

# Future Development Planning - New Build & Retrofit

## Foresighting, resilience and delivery for upcoming issues

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# OVERVIEW



- **Green JEDI: JUST+ECONOMIC+DECARBONISED & INNOVATIVE**
- Net Zero DEMANDS - Policy, Procurer & Public (PPP)
- New Developments – Supply chains and Skills
- Retrofit impact on new build sector delivery
- Be ready for retrofit system ‘archetype’ solutions
- Growing significance and **importance of Offsite for new build**



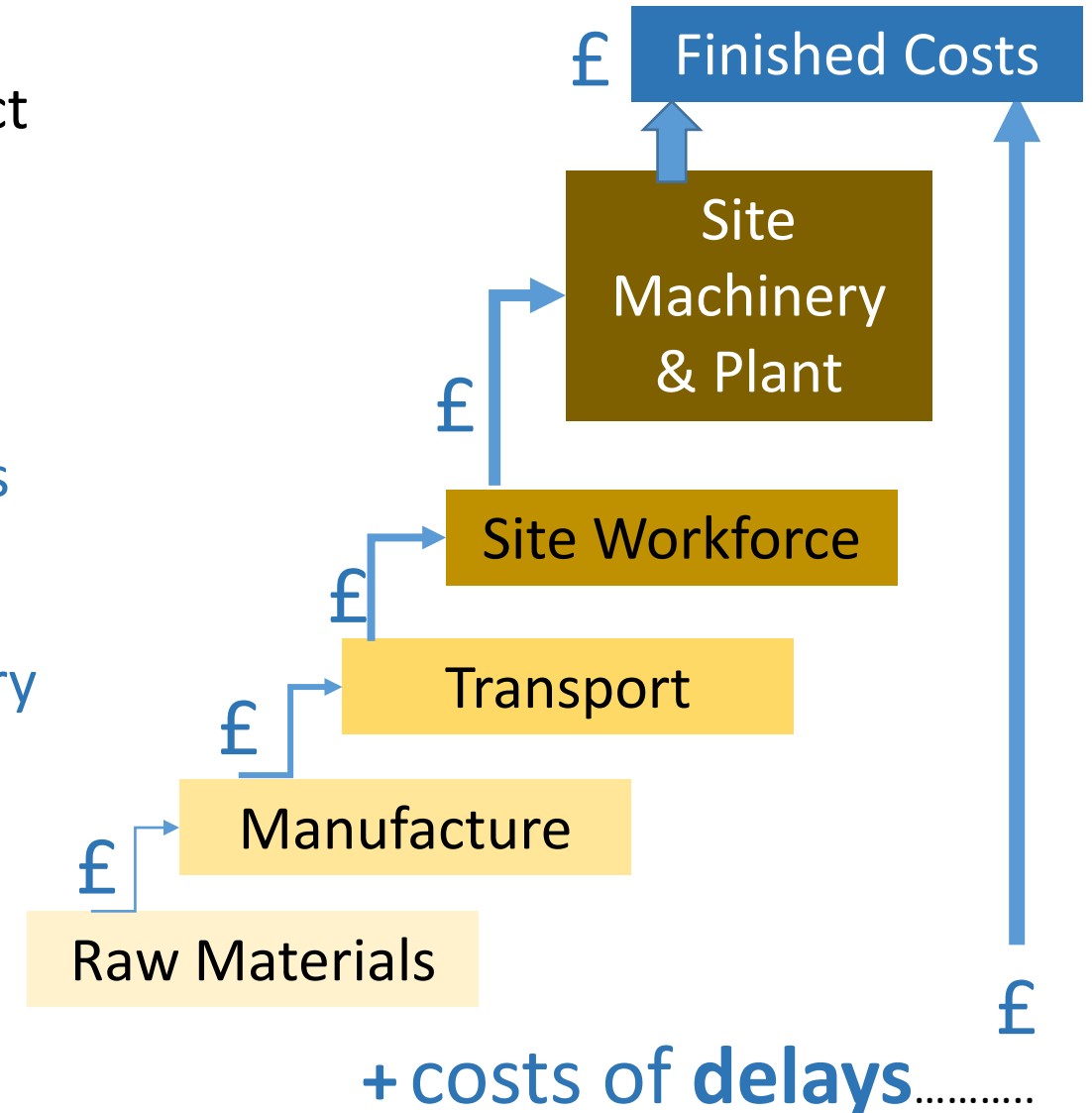
## ONGOING & FUTURE ISSUES

- Global supply chains
- Synergetic delivery of green (net zero) infrastructure
- Material demands
- Resilience in planning sites / delivery / costs

# Global & EU Factors

Whilst 'Brexit+COVID' have created the 'perfect storm' there is an '**underpinning of ongoing future impacts**'

- Net zero targets across so many countries
- Similar technology and material approaches
- Rising energy and labour costs
- COVID ongoing impacts to workforce, factory and port shut downs and supply chains
- Price increases across many products
- Also transport price increases (pallets, drivers, shipping cargo etc..)



# Retrofit of Buildings

For Scotland to hit the net zero target by 2045 it will require to retrofit **113,000 homes** per year (*NOTE: Target for net zero heating systems is 2040*)

## 2050 Net Zero targets

- England retrofit needs: **850,000 homes** per year
- Europe retrofit needs: **11 million homes** per year



Parallel synergetic demand on similar construction and low carbon heating systems across so many countries will place high demand pressures and result in increased costs, particularly as the **UK is very dependent on importing such energy systems.**

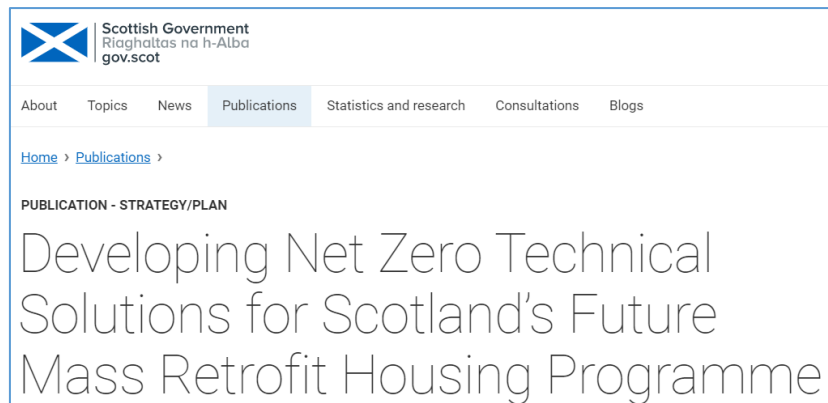
# Retrofit of Buildings

The retrofit sector for many countries has still to get fully underway. Likely to lead to higher demands and supply pressures for this market sector

- **Influencing the markets** for building membranes, energy fabric insulations, micro renewables (solar PV, solar-thermal, air source heat pumps and mechanical ventilation heat recovery systems).
- **Future shift from gas to non-fossil fuel energy** systems for new housing with no clear optimum alternative solution places
- **Growing focus on future electrical powered** systems for heating, water and transport (such as EV) indicates demand will be particularly high for specific material resources.

# Retrofit of Buildings – ZEST Report

- Joint LA and HAs led report
- Strong focus on ‘Fabric First’
- Reduce fuel costs & fuel poverty
- Readiness for future energy systems
- Planning for Archetype approaches (*Mass retrofit approach for economies of scale*)
- Align property portfolio with Archetypes



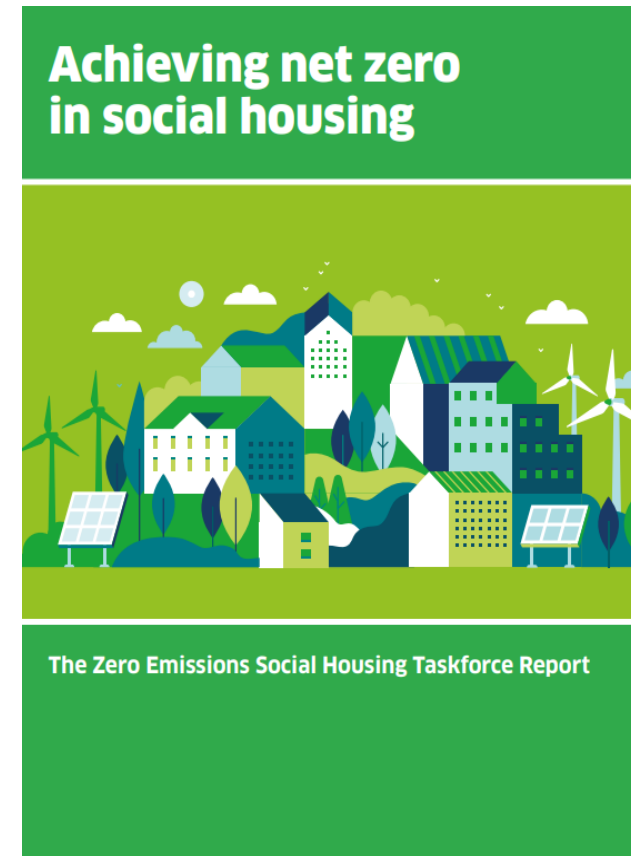
<https://www.gov.scot/publications/developing-net-zero-technical-solutions-for-scotlands-future-mass-retrofit-housing-programme/>



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PUBLICATION - INDEPENDENT REPORT

Achieving net zero in social housing:  
Zero Emissions Social Housing  
Taskforce report



<https://www.gov.scot/publications/achieving-net-zero-social-housing-zero-emissions-social-housing-taskforce-report/>

# New Build & Retrofit of Buildings

- ASHPs, GSHPs, PV, Solarthermal
- Thermal battery storage
- Hydrogen?
- Microwave heating systems

## *Considerations...apart from costs?*

- Real...contribution to net zero
- Reliability / performance / efficiency
- Application to houses and flats
- Existing services / pipework
- Ease of install & Maintenance
- Space utilisation & Noise

### SUNAMP Thermal battery storage



Traditional hot  
water cylinder

Sunamp heat  
battery

<https://sunamp.com/residential/>

### HEAT WAYV Microwave heating



Expected 2025 after pilot  
trials 2022-24

<https://www.heatwayv.com/resources/faq2/>

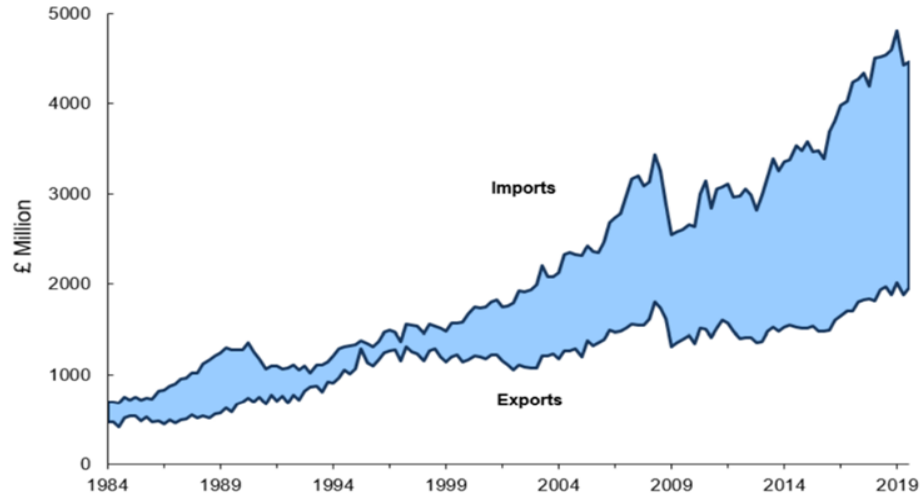


# Imports / Exports Key Products



## Imports and Exports of Construction Materials

**Chart 7: Exports and Imports of Construction Materials, UK.**  
Value in pounds sterling



Source: Monthly Statistics of Building Materials and Components, Table 14

**Table 14 : Value of Overseas Trade in Selected Materials and Components for Constructional Use : Imports (cif) & Exports (fob)**

United Kingdom		Current Prices (£'000)					
		2014	2015	2016	2017	2018	2019
Pumps (circulating)	Imports	37,205	38,310	47,261	38,761	65,214	76,338
	Exports	6,894	12,767	10,483	13,573	8,978	9,494
Central Heating Boilers	Imports	590,564	584,030	624,423	640,815	664,916	622,219
	Exports	63,436	75,463	110,656	152,292	180,696	173,005
Radiators	Imports	181,277	184,085	191,200	210,206	213,025	226,528
	Exports	41,046	40,929	45,208	49,243	50,045	40,353
Water Heaters	Imports	122,971	127,898	139,385	148,614	153,555	164,460
	Exports	58,529	65,808	65,569	71,045	73,064	68,307
Space Heaters	Imports	126,100	130,099	140,966	150,464	165,358	155,836
	Exports	30,221	31,490	32,277	40,711	47,546	56,944
Fan Systems	Imports	223,294	245,360	291,210	205,348	237,937	267,822
	Exports	151,261	143,119	129,268	84,271	106,124	140,883
Air Conditioning Equipment	Imports	534,282	518,087	585,067	663,142	659,164	652,275
	Exports	269,524	284,946	340,891	374,499	412,136	403,328
Air Purifying Equipment	Imports	82,949	78,450	97,383	104,833	128,375	153,039
	Exports	223,275	229,591	280,094	253,924	277,036	284,498
Meters	Imports	59,692	97,599	170,651	308,905	224,724	195,800
	Exports	76,447	73,939	68,224	65,336	41,624	26,422
Electrical Wires	Imports	1,573,631	1,555,575	1,722,019	1,927,463	1,902,786	1,849,576
	Exports	643,696	685,189	711,411	855,361	866,414	873,821



# Office Market Changes / Communities



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- Changing nature of land and buildings use 'post covid'
- Conversions - commercial offices and public buildings into residential
- Potential to re-energise some city and town centres
- Placemaking – key area of government policies
- 20 min neighbourhoods - planning-decision tool
- Mapping future use of gap sites
- Modular/offsite systems may also increase



See latest Scottish Government  
4<sup>TH</sup> Planning Framework

<https://www.gov.scot/publications/scotland-2045-fourth-national-planning-framework-draft/>

# Net Zero Targets = Material Needs



- Mainly focused currently on “operational carbon”
- Governments yet to state *when and if* embodied carbon, whole life carbon will be included
- Focus on your Scope 1 & 2 emissions first - direct control of via assets emissions (1) and source of energy (2)
- Scope 3 is related to indirect control – including supply chains
- Net Zero is a medium to long term delivery schedule. Don't rush to install energy systems you may require to remove later
- Fabric first is key

## Net Zero Targets

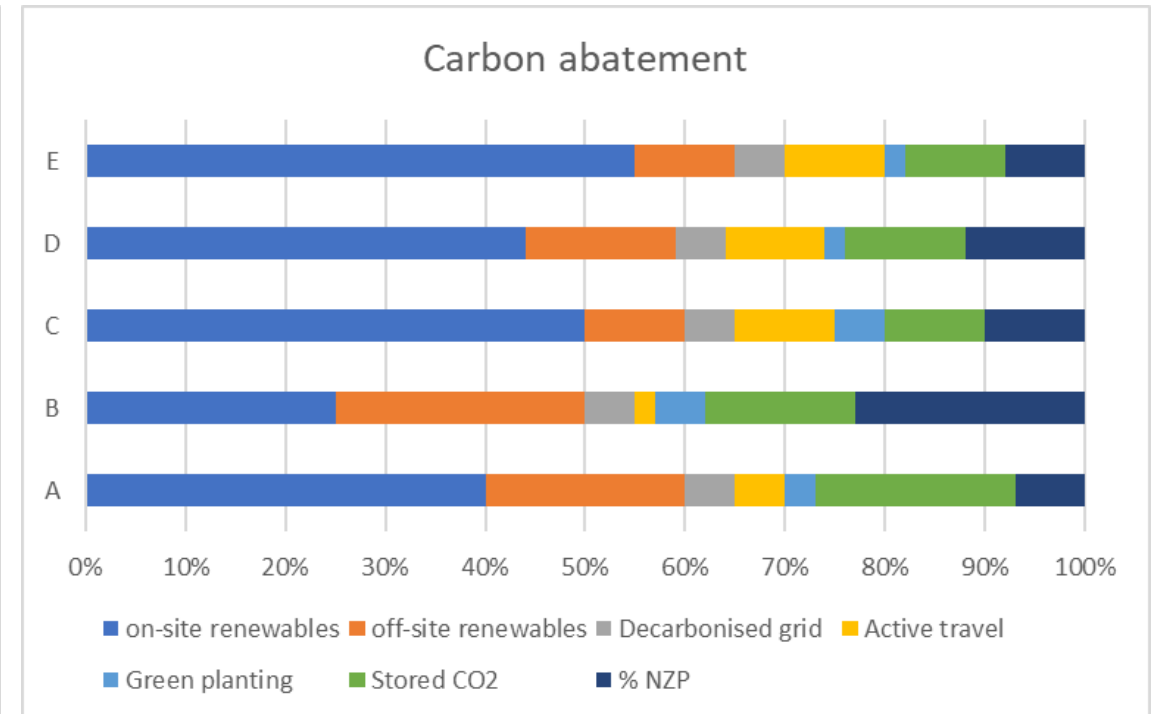
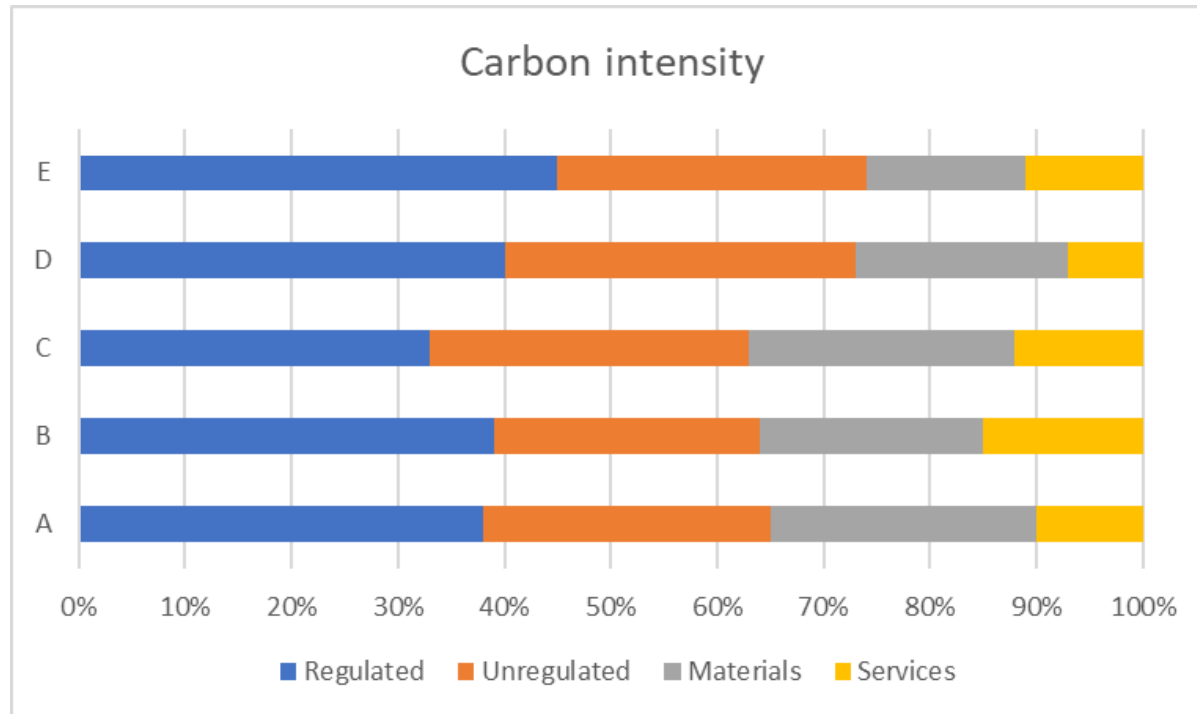
Glasgow	2030
Edinburgh	2030
Scotland (heating)	2040
Scotland	2045
UK	2050
EU	2050

# Net-Zero Carbon DNA:

## Building or Estate Net-Zero Potential (NZIP)

- Example – 5 buildings (A to E)- mapping carbon intensity and abatement potential
- Track and record your buildings or estate's Net Zero focus areas, delivery and outcomes (NZP)

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# Recommendations

- Develop a detailed database of Housing Condition stock
- Analysis of key 'fabric first' plans – mapping 'material' needs
- Archetype 'retrofit' approach – track ZEST outcomes
- B-2-B relationships will be key
- Monitor and get involved with trialling energy systems
- Offsite likely to increase – are you ready?
- Further skills crunch coming (pressures of NZ retrofit growth)

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End of Presentation



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