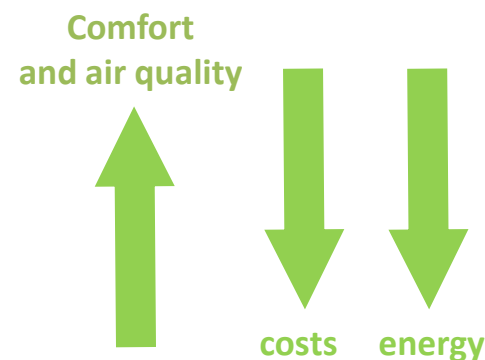
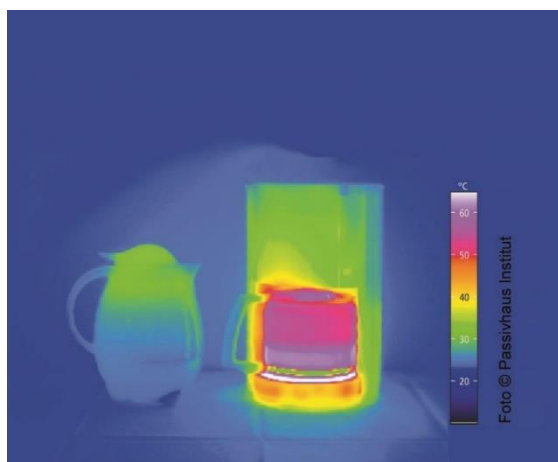


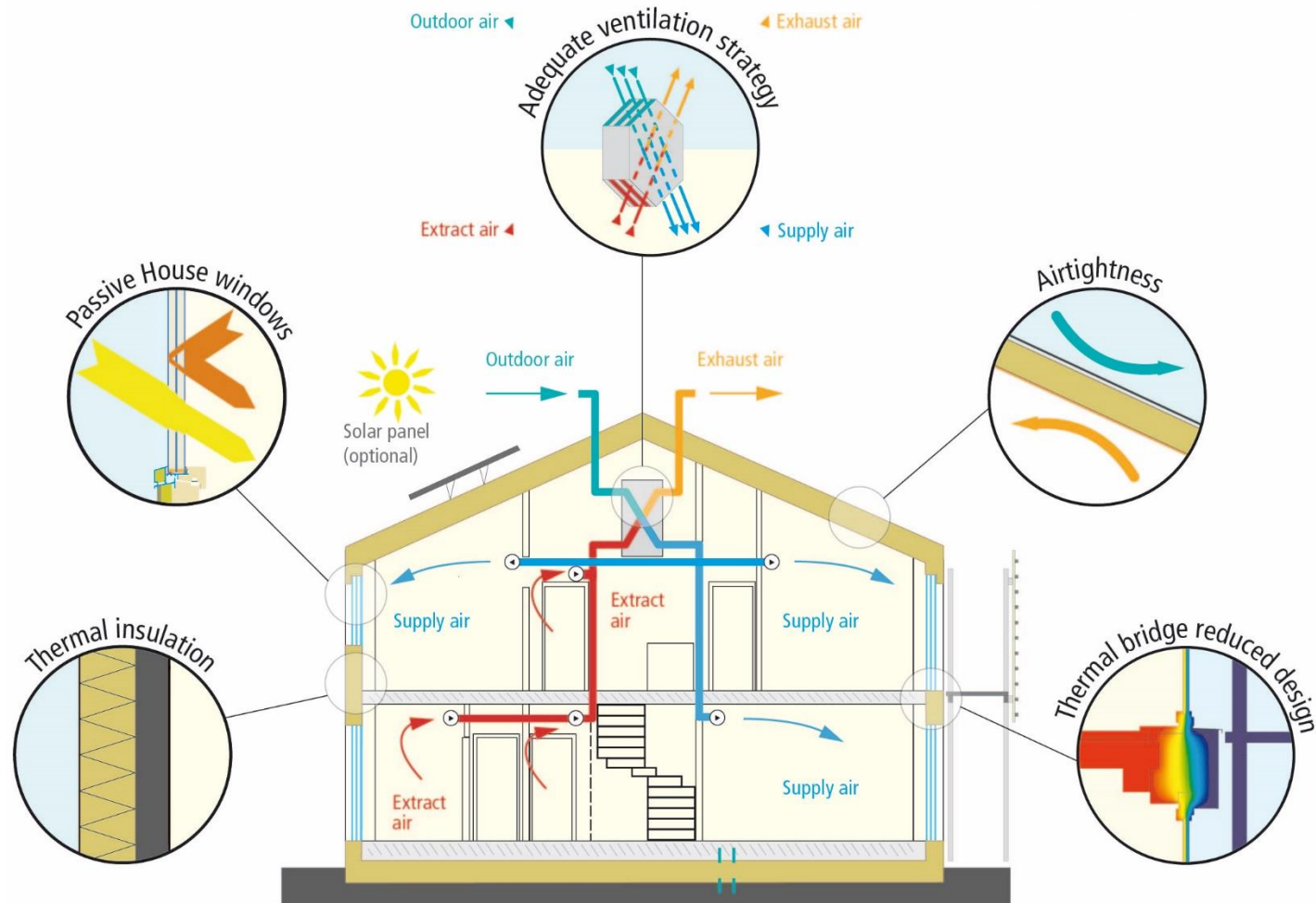
# Passive House buildings as an effective tool for social housing and tackling fuel poverty

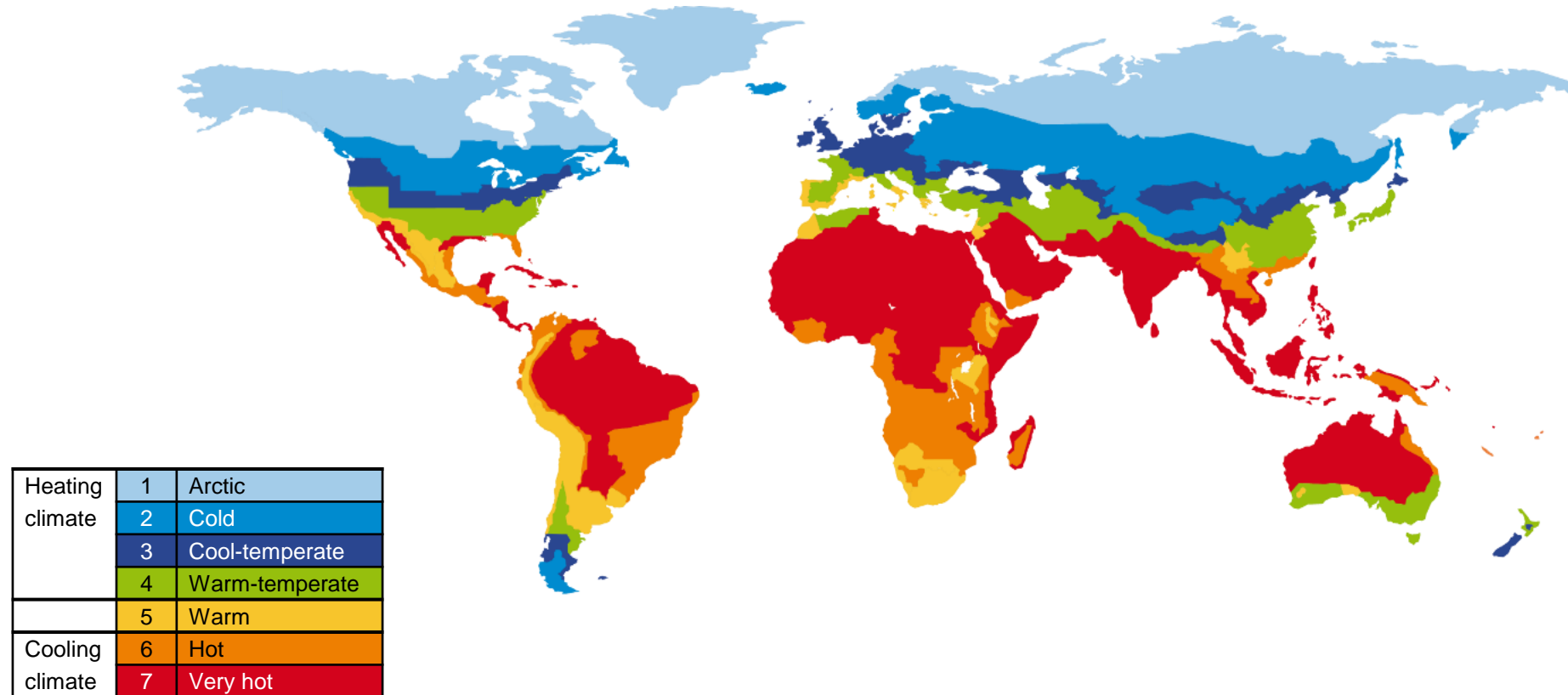
Giorgia Tzar  
Passive House Institute  
Rheinstraße 44 | 46  
64283 Darmstadt, Germany  
[info@passivehouse-international.org](mailto:info@passivehouse-international.org)  
+49(0)6151 826 99 55

## A performance based standard for highly energy efficient buildings.

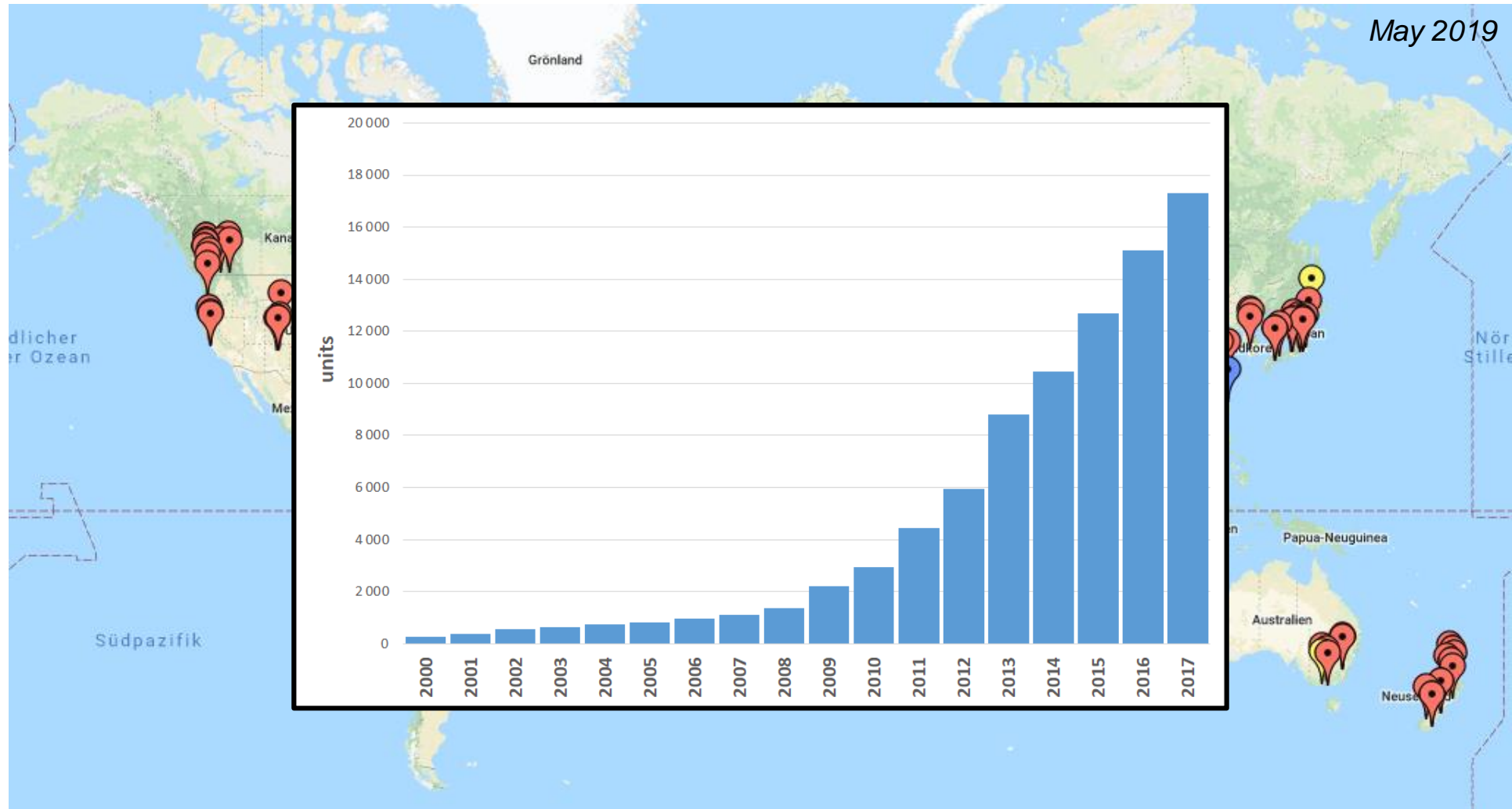
- A building which on account of its **excellent thermal insulation** uses up to 90% less heating energy and up to 80% less cooling energy compared to conventional builds.
- Passive House buildings make use of passive heating and cooling sources such as solar radiation (heating) or night ventilation and shading (cooling).







approx. 2 Mio m<sup>2</sup> TFA of certified Passive House projects worldwide





For new builds

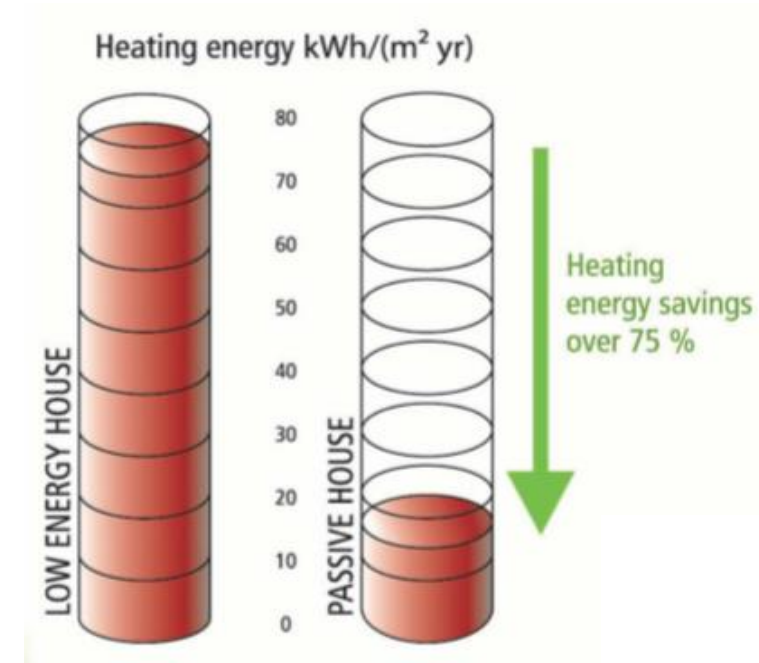


For retrofits



The PHI Low Energy Building Standard is suitable for buildings that, for various reasons, do not fully comply with the more ambitious Passive House criteria.

1. High levels of health and comfort
2. Consistent fresh air all throughout the building
3. Structural longevity: mould-free buildings with a highly reduced risk of moisture related damages
4. Extremely low heating and cooling costs; despite rising energy costs
5. Passive House buildings benefit regional manufacturers



- The Scottish Government has set ambitious targets to reduce carbon emissions (by 42% by 2020 and 80% by 2050).
- Glasgow City council has recognised that the Passive House is a key tool to radically reduce energy consumption, and contribute significantly to achieving this target.
- 27% of all households are estimated to be affected by in fuel poverty; 8% by extreme fuel poverty
- City Council's current Climate Change Strategy includes the Passive House Standard as part of its housing strategy as part of its Glasgow Standard (Option 2 – Nearly zero emissions)



Craigsbank, Nitshill Glasgow. Source: Passivhaus Trust UK

- Reduces the ‘second rent’ – the reliance on energy for thermal comfort.
- Independence from fluctuating energy costs.
- Less strain on local budget for repairs and replacements due to better quality components and construction.
- No performance gap: Councils do not pay retrofitting costs to achieve intended energy savings goals as everything is planned and calculated for quality assurance.

**Table 1.1.** Costs of designing in measures for a new home at the outset, relative to trying to achieve the same outcomes 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/m <sup>2</sup> /yr) <sup>1</sup>	4,800	26,300

**Source:** <sup>1</sup> Currie & Brown and Aecom for the CCC (2019) *The costs and benefits of tighter standards for new buildings*. <sup>2</sup> Wood PLC (2018) for the CCC.

**Notes:** All values are rounded to the nearest £hundred. The **retrofit** costs provided are illustrative of the costs that would be incurred where **retrofitting** the same measures as we recommend in a new build, and are not representative of the costs of recommended **retrofit** measures more widely. For a number of these measures, the prohibitively high **retrofit** costs mean that they would not be cost-effective and would be unlikely to be **retrofitted** in practice. This illustrates the importance of setting the right standards at the outset.

**Mitigation measures (air source heat pump and energy efficiency)** - new build costs are based on a semi-detached home built in 2020. Costs represent the incremental costs of incorporating an air source heat pump and ultra-high levels of energy efficiency (equivalent to a space heat demand of 15 kWh/m<sup>2</sup>/yr), relative to building a home to current standards with a gas boiler. **Retrofit** costs represent the costs of **retrofitting** an air source heat pump and ultra-high levels of energy efficiency in 2030, to a home built in 2020. **Retrofit** costs have not been discounted back to 2020 prices.

Source: Committee on Climate Change: UK housing: Fit for the future?

<https://www.theccc.org.uk/publication/uk-housing-fit-for-the-future>

- Effective tool to tackle fuel poverty.
- Improved quality of life for tenants – better health (fresh air, no draughts, moisture damage or mould issues).
- Tenants save money on fuel, improving their financial situation.
- Future-proofing social housing to meet climate-resilience needs.
- Minimal heating/cooling demand means lowered operative costs, but also lower operative emissions – in line with climate protection goals.



Cunningham House, Glasgow  
Source: Shettleston Housing Association



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- Research
- Quality assurance
- Capacity building
- Advocacy

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**Thank you for your attention**

Giorgia Tzar  
Passive House Institute  
Rheinstraße 44 | 46  
64283 Darmstadt, Germany  
[info@passivehouse-international.org](mailto:info@passivehouse-international.org)  
+49(0)6151 826 99 55



The UK Passive House Organisation