Housing: addressing adaptation and mitigation issues

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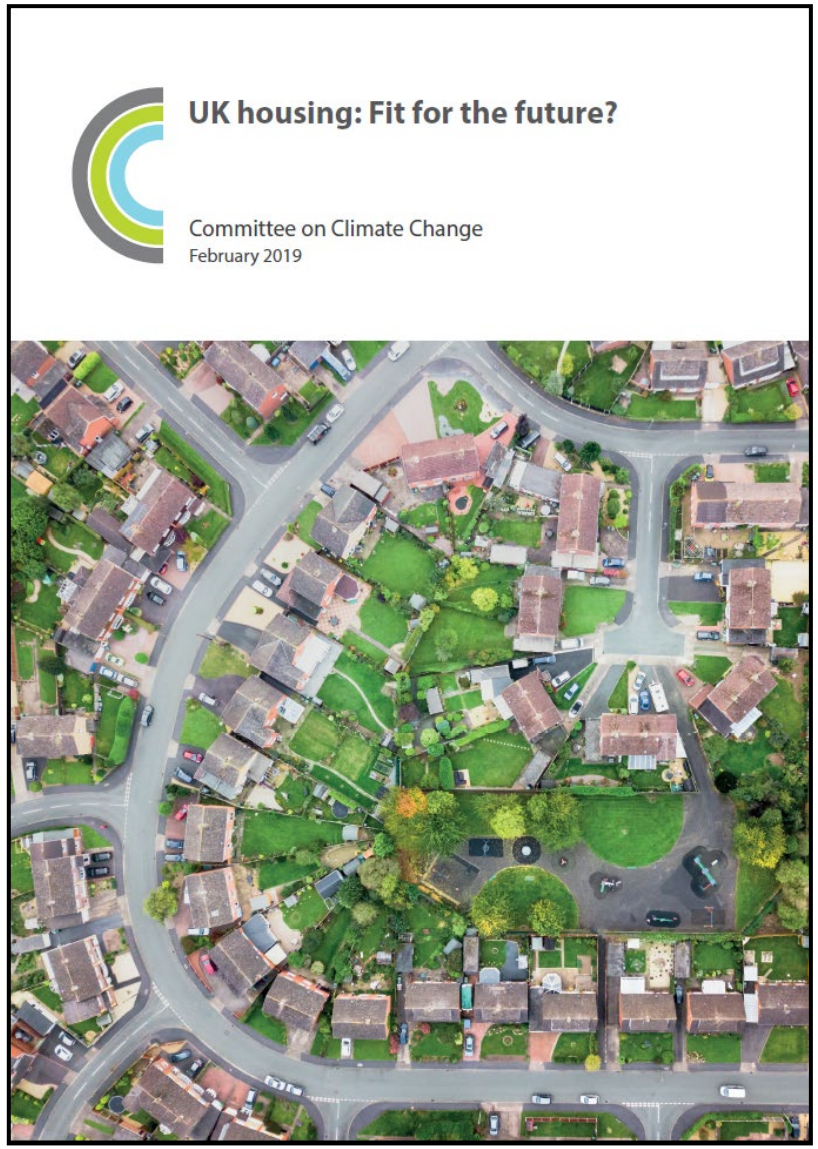
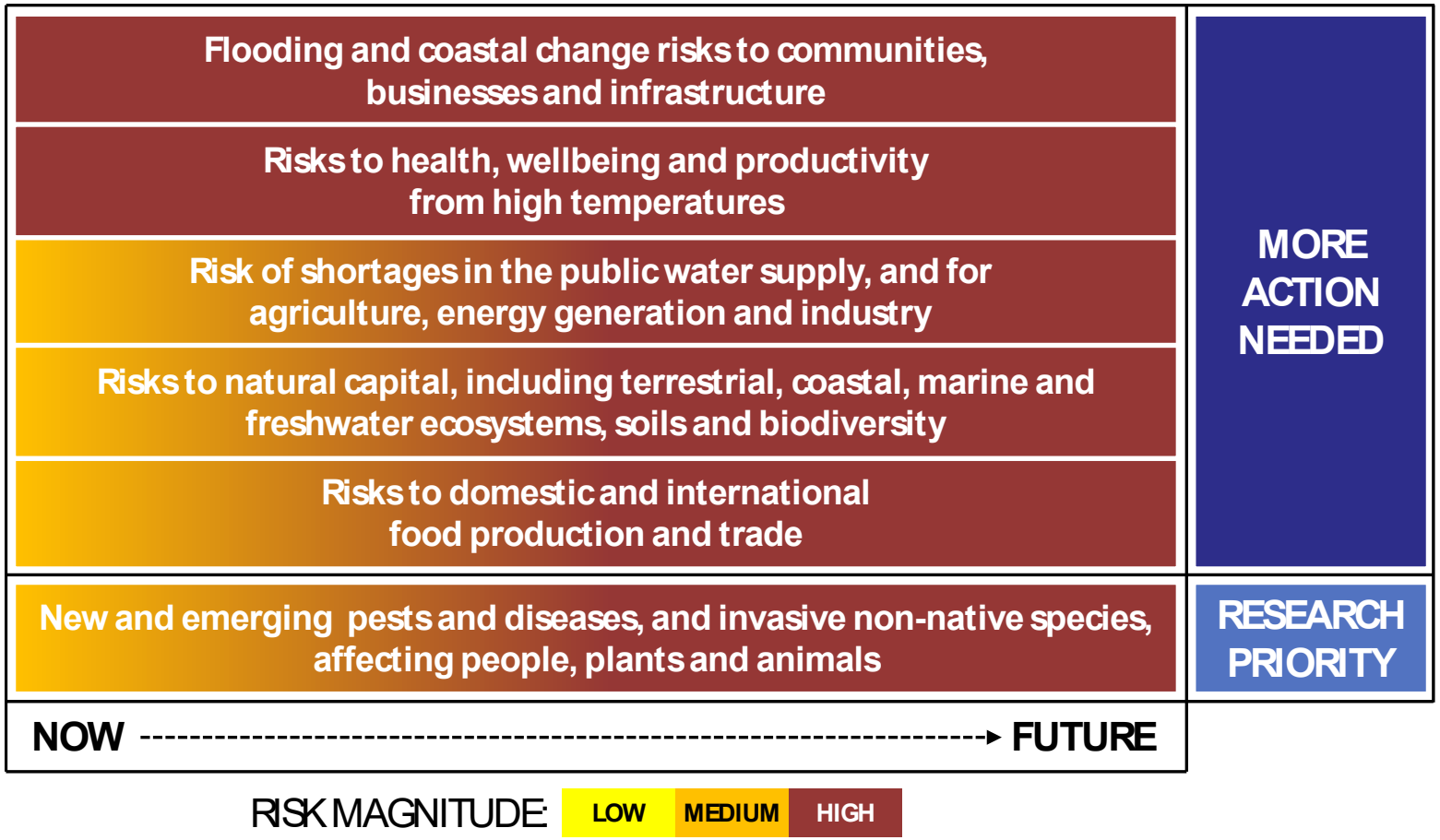
UK housing: Fit for the future?



- UK wide - joint mitigation and adaptation
- Assesses current state of UK housing (~29 million homes)
- Identifies barriers and gaps to effective mitigation and adaptation action
- Recommends where improvements are needed - to support climate objectives *and* improve

Why a report on homes and climate change?

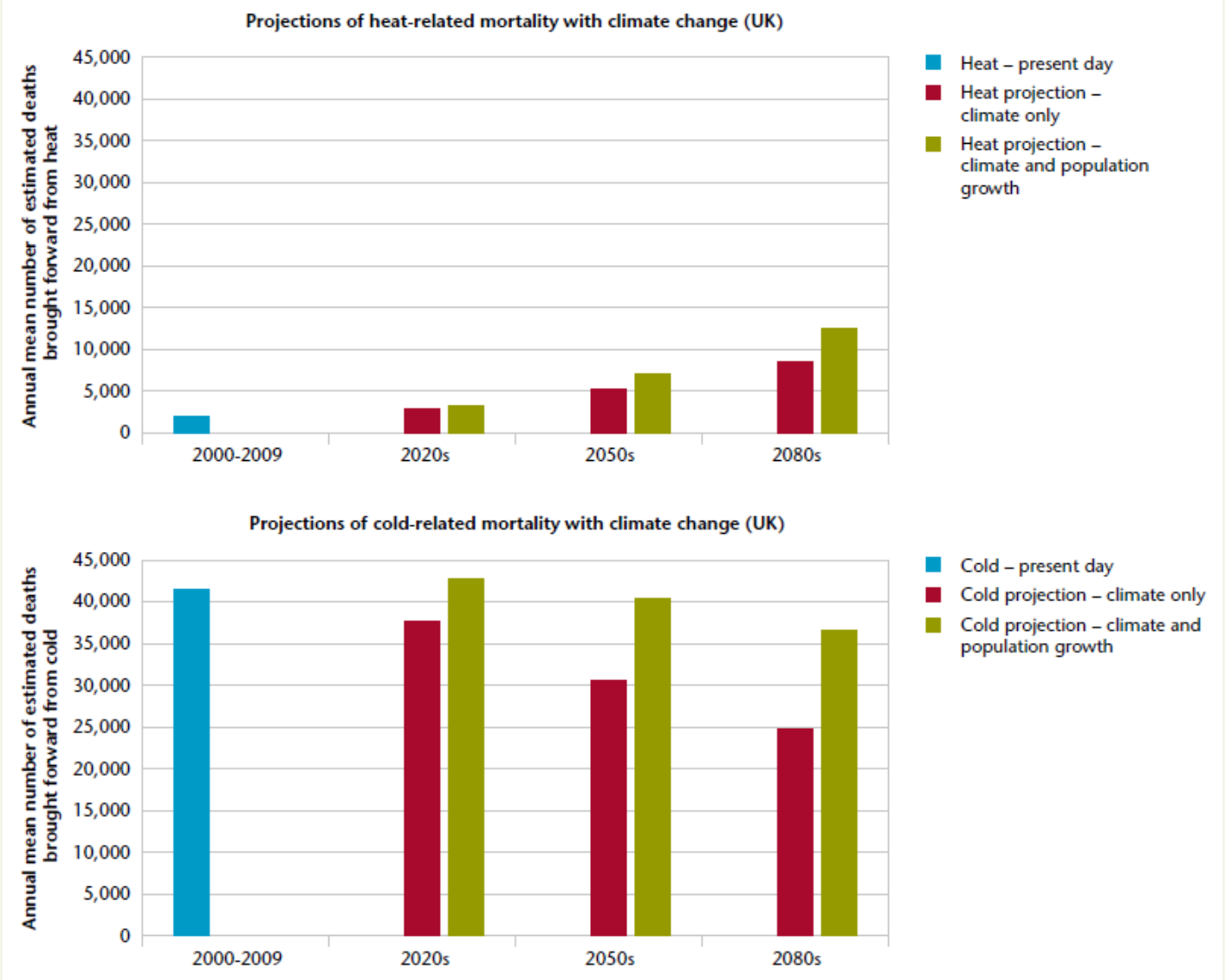
Key climate change risks facing UK are related to housing



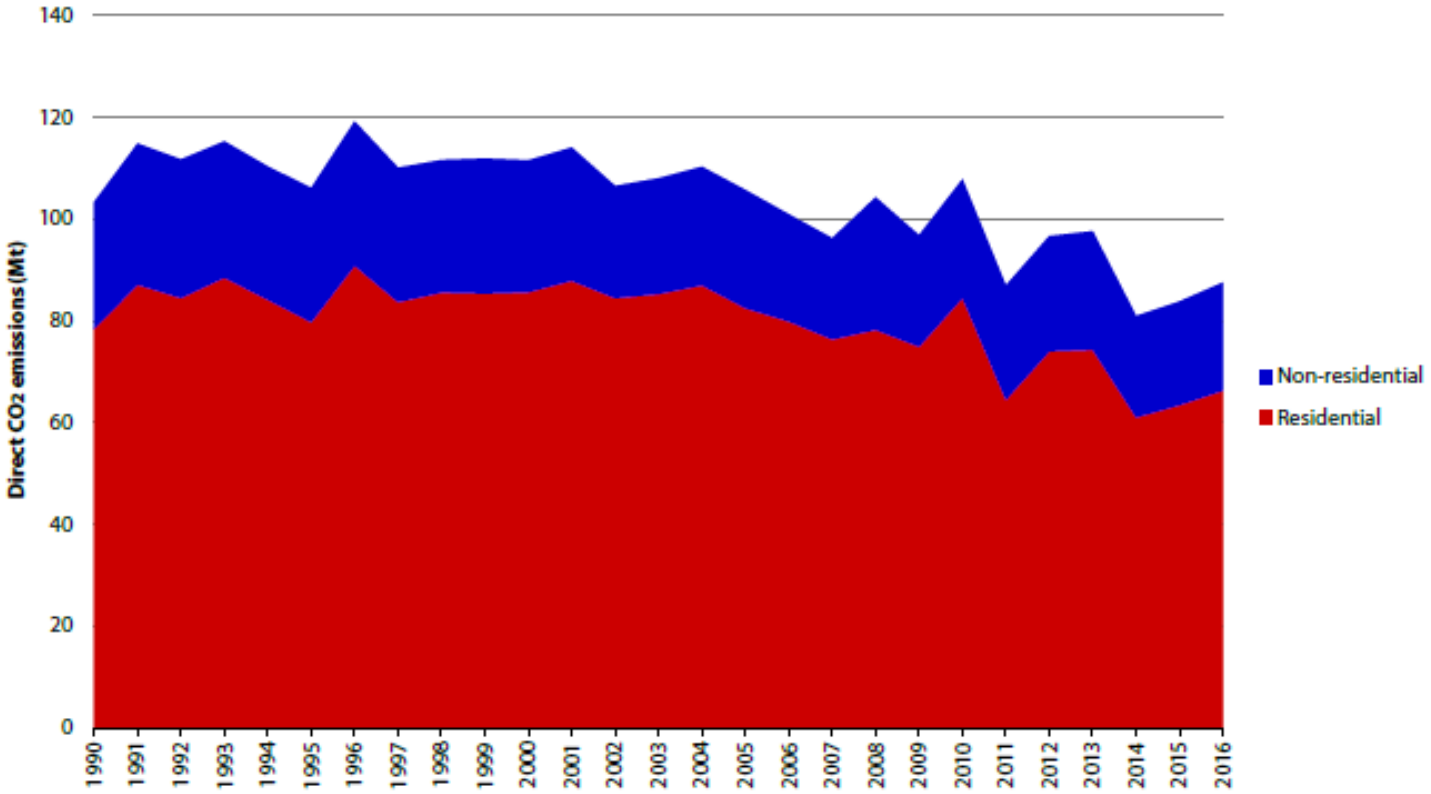
CCC (2016) UK climate change risk assessment – Evidence Report

Homes are not adapted for rising climate risks from:

- flooding
- water scarcity
- and heat



Greenhouse gas emissions from UK housing are not falling fast enough



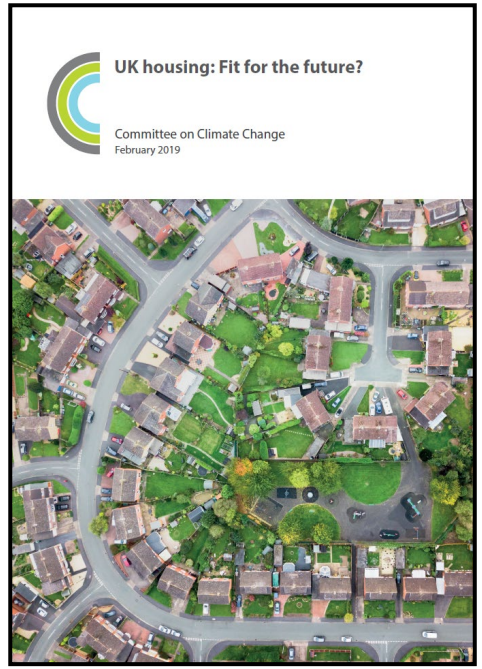
Direct CO2 emissions increased for the second year running in 2016. Adjusting for annual variations in winter temperatures, emissions rose by around 2% (CCC 2017 – Progress Report to Parliament)

A holistic approach

2.3 Energy efficiency, overheating, indoor air quality and moisture

2.3.1 A holistic approach

Measures to address thermal efficiency, overheating, indoor air quality and moisture must be considered together when retrofitting or building new homes.



Doing things right at the new build stage is much cheaper than retrofitting later

Measure	Cost (£) – new build	Cost (£) - retrofit (equivalent outcome)
Building a home with an air source heat pump and ultra-high levels of fabric efficiency (equivalent to a space heat demand of 15 kWh/m²/yr)[1]	4,800	26,300
Passive cooling measures package[1,2]	2,300	9,200
Water efficiency package of measures[2]	300	3,300
Flood resilience and resistance package of measures[2]	1,500	3,100

[1] Currie & Brown and AECOM for the CCC (2019) *The costs and benefits of tighter standards for new buildings*.
[2] Wood PLC (2018) for the CCC.

Over 30 recommendations, around five themes

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Our recommendations to Government

The Government needs to take action in five areas NOW to improve the UK's housing stock and help achieve long-term emissions reduction targets. This includes:

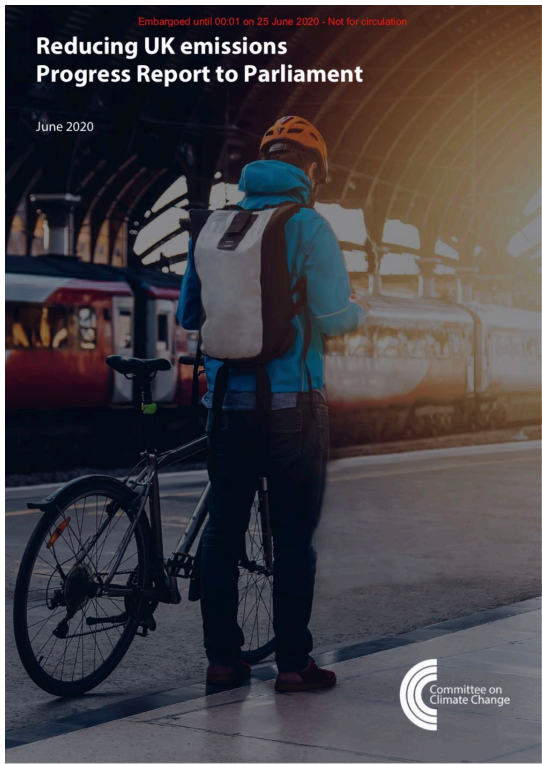
1. Enforcing standards, ensuring compliance with those standards and closing the 'performance gap'
2. Delivering a step-change in construction skills
3. Retrofitting existing homes so they are low-carbon, energy efficient and resilient to a changing climate.
4. Ensuring new homes are low-carbon, ultra energy efficient and climate resilient, with sustainable transport options
5. Addressing urgent funding needs

2020 Progress Report to Parliament

Buildings and heating policy continues to lag behind what is needed

- *Provided the final details match its intentions, the Future Homes Standard will mean that new homes must be built to be zero-carbon from 2025. This change is long overdue – since the Climate Change Act was passed, nearly two million homes have been built that are likely to require expensive zero-carbon retrofits and have missed out on lower energy bills.*

- *There remains a longstanding need to integrate emissions reduction measures in homes with improvements to resilience and indoor environmental quality. Having a policy that considers all of these together is critical to ensure building safety and comfort.*



Building Safety Regulator and climate change

We have written to Dame Judith Hackitt in her role as as chair of the board to oversee the establishment of the new building safety regulator noting our hope that these issues will be high on the agenda of the new regulator.

What does a low-carbon, sustainable home look like?

Current technology, and measures aimed at preparing for the impacts of climate change, can help new and existing homes to become low-carbon and ultra-efficient as well as adapted to flooding, heat and water scarcity.

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Existing homes

Improving existing homes can help existing house-holders meet the challenges of climate change

1. **Insulation** in lofts and walls (cavity and solid)
2. **Double or triple glazing with shading** (e.g. tinted window film, blinds, curtains and trees outside)
3. **Low-carbon heating** with heat pumps or connections to district heat networks
4. **Draught proofing** of floors, windows and doors
5. **Highly energy-efficient appliances** (e.g. A++ and A+++ rating)
6. **Highly water-efficient devices** with low-flow showers and taps, insulated tanks and hot water thermostats
7. **Green space (e.g. gardens and trees)** to help reduce the risks and impacts of flooding and overheating
8. **Flood resilience and resistance** with removable air brick covers, relocated appliances (e.g. installing washing machines upstairs), treated wooden floors

24% REDUCTION NEEDED IN DIRECT CO_2 FROM HOMES BY 2030, FROM 1990 LEVELS

15% REDUCTION REQUIRED IN ENERGY USED FOR HEATING EXISTING BUILDINGS BY 2030 THROUGH EFFICIENCY IMPROVEMENTS[1]

New build homes

New build homes can and should meet even more ambitious standards in some areas

- **A** **High levels of airtightness**
- **B** **More fresh air** with mechanical ventilation and heat recovery, and passive cooling measures such as openable windows
- **C** **Triple glazed windows and external shading** especially on south and west faces
- **D** **Low-carbon heating** and no new homes on the gas grid by 2025 at the latest
- **E** **Water management and cooling** more ambitious water efficiency standards, green roofs and reflective walls
- **F** **Flood resilience and resistance** e.g. raised electricals, concrete floors and greening your garden
- **G** **Construction and site planning** timber frames, sustainable transport options (such as cycling)

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End