

LOW CARBON FUTURE, LISTED BUILDINGS, CHALLENGES OF RETROFITTING.



Retrofitting is complex, and has many options available for consideration.

Fabric First: maximising performance of the building fabric itself (components/materials) before improving M&E systems.

Low Carbon Technologies: before full retrofit, moving to sustainable technologies, solar, hydro, wind. Improving a building carbon footprint, and reducing it's financial expenditure.

PassivHaus Measures: at the uppermost level of retrofitting is PassivHaus. External fabric envelope, and sustainable technology combined to create the most complete retrofit possible

Climate Crisis – Wales declared a climate emergency in 2019, further increasing the efforts to reduce carbon emissions by 2050

Existing Housing accounts for 27% of all emissions, with 26% of all dwellings being over 100 years old, increasing to 36% by 2050

30,000 listed buildings, houses, cottages, churches, theatres, schools, universities, hospitals, castles and forts.

Listed buildings pose difficulty in renovation/retrofitting because of the desire of CADW to maintain the original aesthetic and integrity of the building.

Some buildings are beyond repair. Degradation, intentional damage, poor maintenance has led to listed buildings becoming untenable and the safest proposal would be to demolish them and replace with new buildings. Using as much of the existing materials as possible to reduce the amount of lost embodied carbon, and reducing further carbon created by sending materials to landfill

Recycling the buildings. Many listed buildings have been left abandoned due to high maintenance costs and inefficiency. The larger properties will require change of use, which would increase retrofit costs further. This could aide in reducing the homeless crisis in Wales

Lack of trained skillspeople. To retrofit the whole of the UK it would require one building to be retrofitted every 35 seconds, 500,000 simultaneous retrofits, and 2,000,000 retrofit trained designers/tradespeople/technicians

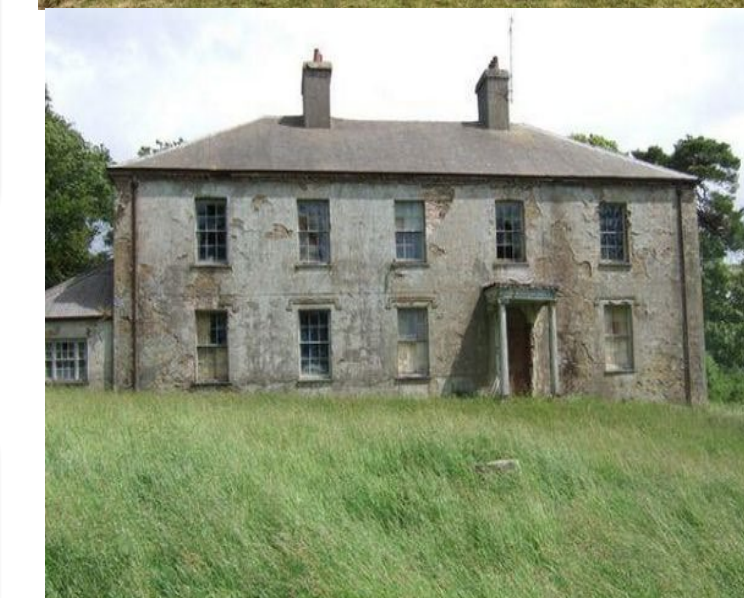
Many listed buildings are large, and the expenditure for those can be extremely disproportionate to the value of the property.

Toxic materials. Most listed buildings have had remedial work, renovation, or repurposing work done over their lifespan. This could involve toxic materials such as asbestos, lead, and cadmium. All of these involve extra cost to remove, and possible danger to life.

Old buildings were designed to be sturdy, and not much else. A full retrofit on old technology may create maintenance issues with the existing structure. Trapped moisture, non-breathable buildings could create a damp environment that could nullify the benefits of the new technology.

Old skills. Most listed buildings are made from local stone and the art of stone masonry is now limited to very few tradesmen available to conduct repairs to the pointing with appropriate materials.

Reducing draughts. While many listed buildings have had modern heating systems installed over time, they still have chimney flues. These would need to be totally removed to eliminate the issue, as over time a blocked chimney will still develop water ingress, causing damp and damage.



References

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