Introducing Retrofit

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What is retrofit and why does it matter?

- ‘Retrofit’ is a word used to describe making changes to an existing building, about the way the building uses energy
- This matters because:
  - We need energy for heating, hot water, cooking, lighting, electrical appliances
  - Buying energy is expensive for households, so using it efficiently is important
  - An energy efficient home can be more comfortable, and healthier to live in
  - Much of our energy still comes from fossil fuels, causing carbon emissions and climate change
  - We import energy from other countries, and these supply sources are not always secure
  - Most UK existing homes are not energy efficient, and we are building new homes slowly
  - Our energy standards for new homes are not strict enough to meet carbon targets – so even homes being built now may need to be retrofitted

What is retrofit in practice?

These are the main things that are currently retrofitted to homes:

- Thermal insulation – to slow down the loss of heat: walls, roof, floor, windows and doors!
- Installing renewable electricity generation – photovoltaic (PV) panels
- New systems for providing heating and hot water, or improvements to existing ones:
    - More efficient boilers
    - Better heating controls
    - Change of heat source, such as:
        - replacing a boiler with a heat pump
        - installing solar thermal (hot water) panels

Retrofit decisions – things to think about

- The cost of the work – and are there grants or loans to help?
- How much can it save on energy bills – how long will it take to get my money back?
- How much will it save on carbon emissions?
- Will it change how the house looks (inside or outside)?
- Who can do the work?
- Will the work disrupt everyday life while it is being done – noise, dust, mess, need to redecorate etc?
- What to do first (usually best to do thermal insulation ‘fabric’ first)
- When is the best time to get the work done?
    - Does it involve other work (replastering, redecorating, scaffolding)?
    - How does it fit in with the life of the household?

Retrofit – when to do it?

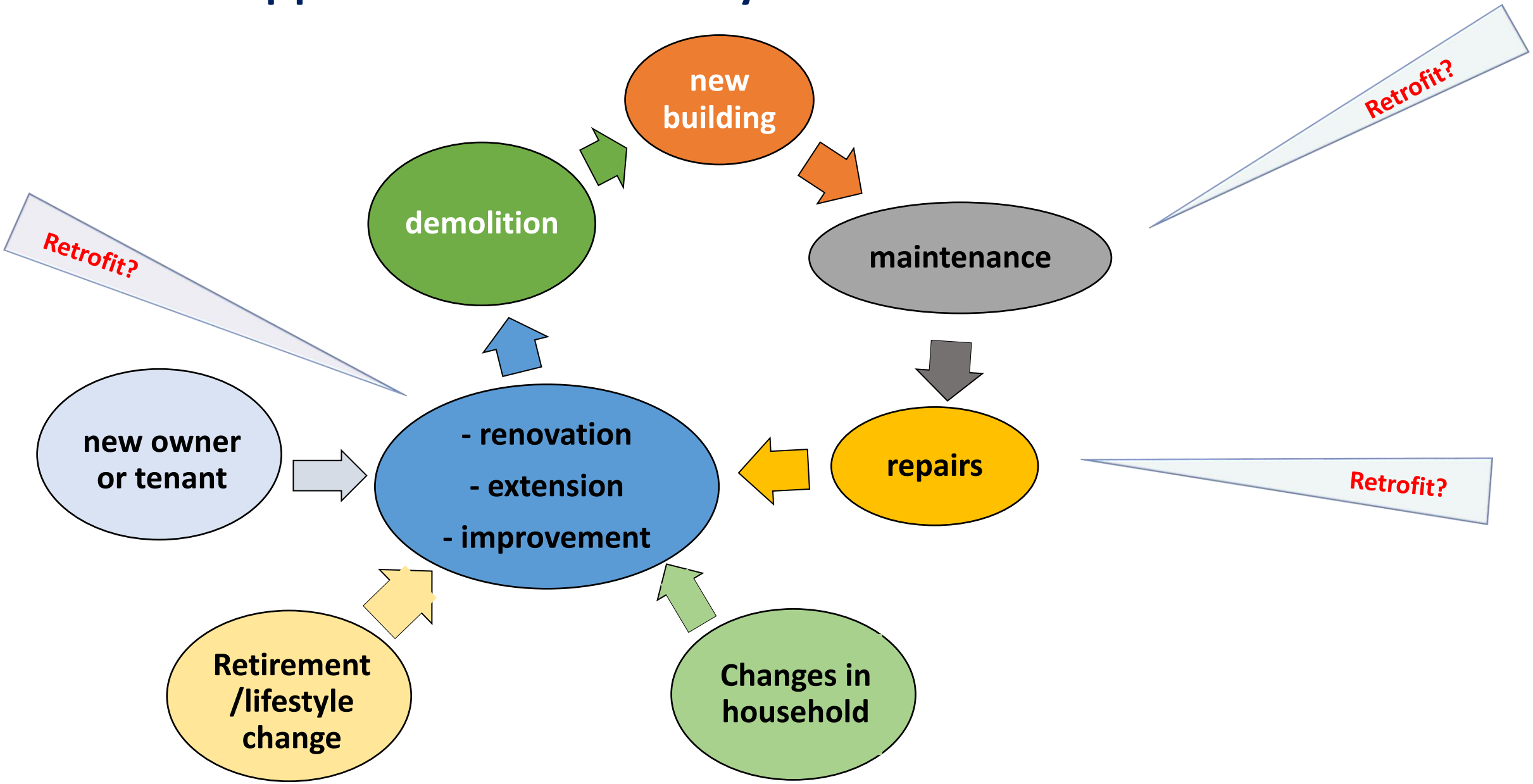
Retrofit measures which can generally be done on their own

- Cavity wall insulation
- Loft insulation
- Double glazing
- Low energy lighting
- Insulating pipes and hot water storage tank
- External wall insulation
- Solar panels, new boiler, heat pump

Retrofit measures that involve other work – more disruptive

- Internal wall insulation
- Sloping ceiling insulation
- Underfloor insulation

Retrofit opportunities in life-cycle of a home



Retrofit example: 1940s semi

- Loft already insulated
- Double glazed
- Gas central heating
- Single elderly occupant, finds it too cold, worries about gas bills

Retrofit solution:

- Identified external wall insulation as priority
- Improved comfort
- Reduced length of time heating needs to be on
- Lower bills

Retrofit example: 1970s maisonette

- Only heating was on-peak electric panel heaters, very expensive to run
- Flat roof leaky
- Home was cold and damp

Retrofit solution:

- Repaired flat roof, which offered opportunity to insulate at same time
- Got cavity walls insulated for whole building at once, including flat downstairs
- Fitted air to air heat pump
- Home now warm and dry

Retrofit example: Victorian brick-built semi

- Painted brick, in a Conservation Area
- 250mm loft insulation
- Gas central heating, with efficient condensing boiler
- Double glazing already installed

Retrofit solution:

- External wall insulation to side and rear
- Internal wall insulation to front (where external not allowed as it would alter appearance)
- Improved comfort – walls feel warmer on inside

Retrofit example: rented stone cottage

- Leaky flat roof, so tenant contacted local builder
- House quite cold as well as damp

- Builder suggested insulating flat roof at same time
- ..and why not loft area too? Landlady said ‘yes’
- Builder then suggested PV too
- Contacted PV company, and arranged for tree trimming
- Builder also put in TRVs and chimney balloon (to raise the Energy Performance rating to get the Feed in Tariff available at that time)
- Cold leaky house now warm, dry and generating….