

Economics in Brief



No. 30, 21st November 2013

Climate change also affects the residential sector

Author: Prof. Dr Rainer Durth, phone +49 (0) 69 7431-3607, research@KfW.de

The scientific evidence is piling up: climate change is real, as demonstrated by the new report from the International Panel on Climate Change (IPCC).¹ Not even Germany will escape unscathed: temperatures are predicted to rise by an additional 2–4.5 °C by the end of the century. How climate change affects Germany will vary hugely depending on the region and season. Essentially maximum temperatures and the frequency, intensity and duration of heatwaves and tropical nights will all increase. Extreme weather events such as gale force winds and thunderstorms will become more common. The 2003 heatwave proved that the predicted changes will be anything but harmless: the heatwave was the most deadly natural disaster in Europe's history, causing approx. 30,000 deaths in the EU alone.²

Climate change will hit cities hard

Cities are particularly affected by climate change, not least because temperatures are already significantly higher than in the surrounding areas. Over 80 % of the German population live in cities. What changes should they expect? The impact of climate change can vary considerably, from flooding, to damage to infrastructure, to utility supply issues. A whole range of measures is required, with little scope for action by individual citizens.

Within the cities, houses will suffer

However, residents can make changes in their homes. Some of the potential consequences of climate change.³

- Higher temperatures increase heat stress and prevent temperatures from falling overnight.
- Wilder storms and gale force winds will cause more damage to property and people.

- Protracted periods of drought will cause the water table to fall and buildings will be damaged by subsidence.

- Extreme rainfall will cause urban flash floods and overload drainage systems.

As most of these phenomena constitute more extreme versions of existing weather events, houses can be adapted based on past experience. The question remains: what are the financial implications of climate change for urban homes?

Case study on the cost of climate change

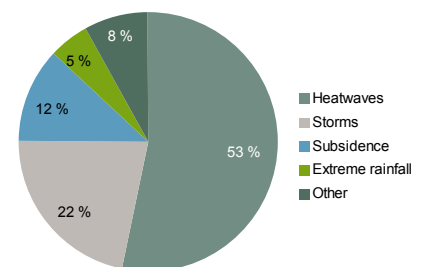
The German Federal Ministry of Transport, Building and Urban Development (BMVBS) published a detailed study analysing the cost of climate change for a range of property types.⁴

One property examined is a city-centre block of flats. Rent before heating is EUR 9/m² for a residual life of 33 years. In view of rising temperatures and the prospect of heatwaves lasting several weeks, the report assumes that the rent for the top three flats will have to be reduced by 15 % because of climate change.

The reduced rent accounts for over half of the expected annual costs of climate change (see figure). Further analysis shows that it is best to select insurance which offers maximum protection against damage caused by climate change, particularly subsidence. However, this does not provide effective protection against lost income – as a rule, investment is the only option. One low-cost solution is for the apartment block owner to invest in external air conditioning units for the top flats. Insulating the external walls is another alternative; given the predicted ef-

fects of climate change and lower rental income, this constitutes a break-even solution.

Figure: Cost of climate change for an urban apartment block



Source: German Ministry for Transport, Building and Urban Development (BMVBS).

Conclusion

Even Germany is increasingly having to adapt to climate change, particularly in urban residential areas. The primary economic concern is the impact of the predicted temperature rises. Improving energy efficiency or insulation is one solution which reduces heating costs during cold periods, but will also keep homes cool when things heat up. This option provides effective protection against the more serious climate change hazards and the associated rental losses.

In future, renovations will need to focus more on the potential impact of climate change. ■

¹ IPCC 5th Assessment Report on Climate Change, 2013.

² European Environment Agency 2012 report on climate change, impacts and vulnerability in Europe.

³ German Federal Environment Agency, Adapting to climate change: urban construction and living (*Bauen und Wohnen in der Stadt*), 2012.

⁴ German Federal Ministry of Transport, Building and Urban Development, Real estate – strategies for climate change, 2012.