Climate emergency for residential surveyors – what does it mean in practice?

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Learning objectives

- Understand the extent to which the 'climate emergency', or climate change is, or isn't, accepted as 'fact' by the UK public, the UN and other agencies;
- Review how climate change might affect some aspects of property, and some elements of a property, in the UK;
- Assess some of the potential weak points in a typical residential property that might disturb our clients' 'quiet enjoyment' of their home; and
- Consider and or agree some possible ways of reporting the implications of climate change in survey reports.

Group discussion

Does the UK public believe there is a 'climate emergency' and or a possibly temporary change or 'blip' in weather patterns?

Group discussion

Does the UK public believe there is a 'climate emergency' and or a possibly temporary change or 'blip' in weather patterns?

FEEDBACK



Human activity and climate change

Most people think humanity is 'entirely or almost entirely' responsible, or responsible for a 'large majority' of the change

Previous YouGov questions on belief in the existence of climate change have not established in much detail the *extent* to which people think humanity is responsible. Our <u>website tracker question</u> only asks whether or not people think humanity is responsible at all (alongside saying it doesn't exist in the first place), while <u>a 2019 international</u> <u>YouGov study</u> allowed for respondents to distinguish between humanity being "mainly", "partly" and "not at all" responsible.

Now a new YouGov survey looks at this attitude in a greater level of granularity.

Asked first whether or not they think the climate is changing, 87% of Britons say they believe it is. Only 7% say it is not, a slightly higher rate than we get with the compound question on the website tracker (generally 2-4%). A further 6% are unsure, a lower rate than the website tracker tends to generate (normally between 10-13%).

To what extent do Britons think human activity is responsible for climate change?









United

Nations

'The climate crisis – a race we can win' 🛸

Climate change is the defining crisis of our time and it is happening even more quickly than we feared. But we are far from powerless in the face of this global threat. As <u>Secretary-General António Guterres pointed out</u> in September, "the climate emergency is a race we are losing, but it is a race we can win".

No corner of the globe is immune from the devastating consequences of climate change. Rising temperatures are fueling environmental degradation, natural disasters, weather extremes, food and water insecurity, economic disruption, conflict, and terrorism. Sea levels are rising, the Arctic is melting, coral reefs are dying, oceans are acidifying, and forests are burning. It is clear that business as usual is not good enough. As the infinite cost of climate change reaches irreversible highs, now is the time for bold collective action.

https://www.un.org/en/un75/climate-crisis-race-we-canwin#:~:text=Rising%20temperatures%20are%20fueling%20environmental ,acidifying%2C%20and%20forests%20are%20burning.



United Nations 'New extremes & a catalyst for conflict' Disasters linked to climate and weather extremes have always been part of our Earth's system. But they are becoming more frequent and intense as the world warms. No continent is left untouched, with heatwaves, droughts, typhoons, and hurricanes causing mass destruction around the world. 90 per cent of disasters are now classed as weather- and climaterelated, costing the world economy <u>520 billion USD each year</u>, while 26 million people are pushed into poverty as a result. Climate change is a major threat to international peace and security. The effects of climate change heighten competition for resources such as land, food, and water, fueling socioeconomic tensions and, increasingly often, leading to mass displacement. Climate is a **risk multiplier** that makes worse already existing challenges. Droughts in Africa and Latin America directly feed into political unrest and violence. The World Bank estimates that, in the absence of action, more than 140 million people in Sub-Saharan Africa, Latin America, and South Asia will be forced to migrate within their regions by 2050.

Group discussion

What are the possible likely effects of the climate emergency on the residential property market generally?

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FEEDBACK



It has been confirmed that the past decade was the hottest on record for our planet, with the undeniable cause being human-induced climate change. Many will associate hot summers and mild winters with our changing climate, but the reality is much different. Climate change drives more extreme weather conditions, from severe cold, to wide-spread flooding, extended heatwaves and high-speed winds. As a homeowner you need to consider what impact these extreme weather conditions may have on your home in the future, and the steps you can take to protect what is likely your most valuable asset.



<section-header> Flooding & burst pipes In December 2019 more than 100 flood warnings were put in place by the Environment Agency as some areas experienced record-setting levels of rainfall, Insurance pay-outs for those hit in Yorkshire and the didlands are expected to reach those hit in the air due to higher global temperatures, fooding is likely to become more and more frequent. Whilst flooding is often considered an "Act of God", neighbours do owe each other a duty to take reasonable steps to prevent natural occurrences damaging neighbouring troagers your property, and ensure that your property is not causing damage by the global temperatures. Mellos Vetter (1869) – strict liability Despite the mild winter we are currently experiencing, one possible impact of climate for the gas throm the East struck; a period during which burst pipe incidents to reased ten-fold on the previous year. Burst pipes can cause significant financial damage to properties, and with cold weather spas becoming increasingly likely, the occurrence of burst pipes will undoubted yrise approximation the previous year.

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Subsidence & the impact on your home

One of the impacts of an increased global temperature is the greater evaporation of the moisture held in the soil. The drying of soil can lead to a loss in structural integrity below ground and increases the risks of subsidence. Subsidence can also occur as a result of trees located close to homes absorbing water from the soil through their roots, thereby drying the soil in a similar manner to increased soil evaporation.

Subsidence can cause irreparable damage to properties and can, at the very least, create a great deal of problems when it comes to selling your home. If you notice significant cracks in the walls of your property you should take immediate action. If you are unsure what to do then it is always best to seek professional advice.

The significance of climate change is being discussed globally every single day, and we are now experiencing the impact it will continue to have on our national climate. The protection you afford to your home will ultimately depend upon its location and how susceptible it is to the increased risks (including those set out above).

If a neighbouring property has caused damage to your home (as a result of an extreme weather event or otherwise), or you have caused damage to a neighbouring property, then please do not hesitate to contact our <u>Litigation & Dispute Resolution Team</u> for specialist advice on 01603 610911 or email the team here.







5. Subsidence

SECTION 2: Physical risks

Extreme weather events pose major risks for the real estate sector. These extreme weather events include exceptionally high precipitation and flooding, hurricanes, and wildfires, as well as chronic risks such as subsidence and sea level rise in low-lying areas. Physical risks for the real estate sector are related to the damage caused to properties from weather events that are intensified by climate change.



As the global temperature rises and the occurrence of dry weather increases, the emergence of subsidence due to climate change will become more likely. Subsidence—which occurs when the ground beneath a property sinks, pulling the foundations of a property down and causing the walls and floors to shift—has the potential to destabilise the structure of a property (Hamilton Fraser, n.d.). An increasing number of real estate buildings could potentially be at risk of subsidence in the coming years. An analysis by the British Geological Survey estimated that the number of buildings across Britain likely to suffer will increase from 3% in 1990 to 6.5% by 2030 (Figure 10) (British Geological Survey. 2021). Subsidence can cause a rise in insurance premiums and a decrease in real estate prices. Properties exposed to subsidence may also require engineering work for land stabilisation or replacement of damaged infrastructure, which can increase costs (British Geological Survey, 2021).









While successive governments have channelled millions of pounds into flood defences to protect priority communities from the river network, this only reduces the risk for those places. Climate change allowances are redrawing the map of flood risk as each major flooding event occurs. Even with this investment, there are thousands of undefended streams that have caused huge damage, with the insurance bill for the 2020 floods alone standing at £375 million.

The tapering off of Flood Re as a support to the most vulnerable and high premiums or excesses for those just outside of this extra support, means there are major considerations for homebuyers and business owners in making their properties more resilient and needing to invest in measures to mitigate against the risk.

Coastal Erosion

Sea levels could rise by as much as 1m in the next century, accelerating coastal erosion in already vulnerable areas. Not everywhere will be protected and funds to defend communities are not infinite.

Whole settlements could be given up to the sea, while many properties may have a shorter lifespan and unable to get insurance or mortgages. Some may walk into a transaction on a cash basis with eyes wide open, but for many they could become trapped and be staring at a total loss on their investment.





FLOODRE

What can I do to protect my home against flooding?

Flood Re and the Environment Agency have launched a new campaign 'Be Flood Smart' to improve flood risk awareness and inspire householders to make their properties more resistant to flooding, so that floods stop stealing what makes their house a home.

There are three main elements to PFR, and each have a range of changes you can make to your home within a wide range of budgets.

Find an insurer Are you at risk? What is Flood Re? FAQs Career

Resistance

These measures are designed to keep as much water out of the property as possible. Measures include flood doors and barriers, self-closing air bricks and non-return valves as well as toilet bungs and other elements.

These PFR measures help provide much needed time for you to move precious possessions and, most importantly, get to a place of safety if flooding is expected.

Recoverability

Sometimes, the resistance element is not achievable and, so, the focus becomes on minimising the effects of flooding. Recoverability is all about making simple changes inside your property, so if water does get in, it causes as little damage as possible.

For example, replacing flooring with waterproof tiling and grouting will help overall recoverability after flooding has occurred. This is because Waterproof tiles and grouting dry quicker and are easier to clean than carpets. Other recoverability measures include elevating electrical items and plug sockets and choosing water resistant materials for your kitchen units.

Subsidence

Subsidence

As the wetter areas get wetter, so the drier areas get drier. The record breaking 2022 heatwave brought with it a surge in subsidence claims through clay shrinkswell impacts. This is proportionately the greatest risk in the coming century as the ground moves beneath us. Not just from natural causes, but also due to the nationwide legacy of past mining, some of which lies forgotten as a hidden hazard below our houses and businesses.

Shallow, informal workings can give way through both drought and deluge and can have significant impacts on insurance cover and mortgage availability.



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Short term 449,000 By 2050 2 Million





- More rain and heavier rain in shorter bursts, leading to:
 - Higher groundwater levels,
 - 'Flash flooding',
 - Rain falling on roofs and against walls etc. for longer periods;
- Stronger winds, which tend anyway to be stronger:
 - Close to the coast (within 10km),
 - With increases in height above sea level,
 - In country locations, and
 - Where the ground is 'rougher';
- Higher temperatures, leading to:
 - Overheating of the internal environment in the home,
 - Increased drying out of the ground (? see above), causing more subsidence, and
 - Moister conditions, possibly causing more rot (fungal decay) and woodboring insect attacks.





Which parts of a residential property's building fabric might be affected by the climate emergency, why and what will we do about it?

Group discussion

Which parts of a residential property's building fabric might be affected by the climate emergency, why and what will we do about it?

FEEDBACK













PREVENTION

Principle — Correct construction and positioning of dpcs in chimneys is critical if rain falling on the brickwork is to be kept out of the house.

Practice

- Check where dpcs are specified to be installed, eg beneath the chimney capping, Figure 2a and at roof junction level, Figure 2b, c, d;
 - where the chimney is not too exposed the use of two courses of dpc brick or two courses of slate bedded in a 1:0 to ¼:3 cement:lime:sand mortar may be satisfactory.
- Ensure that the dpc or tray is laid on a bed of mortar, raking out at the front to allow for the tuck under of the front apron, Figure 3.
- Ensure that the front apron is tucked under, not over the dpc or tray.
- Check that trays have upstands of at least 25 mm to inner edges within flues and to back and sides, Figure 4.



· Check that corners in trays form a watertight junc-Flashings are tion. seldom properly tucked in, wedged • Ensure that lead trays, Code No. 4 (blue marked), and supported are coated both sides with bitumen paint: - if a solvent based paint is specified check that correct product is used (eg check that product instructions are to clean brushes in solvent, not in water). Ensure that a joint in the flue liner coincides with the level of the tray. Figure 3 • Ensure that bed and perpend joints are completely filled with mortar and that a bucket handle or weathered joint is used. • Ensure that flashings and soakers are in the correct position, tucked into the bed joint at least 25 mm and wedged. REFERENCES AND FURTHER READING Defect Action Sheet DAS 71 'External masonry walls: repointing specification'. Figure 4









Possible paragraph(s) – chimney stacks

The phenomenon known as 'climate change' or the 'climate emergency' is anticipated to result in changes in weather patterns. Indeed, there are indications we are already experiencing such changes. This may be causing drier summers and wetter winters together with tropical type storms including periods of heavier rain and sometimes stronger winds. Chimney stacks are particularly prone to damage caused by weather as they are so exposed. Chimney pots are especially prone to wind damage. It is likely you will therefore need to regularly inspect the chimney pots and other parts of the chimney stack at high level to ensure you identify and repair defects in those parts.

The possibility of heavier rainfall and winds and rain falling for longer periods due to climate change is likely to result in a risk of more water penetration into chimney stacks. Water penetration downwards in chimneys can occur, especially if there is no damp-proof course (DPC) in a chimney stack, or the DPC is in the wrong place, as is often the case. In this property (text). [describe presence or otherwise & efficacy of DPC] Such water penetration usually only wets any chimney breast in the roof space and tends to dry out once the rain stops – you can often see resultant salt stains in any stack in the roof space. However, if more rain tends to fall for longer periods in the future, there is an increased risk the water will penetrate further downwards, into living accommodation such as bedrooms. Chimney stacks at the lower edges (eaves) of a roof are especially likely to suffer this problem. This can cause issues such as rot (fungal decay) and wood-boring insect attacks in timbers and damage to plaster and decorations. This is a risk to the property – see 'risks to property' in section ? for further details.

External cavity walls

Penetrating dampness in cavity walls

- cracked and or deteriorated mortar or brickwork.
- wall ties sloping downwards and inwards.
- mortar snots on wall ties or bridging cavity.
- mortar snots on insulation batts.
- snapped headers which project across the cavity.
- absence of cavity trays at abutments between roofs and walls.
- lack of satisfactory cavity trays, stop ends and weep-holes to lintels.
- remedial work is expensive, but possible; although in some instances may require total rebuilding of the outer leaf including introduction of an insulated cavity but with an actual cavity.











Cavity trays

Cavity trays should be provided at all interruptions to the cavity (e.g. window and door openings and air bricks) unless otherwise protected (e.g. by overhanging eaves). Cavity trays should:

- provide an impervious barrier and ensure that water drains outwards
- cover the end of the lintel and project sufficiently beyond the lintel ends to allow a stopend linked to the DPC/cavity tray accommodated within a naturally occurring perp joint
- provide drip protection to door and window heads
- have a 140mm minimum upstand from the inside face of the outer leaf to the outside of the inner leaf
- not be low-density polyethylene (LDPE) to BS 6515
- have appropriate third party certification



- be shaped to provide 100mm minimum vertical protection
- above points where mortar droppings could collect
 be provided where the cavity is bridged by air bricks,
- etc. and the DPC should extend 150mm beyond each side of the bridge
- where not otherwise protected (e.g. by a roof at an appropriate level), be provided over meter boxes
- be in one continuous piece or have sealed or welded joints
 be used in accordance with the manufacturer's























Possible paragraph(s) – outside cavity walls

The phenomenon known as 'climate change' or the 'climate emergency' is anticipated to result in weather changes. Indeed, there are indication we are already experiencing such changes, with drier summers and wetter winters together with tropical type storms including very heavy rain and sometimes higher winds. The possibility exists therefore that outside cavity walls on most properties in the UK may be subjected to heavier and more prolonged periods of rain. Cavity walls are intended to prevent water penetration, but there are sometimes weaknesses in such walls that can allow rainwater ingress. If climate change continues, there is a risk this issue could become more of a problem generally in significant numbers of homes in the UK. I saw no evidence of this issue in the property at the time of my inspection. Water penetration through outside walls can cause damage to plaster, timbers (resulting in rot and woodboring insect attacks) and decorations. This is a risk to the property – see 'risks to property' in section ? for further details.

Rainwater fittings







Possible paragraphs – rainwater fittings

The phenomenon known as 'climate change' or the 'climate emergency' is anticipated to result in weather changes. Indeed, there are indication we are already experiencing such changes, with drier summers and wetter winters, together with tropical-type storms including heavy rain and sometimes higher winds. There are indications that rainwater systems such as gutters and rainwater pipes which have until now been of sufficient size to deal with the usual amount of rainfall in the United Kingdom may in future be inadequate. Thus, if climate change continues to progress, you may find it necessary to replace the existing gutters and rainwater pipes with larger gutters of greater capacity. This is a risk to the property – see 'risks to property' in section ? for further details.

Overheating

Red	quirement	ONLINE VERSION
Requ	urement	
01 0	Dverheating mitigation Reasonable provision must be made in respect	The Building Regulations 2010
(1)	of a dwelling, institution or any other building containing one or more rooms for residential purposes, other than a room in a hotel ("residences") to—	Overheating
	(a) limit unwanted solar gains in summer;	APPROVED DOCUMENT
(2)	(b) provide an adequate means to remove heat from the indoor environment.In meeting the obligations in paragraph (1)—	Requirement OI: Overheating mitigation Regulations: 40B
	 (a) account must be taken of the safety of any occupant, and their reasonable enjoyment of the residence; and 	
	(b) mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it.	2021 edition – for use in England



	of Duitdings with ci	oss-ventuation should	not exceed the m	aximum glazing area
n Table 1.1.				
Table 1.1 Limitin	ng solar gains for l	ouildings or parts of b	ouildings with cros	ss-ventilation ⁽¹⁾
	High risk location		Moderate risk location	
Largest glazed façade orientation	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of roon
North	15	37	18	37
East	18	37	18	37
South	15	22	15	30
West	18	37	11	22



Table 1.3 Minimum free are	as for buildings or parts of buildin	gs with cross-ventilation	
	High risk location	Moderate risk location	
Total minimum free area ⁽¹⁾	The greater of the following: a. 6% of the floor area ⁽²⁾ b. 70% of the glazing area ⁽³⁾	The greater of the following: a. 9% of the floor area ⁽²⁾ b. 55% of the glazing area ⁽³⁾	
Bedroom minimum free area	13% of the floor area of the room ⁽⁴⁾	4% of the floor area of the room ⁽⁴⁾	Remov
Buildings or parts of buildings v	with no cross-ventilation should equ	ual or exceed the minimum free	exce hea
Buildings or parts of buildings areas in Table 1.4. Table 1.4 Minimum free are	with no cross-ventilation should equ as for buildings or parts of buildin	ual or exceed the minimum free	exce hea
Buildings or parts of buildings areas in Table 1.4. Table 1.4 Minimum free are	with no cross-ventilation should equ as for buildings or parts of buildin High risk location	ual or exceed the minimum free ngs without cross-ventilation Moderate risk location	exce hea
Buildings or parts of buildings areas in Table 1.4. Table 1.4 Minimum free are Total minimum free area ⁽¹⁾	with no cross-ventilation should equ as for buildings or parts of buildir High risk location The greater of the following: a. 10% of the floor area ⁽²⁾ b. 95% of the glazing area ⁽³⁾	ual or exceed the minimum free Ings without cross-ventilation Moderate risk location The greater of the following: a. 12% of the floor area ⁽²⁾ b. 80% of the glazing area ⁽³⁾	exce hea



Overheating – more issues to consider • Check and consider the EPC more than in the past. The program is being overhauled, so it's going to be more 'fit for purpose'; Roof spaces and coverings are a significant cause of overheating, especially under a slate or any other dark-coloured roof covering (one reason I inspect the roof space first, in the Summer, and why wood-boring insects find it very difficult to establish themselves in timbers under a slate roof), so check whether the insulation is sufficient; Windows (and door) openings can significantly contribute to overheating (one reason such openings are so small in older buildings in mediterranean countries) and loss of heat; thus Openings in walls (and roofs, e.g. rooflights) are potential weaknesses in buildings in three ways, they: make the structure weaker – the more openings and the bigger they are, the weaker is the element they are located in (look at BRAD 'A'), are a potential source of water penetration and condensation – that's why there are DPCs around, and trays above, them in cavity walls, plus closers, lintels etc. are now insulated, and are sometimes, or usually, thermally inefficient – as with the structure, the larger the openings are, the more likely they are to allow heat loss and thermal gain. 80



'Combined' (foul & surface water) drainage systems

- 'There are over 500,000 kilometres of sewers in this country, about a fifth of which is "combined". It is given that name because, for those 100,000km of pipe, sewage from homes is combined together with rainwater that has run into drains in our streets and roads. Overflows were built into this combined pipe to stop flooding during storms, and it is these overflows that are responsible for the many spills we see up and down the country and the associated, justified, public outrage'.
- Thus, around 20% of surveys involve these systems.
- Plus, they are usually old and in older built-up areas.



Increased and or heavier rainfall will lead to more discharge of surface water into combined drainage system

This will cause an increasing number of such systems to be overloaded, resulting in sewage and surface water 'backing up' into the system on the property you inspected – your client will sometimes see their breakfast twice!

UK Flood Defence Alliance https://www.ukflooddefencealliance.com > Shop

Drainage Non Return Valve

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Non Return Valve -Self-activating Valve Designed ... £200.00 ◊ M3 Floodtec



4.7 ***** (87)



Possible paragraphs – combined drainage

The phenomenon known as 'climate change' or the 'climate emergency' is anticipated to result in weather changes. Indeed, there are indication we are already experiencing such changes, with drier summers and wetter winters together with tropical type storms including very heavy rain and sometimes higher winds. The possibility exists therefore that the foul / combined [*delete*] public drainage system beneath the highway may at times be overwhelmed by 'flash-flooding'. Indeed, to my knowledge this has occurred in the area recently before my inspection. [*delete*] This could result in water and foul sewage 'backing up' within the combined public drainage system and causing flooding in or on the property. I recommend you install a 'non-return' valve in the last inspection chamber (man-hole) to help prevent this occurring.

There is a risk that climate change may cause the combined public drainage system to 'back up' into the drainage system on the property. This could cause flooding in the property, with a resultant risk of damage to masonry, plaster and decorations and also increase the risk of fungal decay (rot) and wood-boring insect attacks. Flooding could also affect the soil and foundations, with a possibility of damage to foundations causing structural movement. This is a risk to the property – see 'risks to property' in section ? for further details.

One surveyor's general climate change advice

'Like everything else, buildings are being affected by climate change and the home-buying public need to be aware of a new range of issues when considering a property purchase.

In the most general terms, buildings are not equipped to deal with new climate conditions in the UK. Buildings are suffering a battering from the weather on a much more regular, extreme basis. Most building parts will be shorter lived and more vulnerable to damage. Increasingly houses are overheating in summer and leaking in extreme wet weather. Gutters are often undersized, walls are being saturated before they are able to dry out, and flash flooding is more prevalent.

It is important to understand that all buildings require regular repair and maintenance and that the purchasing of a survey is in no way an indemnity against future issues. Many parts will be affected to a greater or lesser extent.



Mike Ridgell Chartered Surveyor & Sava Trainer

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Climate change is here to stay, or at least that is the view of the vast majority of the scientific community, which is confirmed by public perception (and perception is reality); The UN and other agencies believe there are likely to be significant global changes arising from the climate emergency and has identified some probabilities in that regard; Property is fundamental to people's lives in many ways and any threat or risk to their homes is a threat to their wellbeing; Even relatively minor changes to weather patterns and behaviour could pose significant threats to property; We have considered a very small number of a property's elements and the possible consequences of climate change; and

• I believe some comment, even just a simple paragraph or two (like Mike Ridgell is doing) is now a minimum requirement for survey reports.

