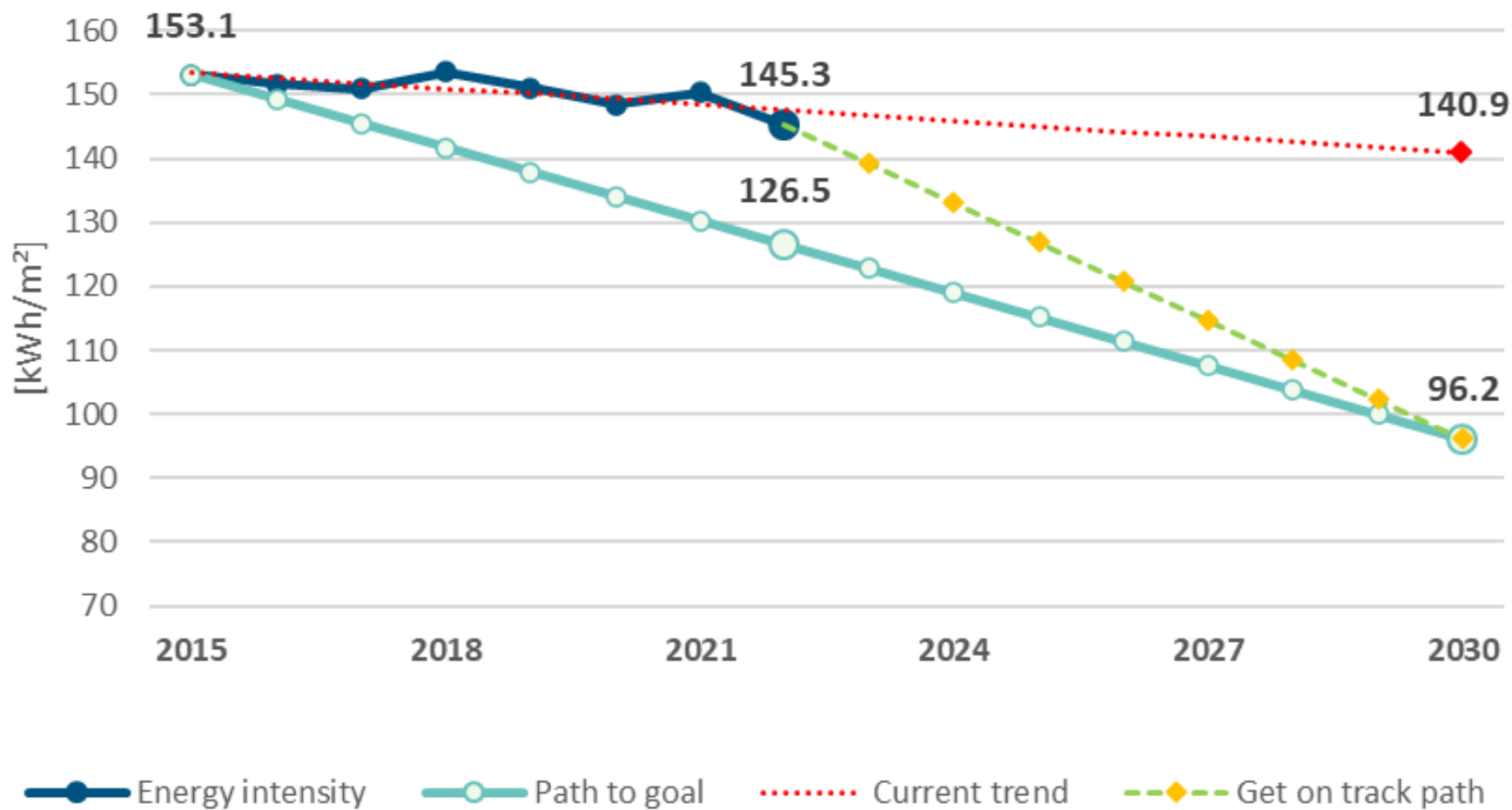


Notes: Spending on electrification (e.g., Heat pumps) is included in the total spending, and represented as a share of total spending on the right axis; 2023e = estimated values for 2023

- Global investment in the energy efficiency of buildings increased by around 14% from 2021 to USD 285 billion.
- Investments in 2023 are estimated to fall to 270 billion due to the impact of rising borrowing costs and economic instability, which are slowing construction activity.
- Investment in energy efficiency and construction of sustainable buildings represents less than 5% of total global investment in the buildings sector.
- Global increases in the cost of living will put pressure on borrowing costs, but energy efficiency presents a means of moderating energy cost volatility as well as reducing emissions.

KEY MESSAGE:

The Building sector energy unit intensity is **15% higher than the needed value to be on track**

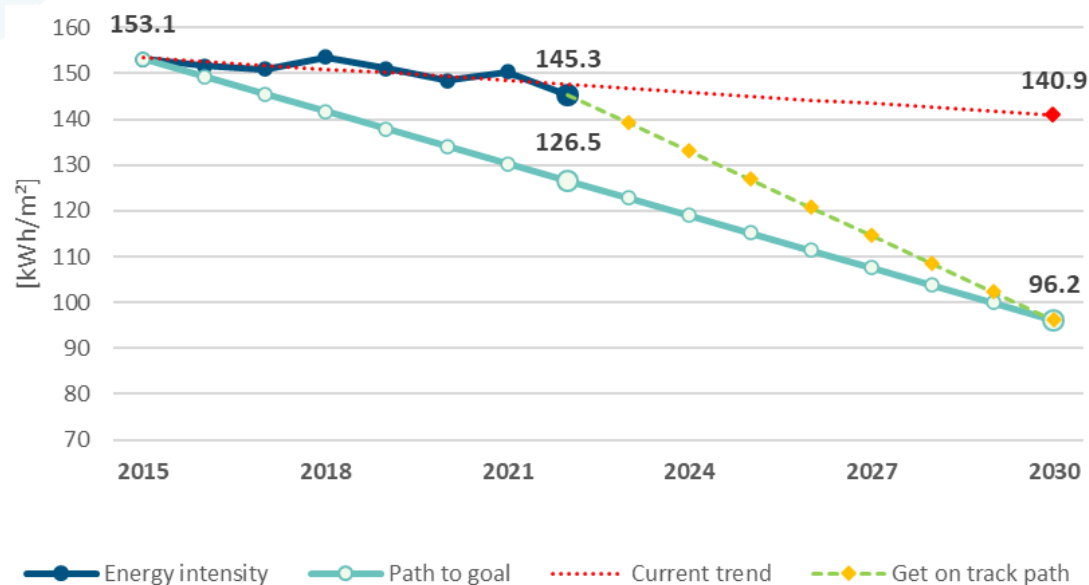


2023 Global Status Report for Buildings and Construction

Source: Adapted by the Buildings Performance Institute Europe (BPIE) 2023.

KEY MESSAGE:

The Building sector energy unit intensity is
15% higher than the needed value to be on track



Source: Adapted by the Buildings Performance Institute Europe (BPIE) 2023.

Status:

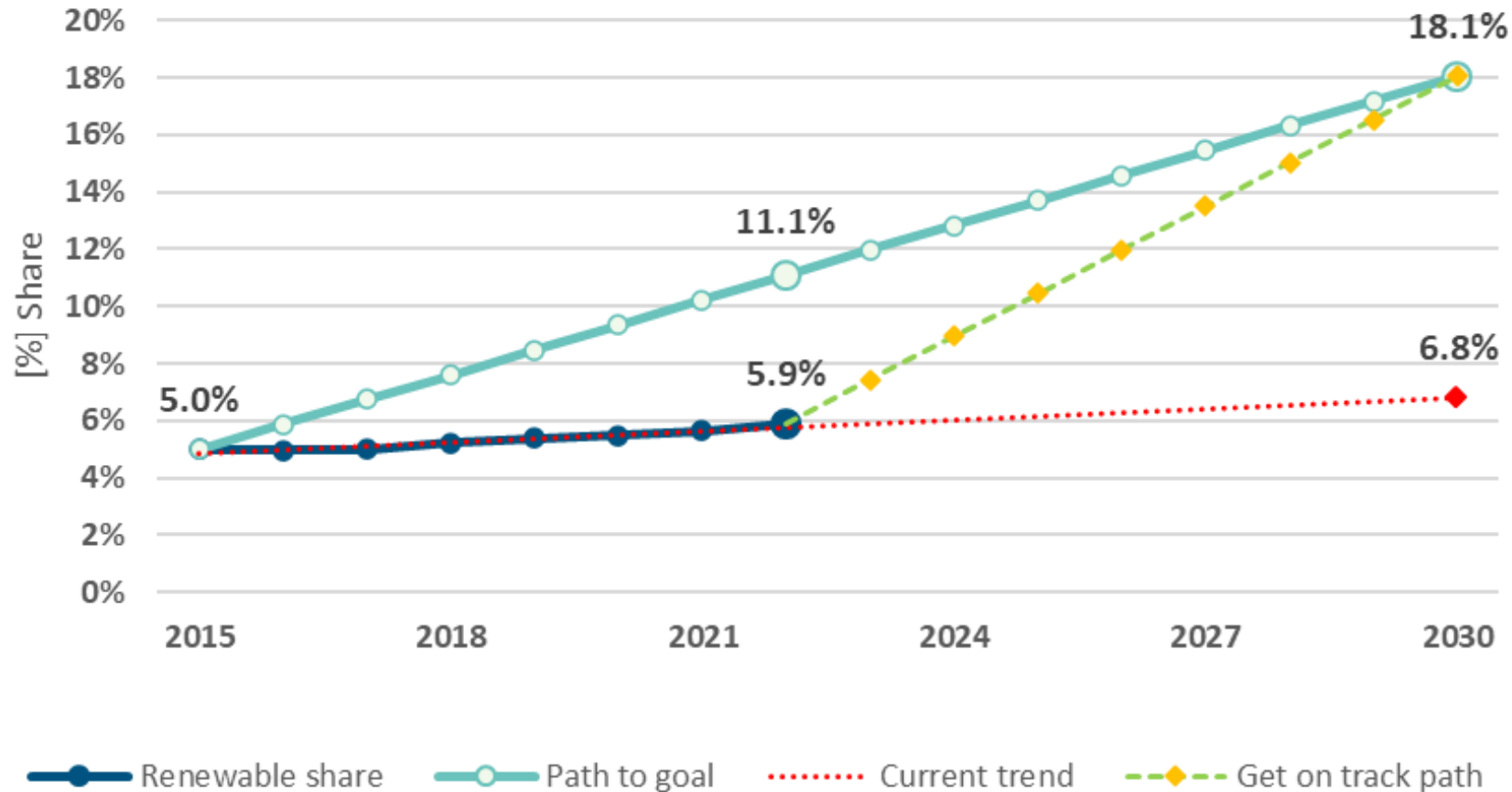
- The energy intensity **has decreased only 5% since 2015**
- By 2022, the energy intensity is **15% higher than the needed value to be on track towards the goal**
- If this trend continues, the energy intensity **would be almost 50% higher than the needed value in 2030**
- To get on track, the energy intensity **should reduce by 5% every year to 2030**, almost seven times faster than during the 2015-2022 period

Recommendations:

- Establish and implement **Minimum performance standards** for energy efficiency in building systems and equipment
- Introduce national/sub-national **renovation roadmaps** for existing buildings
- **Behavioral changes** can provide reductions in the heating and cooling needs

HOW ABOUT RENEWABLES?

The Renewable share in final energy demand in buildings is around half of the needed value to be on track

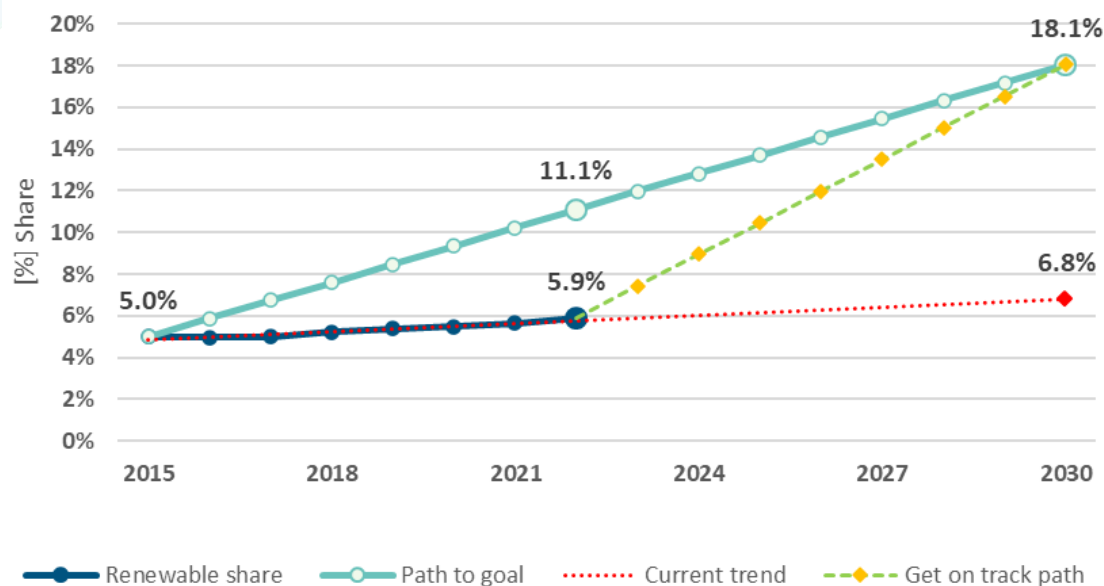


2023 Global Status Report for Buildings and Construction

Source: Adapted by the Buildings Performance Institute Europe (BPIE) 2023.

KEY MESSAGE:

The Renewable share in final energy demand in buildings is around half of the needed value to be on track



Source: Adapted by the Buildings Performance Institute Europe (BPIE) 2023.

Status:

- The renewable share has increased only 1 percentage point since 2015
- By 2022, the renewable share should have reached 11% instead of 5.9%
- If this trend continues this use would only reach 7% by 2030
- To get on track, the share of renewable energy should increase by 1.5 percentage points every year until 2030

Recommendations:

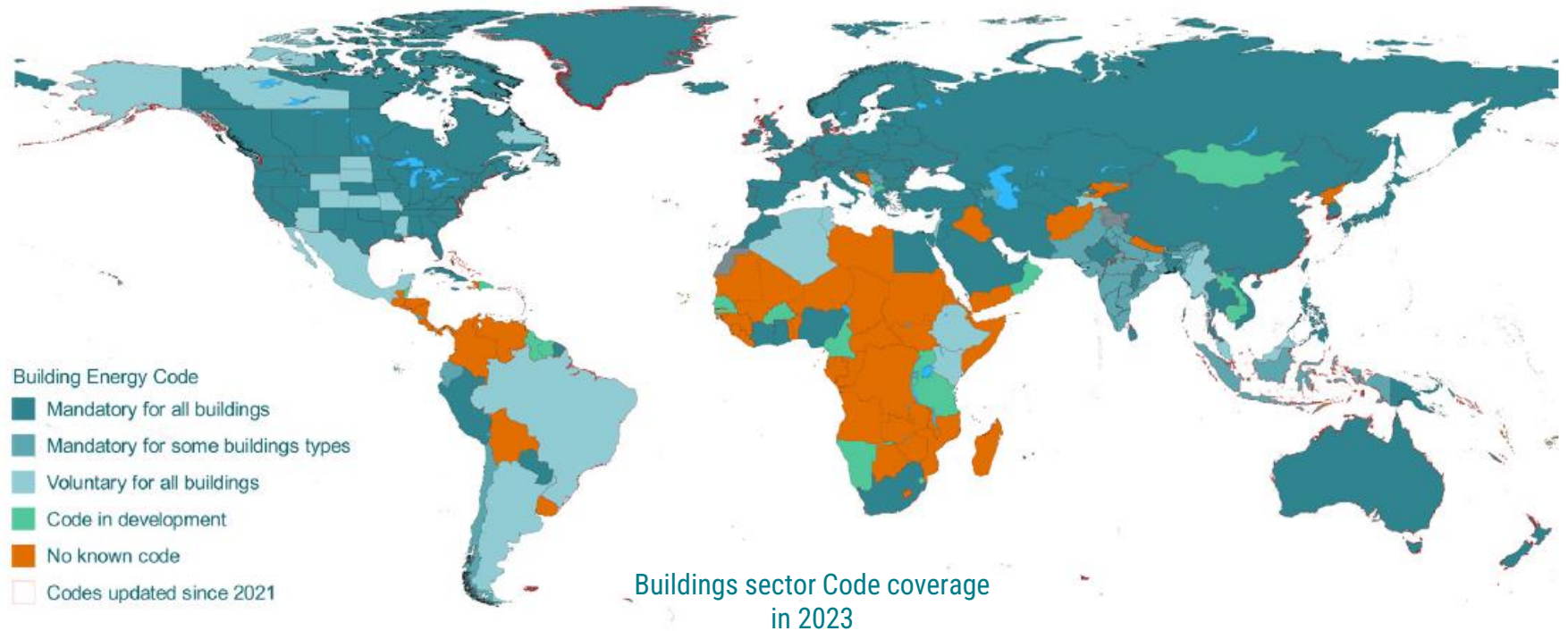
- Clear and ambitious plans for the phase-out of fossil fuels
- Detailed characterization of consumption needs and renewable energies potential to define roadmaps
- Specific roadmaps for renewable energies for heating and cooling
- Characterization of the building stock compatible with technologies such as heat pumps and solar-thermal to target properly the rollout

KEY MESSAGE:

More progress is required on global adoption of mandatory building energy codes and for existing codes to align to zero emissions

Since 2021, there have been 17 national code updated or newly developed mandatory national building energy codes.

A small but growing list of mandatory national codes are aligning to net-zero carbon emissions, including: France, Germany, Sweden and the UK.

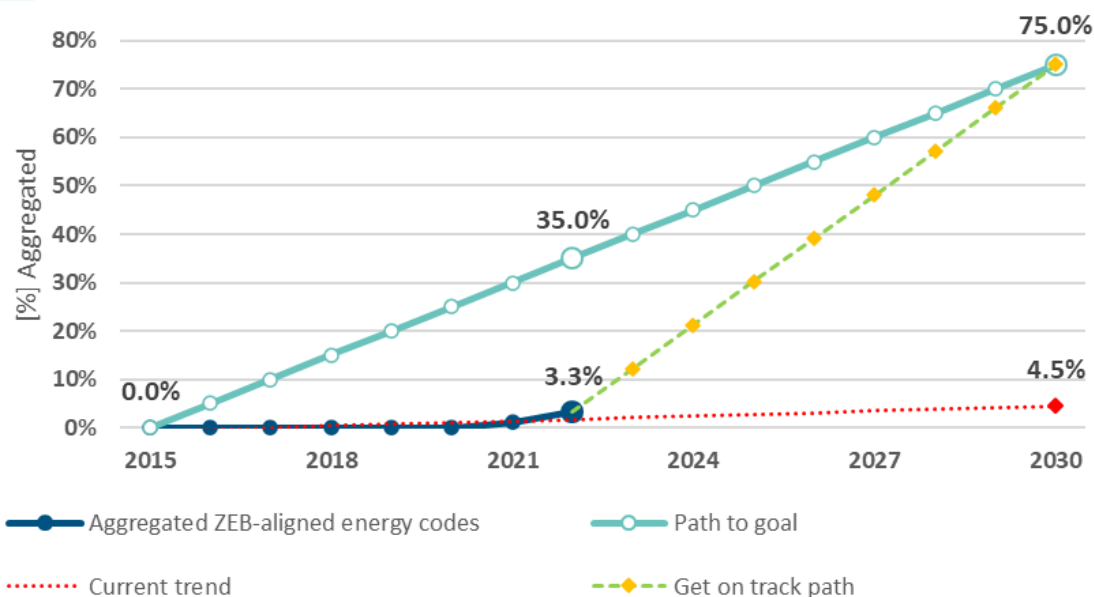


(Source: IEA 2023)

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.

KEY MESSAGE:

Even though multiple Building energy codes exist, the codes aligned with ZEB principles are very few



Source: Adapted by the Buildings Performance Institute Europe (BPIE) 2023.

Status:

- The aggregated value of building energy codes aligned with zero emission building (ZEB) concepts is **only 3.3% by 2022**
- By 2022, **only 3 countries** have energy codes aligned with ZEB
- If the trend continues, this indicator **would be only 4.5%**, more than **70 percentage points below the necessary value in 2030**
- To get on track, **all G20 members and at least 50% of the remaining countries** should set out and implement **building energy codes that are aligned with ZEB standards** before 2030

Recommendations:

- Building energy codes should be **designed or reviewed to include Minimum performance standards** for energy efficiency and resilience
- **Operational and embodied emission limits should be included**

Deep Dive: Adaptation resilient construction

Challenges

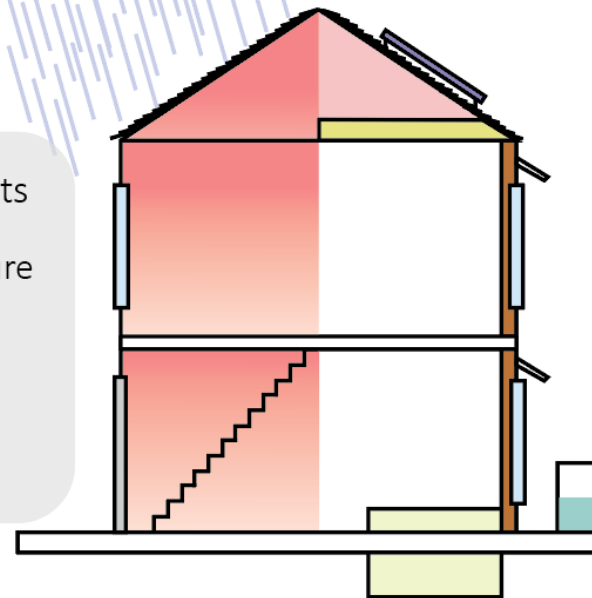
- **Adaptation and Resilience:** Rising global temperatures and extreme weather necessitate increased adaptation and resilience in building design and operations.
- **Building Vulnerability:** Climate change increases risks like overheating and storm damage, especially for high-density, poorly ventilated, and glazed buildings.

Actions to improve resilience

- **Building Codes for Climate Change:** Updating building codes is essential to ensure new and existing structures can withstand and adapt to climate change impacts.

Climate change threats

- Increased temperature
- Heavy precipitation
- Storms
- Flooding
- Drought



Adaptation measures

- Solar shading
- Increased insulation
- Solar reflective coatings
- Fabric hardening
- PV roof installation
- Domestic batteries
- Green facades
- Rainwater tanks

WHERE TO FROM HERE? GOING BEYOND FOUNDATIONS!



There is evidence for some decarbonisation successes over time:

Prioritize the creation of climate action roadmaps for the buildings and construction sector, outlining actionable steps for decarbonization at both national and sub-national levels.

Strong policy signals are creating certainty for all market actors:

Adopt climate action roadmaps to guide their decarbonization efforts and foster marketplace innovation.

Time to learn from positive examples and to accelerate action is now:

Provide research and analysis to support the development of climate action roadmaps, focusing on zero carbon technologies, materials, reuse, and renovation designs.

2023 Global Status Report for Buildings and Construction



Photo credit: Hansjorg Keller

2023 GLOBAL STATUS REPORT FOR BUILDINGS AND CONSTRUCTION

Find out more:
www.globalabc.org
global.abc@un.org