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Welsh Government

Innovative Housing Programme Optimised Retrofit

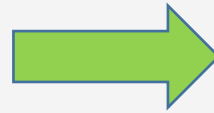
Timothy Mann – Welsh Government
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What started us on this journey? (one thing leads to another)



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(Committee for Climate Change - Net Zero Tech Report p.79)



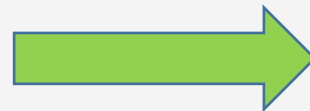
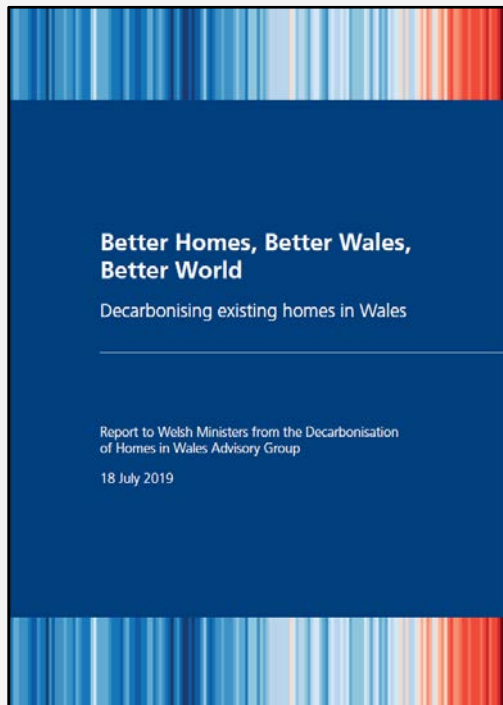
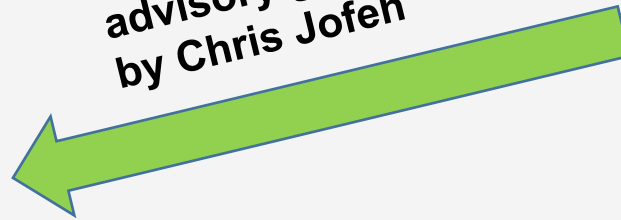
This is set in the context of,

- Environment (Wales) Act 2016
- Welsh Ministers have made decarbonisation one of their top six cross government priorities in “Prosperity for All: the national strategy”
- Declaration of a ‘Climate Emergency’ by Welsh Ministers on 29 April 2019 – pushing towards a 95% target.

‘Critical role of energy efficiency in the near term’

‘Early deployment of measures to maximise energy bill and Carbon savings and prepare the stock for low carbon heating.’

Set up independent advisory group led by Chris Jofeh



Action 2.3 – The Welsh Government should urgently commence a 10-year programme to prioritise the retrofit of certain homes.

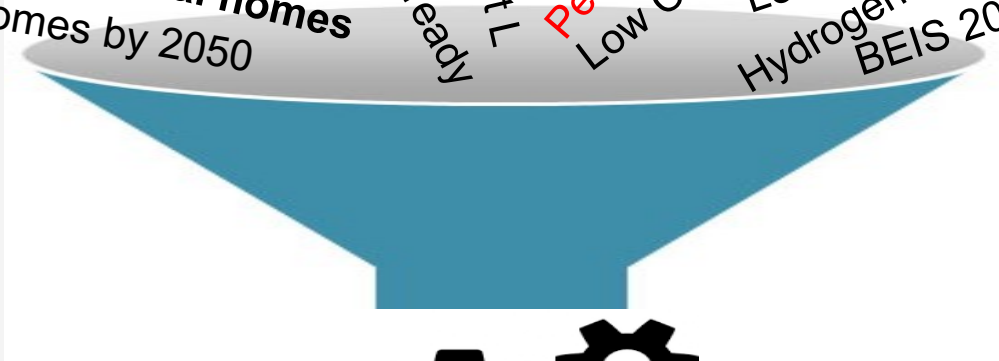
(a) The Welsh Government should set a target of EPC Band A for homes in social ownership and homes in fuel poverty.

(b) The Welsh Government should incentivise early adopters to retrofit homes to a target of EPC Band A.

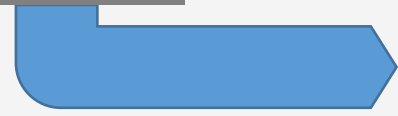
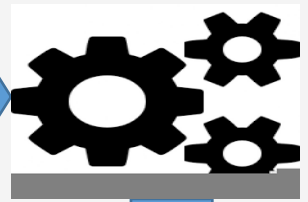
What do we know so far? (today)



Stock modelling data
EPC revision
Heating technology
Post COVID financial recovery
UK CCC net zero targets
DAG recommendations
SAP 92 by 2030-Social homes
SAP 92 homes by 2050
Net Zero ready
Part L
Carbon budgets
Building fabric
People & Behaviour change
Low Carbon gas grid – Bio methane
Renewables
Low Carbon electric grid – 75% by 2030
Hydrogen
BEIS 2050 homes target 15kWh/M2/year



Welsh government policy



Optimised
Retrofit
Approach



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What Does Optimise Mean?

Optimise (verb)

- Make the best or most effective use of (a situation or resource).

What is Optimised Retrofit?



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‘Optimised Retrofit’.

‘The best (value) combination of decarbonised heating and fabric improvements for decarbonisation of a home to make it ‘Net Zero’ ready’ when considering a whole system approach to the three interrelated factors of;

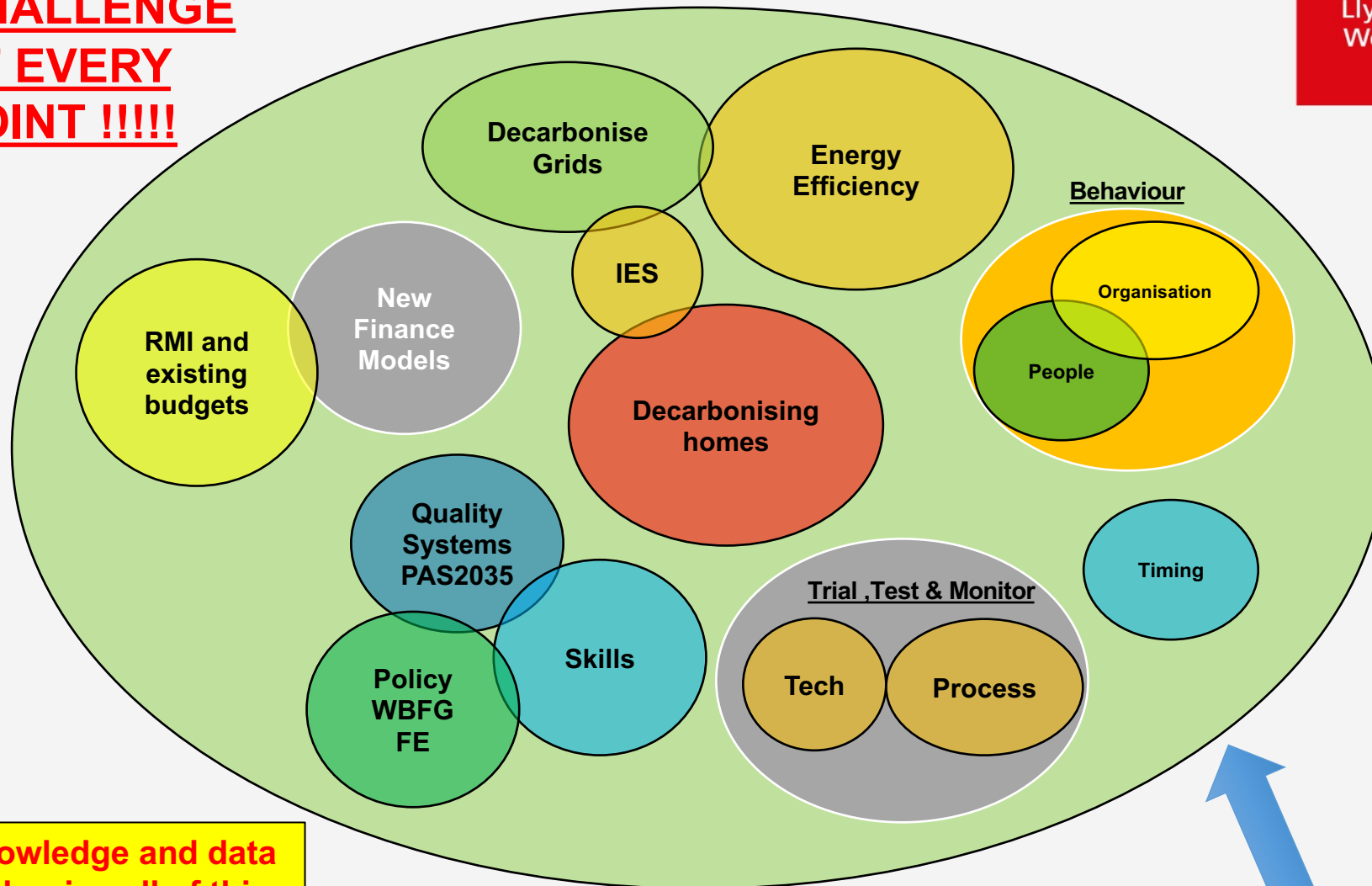
- 1. Building fabric.**
- 2. Heating technologies and Individual Renewables / energy storage.**
- 3. Energy supply grids**

The World of ORP



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CHALLENGE
AT EVERY
POINT !!!!!



Knowledge and data underpins all of this

These are examples of issues you need to consider in every home passport

Green-led Economic Recovery



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- ORP is a cross Government initiative which is looking to **maximise local content & SME engagement**
- Retrofitting of homes has long been recognised as a key tool in economic recovery
- Evidence shows that for every £1.4 million of investment in the delivery of domestic energy efficiency, 32.6 jobs are created / supported

(Source: The value case for decarbonising homes in Wales literature review, Cardiff University, 2020)

Green-led Economic Recovery



- Previous housing retrofit projects have demonstrated multiple benefits which could enable a Green-led economic recovery creating:
 - local jobs to build the foundational economy
 - contribute to decarbonisation
 - provide skills
 - tackle fuel poverty
 - provide better homes



Goals of Optimised retrofit for Net Zero ready



Avoid over investment at all levels ✓

Solution appropriate to each home (passport) ✓

No regret actions that can be built upon in future ✓

Energy efficient to be robust to fuel cost increases ✓

Best Carbon vs capital cost vs fuel cost performance ✓

DSR flexible and smart (IES), grid connected and progressing along the route to net zero capable in readiness for low Carbon energy supplies ✓

Fabric retrofit Measures

- Draught-proofing
- Well insulated Loft
- Thermally efficient windows and doors

- Airtightness
- Ventilation
- Wall insulation (CWI)

- Wall insulation (EWI)
- Wall insulation (IWI)
- Floor insulation

- Low levels of cost or technical competency

- Moderate levels of cost or technical competency

- Higher levels of cost or technical competency

Technology Measures

- A-rated gas boiler – grid connected
- A-rated LPG boiler with wet heating system

- Smart hybrid heat pump system
- Smart grid connected heating controls (IES)
- Battery storage
- Solar Panels
- Heat storage

- Active homes thermal panels
- Advanced PV Fabric systems

IES



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Is **NOT** a smart meter or a
convenience gadget such as
HIVE or NEST

IES

Mandatory requirement



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- Must be able to connect to energy supply grids and use DSR tariff
- Controls energy in and the use in the home to optimise cost and carbon benefits
- Open source and future proof – can be modular
- Monitors and records energy used in real time to give actual performance of the home / building to demonstrate with data the;
 - Current building energy performance
 - Impacts of any physical measures carried out on the building
 - Demonstrates changes of occupant behaviour (eg effect of energy efficiency advice)



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Questions?

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