



University of
Strathclyde
Glasgow

Balance Symposium - 10/09/26

Lessons for Scotland from global & UK policy trends

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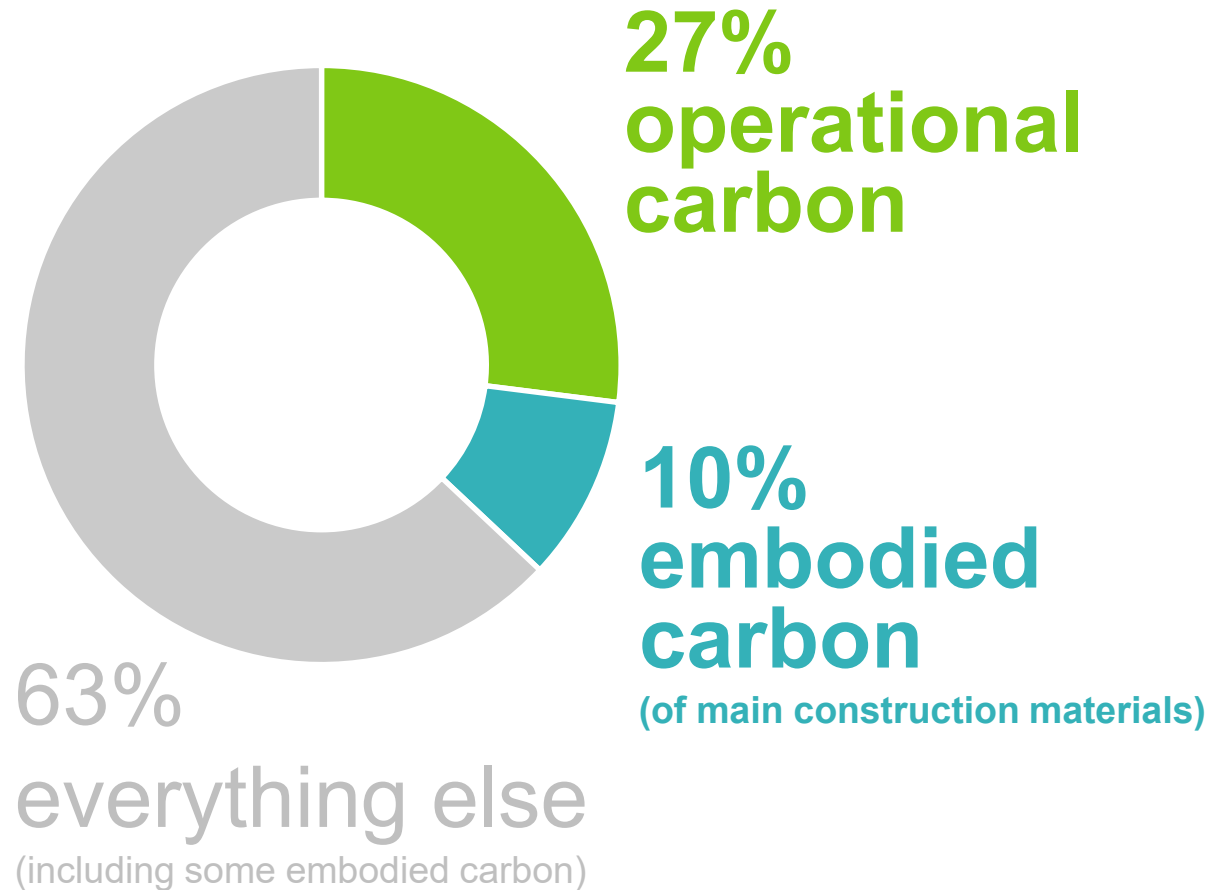
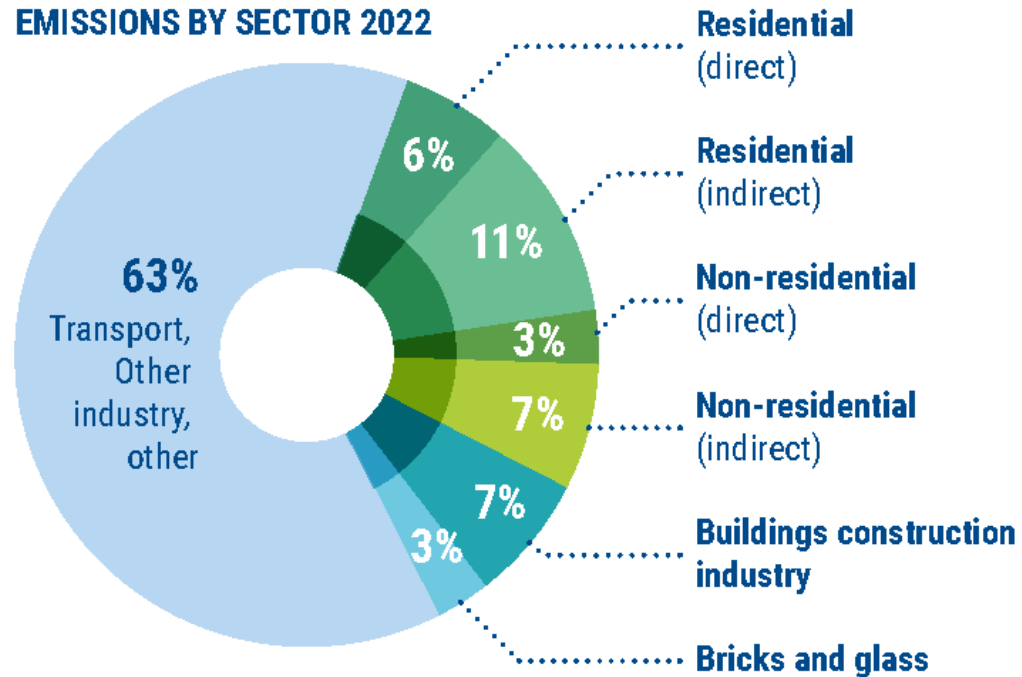
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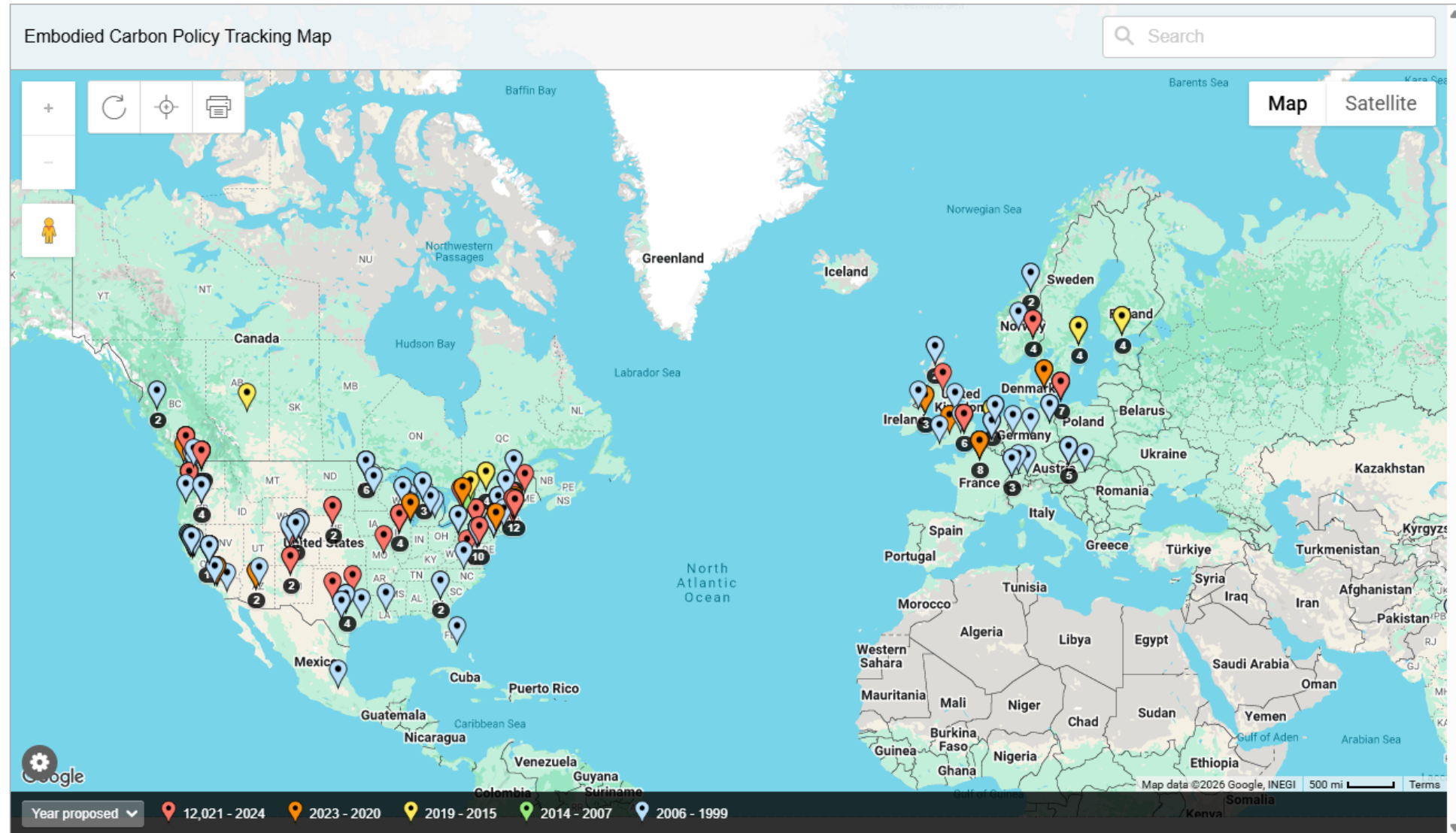
Slides available at jannikgiesekam.co.uk

Global energy & process CO₂ emissions

EMISSIONS BY SECTOR 2022



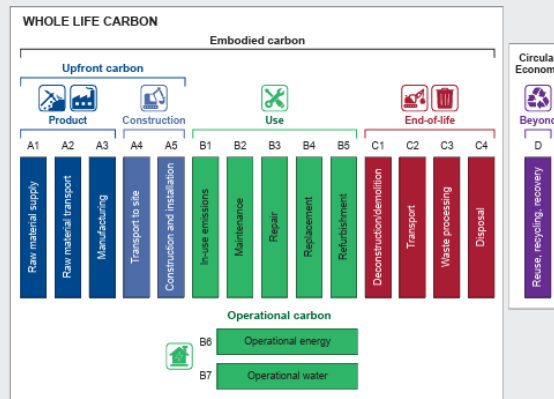
Emerging global policy trend



International policy reviews

International Survey of Mandatory Whole Life/Embodied Carbon Requirements in Building Codes and Regulations

June 2025



CONSTRUCTION CARBON REGULATIONS IN EUROPE REVIEW & BEST PRACTISES

OCTOBER 2022



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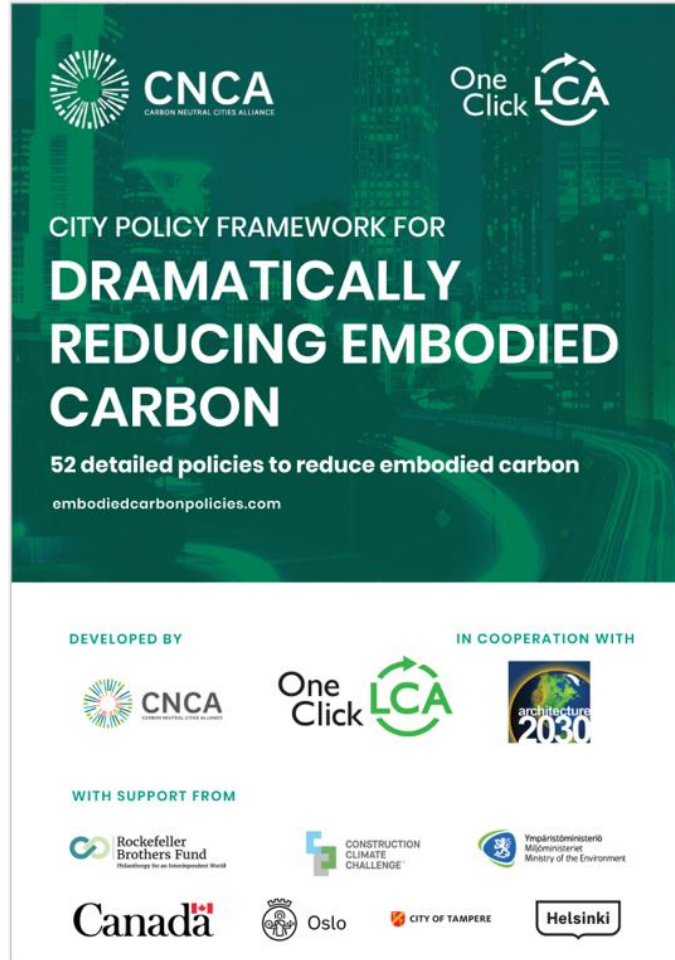
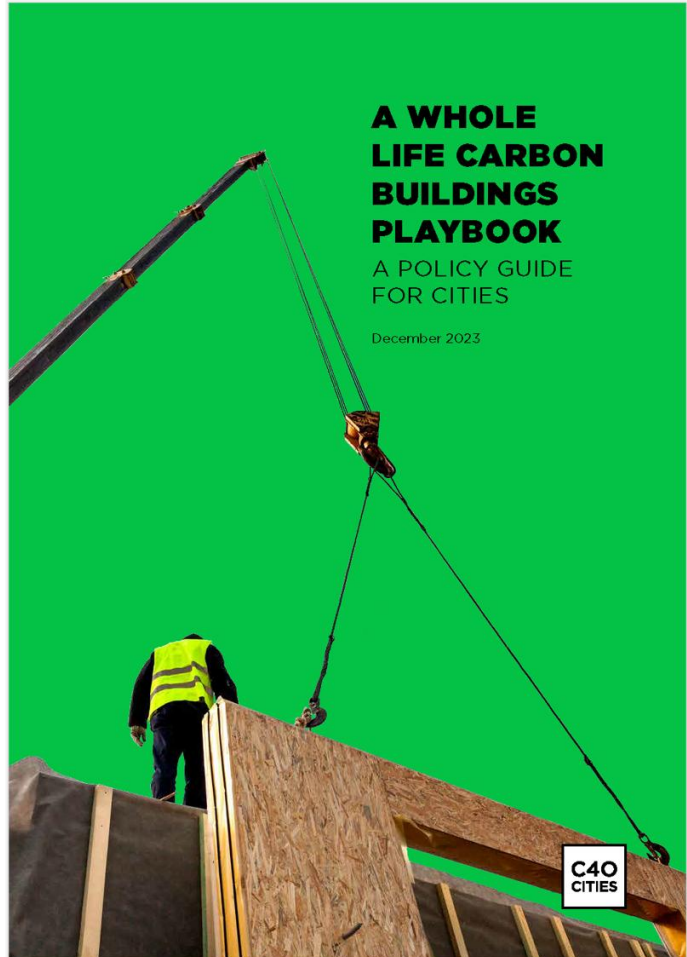
EPBD implementation case studies

How life cycle GWP measures are being implemented by governments

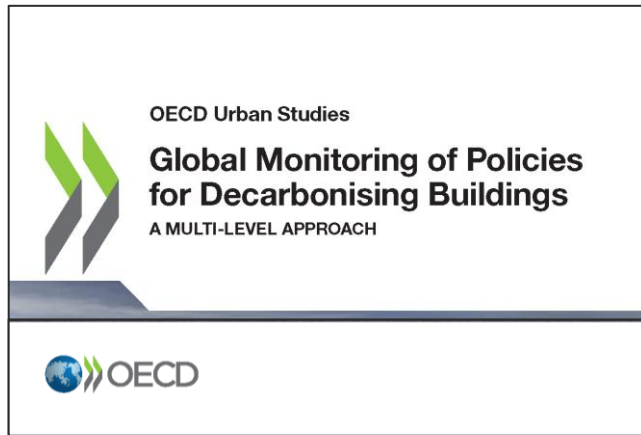
Measures taken in
Denmark, France, Sweden and London



Policy development guides



National regulations



11% of respondents: embodied carbon in policy, further 43% of respondents 'future priority'



EU Energy Performance in Buildings Directive: regulating embodied carbon **starting 2028**

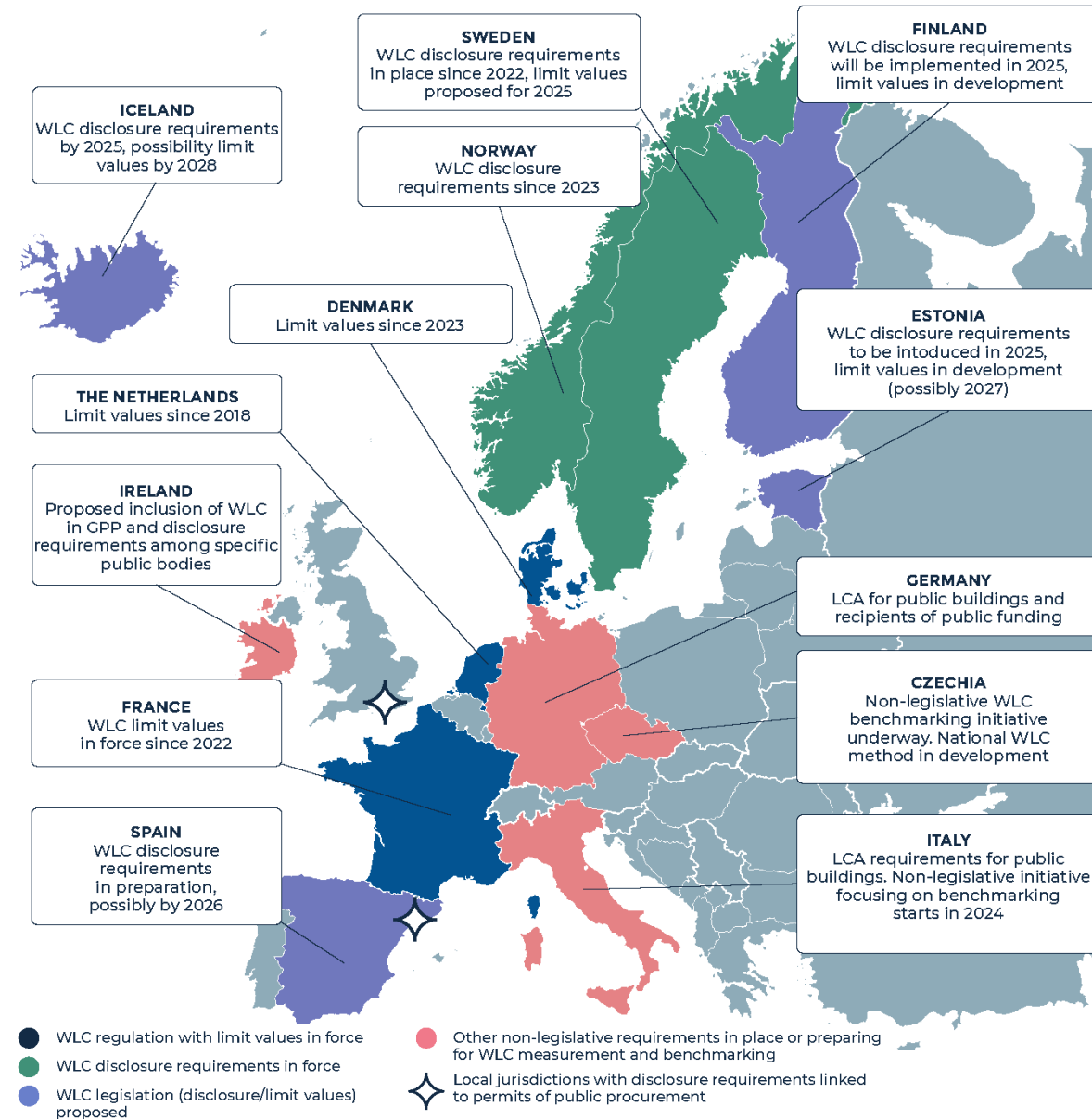
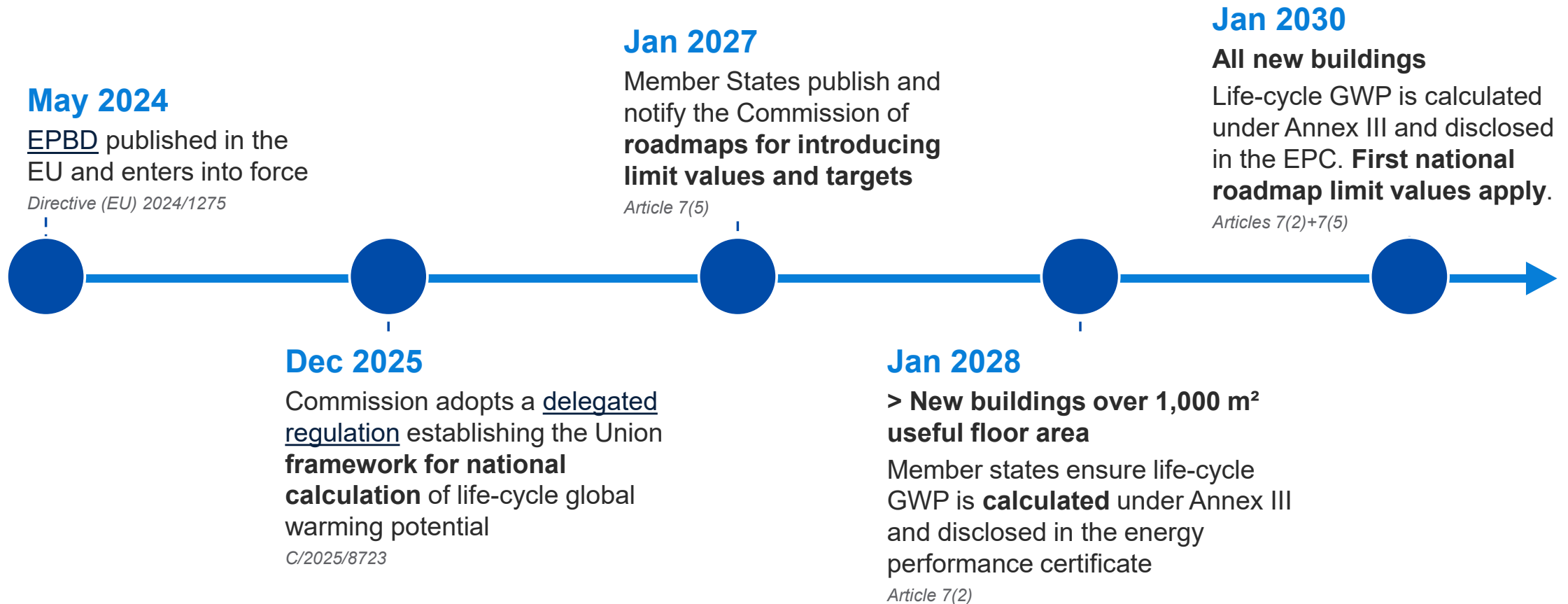
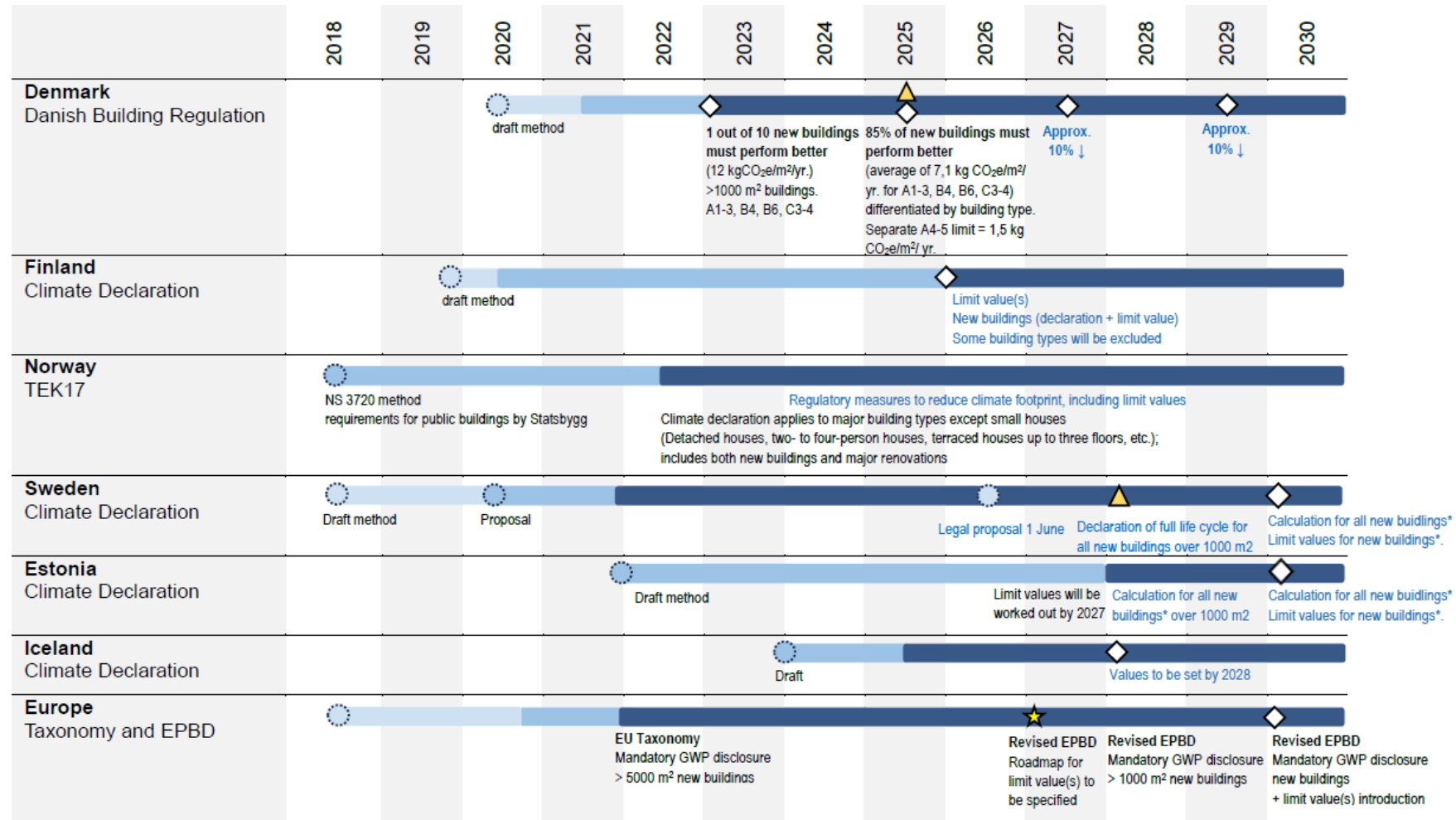


Figure from BPiE (2024) [How to establish whole life carbon benchmarks](#)

Timeline for EU requirements



Nordic regulations timeline



- Integration in national legislation
- Test phase of coming regulation
- Preliminary method development
- Limit values (to be) integrated
- Draft method publication
- Declaration scope extension
- "Blue" indicates proposals, not final decisions
- ★ Roadmap
- * New buildings for which energy is used to condition the indoor environment

Example – Danish limits

Limit values for new construction (kgCO ₂ e/m ² /year)	2025	2027	2029
Average limit value	7.1	6.4	5.8
Holiday homes <150 m ²	4.0	3.6	3.2
Holiday homes ≥150 m ² , single family and row houses	6.7	6.0	5.4
Apartment and office buildings	7.5	6.8	6.1
Institutions and other building typologies	8.0	7.2	6.4
<i>Individual limit value for construction process</i>	<i>1.5</i>	<i>1.3</i>	<i>1.1</i>
Average limit value including construction process	8.6	7.7	6.9

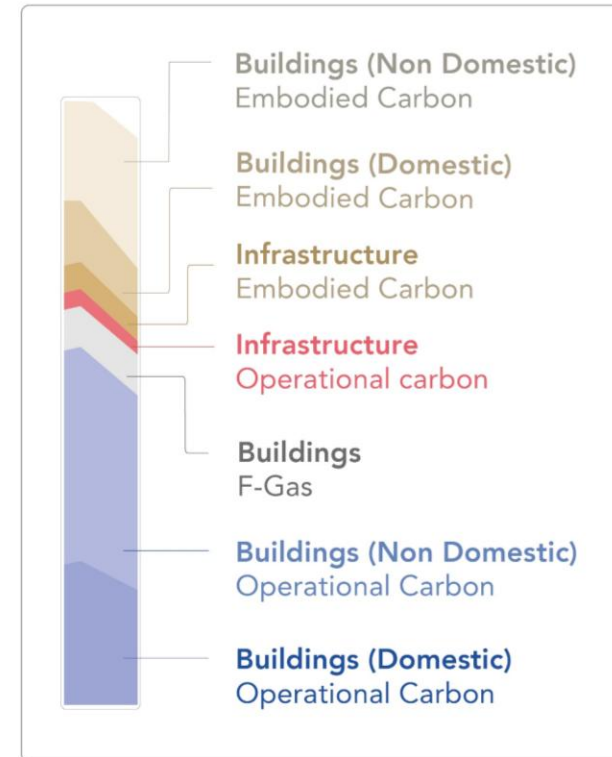
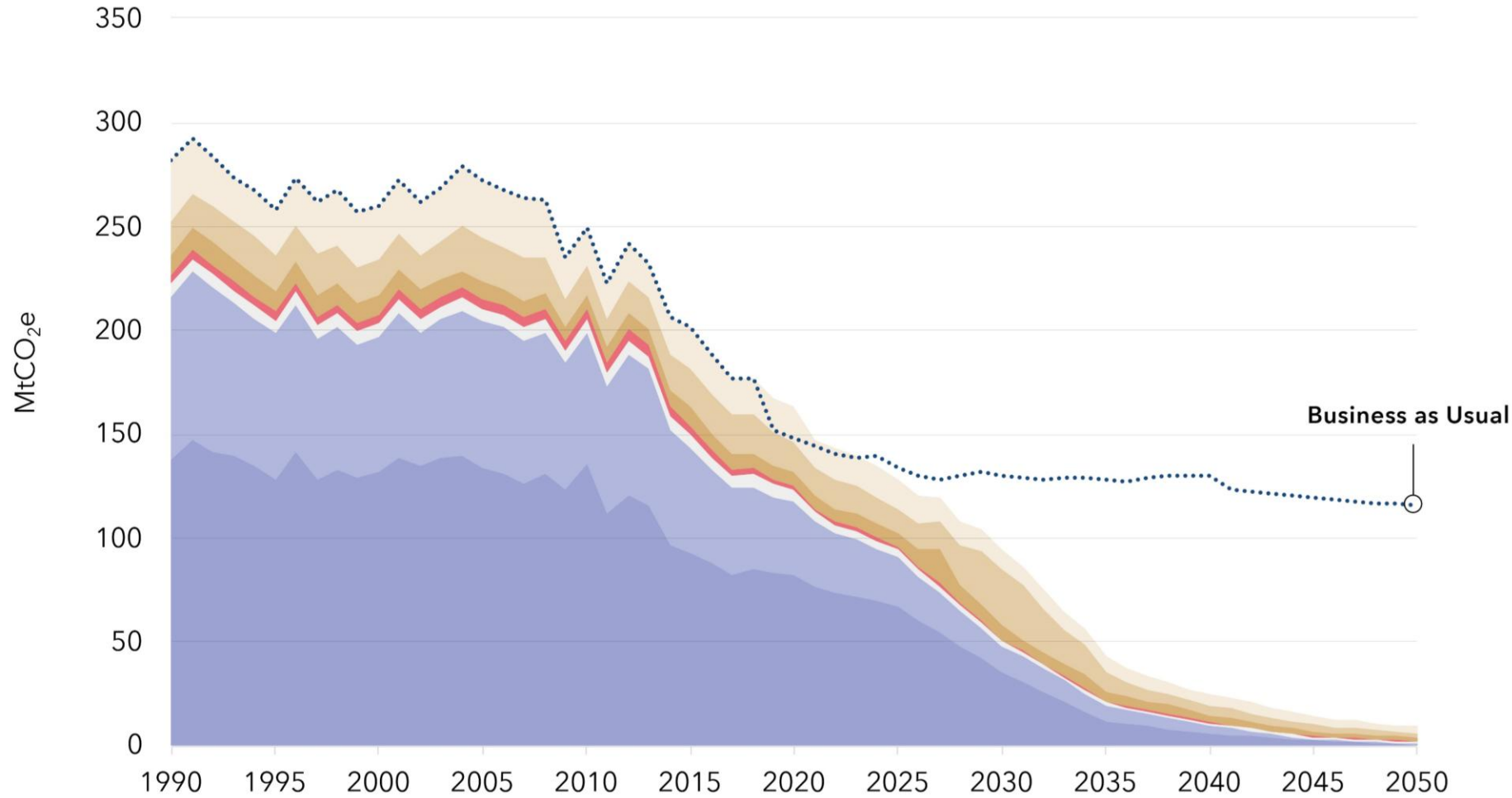
Comparison within Nordic countries

Included life cycle stages	Denmark	Estonia	Finland	Iceland	Norway	Sweden	Level(s)
A1-A3	✓	✓	✓	✓	✓	✓	✓
A A4 Transport to site	✓	✓	✓	✓	✓	✓	✓
A5 Construction	✓	✓	✓	✓	✓*	✓	✓
B1 Use in building							
B2 Maintenance							
B3 Repair							
B B4 Replacements	✓						
B5 Refurbishment							
B6 Energy	✓						
B7 Water							
C1 Demolition works							
C2 Transport							
C C3 Waste management	✓						
C4 Final disposal	✓						
D Additional	✓						
*Only waste included							

	Denmark	Estonia	Finland	Iceland	Norway	Sweden	Europe
Included building parts	BR28	Proposed draft method for climate declaration (2021)	Climate declaration	Climate declaration proposal (under development)	TEK17	Climate declaration 2022	Limit values 2025 Climate declaration 2027 (Boverket's proposal)
Site preparation	-	-	soil stabilization and site reinforcement elements	-	-	-	reported separately from 2027
Substructure							
Foundations	X	X	X	X	X	X	X
Piling	X	X	X	X	X	X	X
Basement walls	X	X	X	X	X	X	X
Ground floor structure	X	X	X	X	X	X	X
Superstructure							
Frame (columns, beams)	X	X	X	X	X	X	X
External walls, façade	X	X	X	X	X	X	X
External doors, windows	X	X	X	X	X	X	X
Balconies	X	X	X	X	X	X	X
Roof structures	X	X	X	X	X	X	X
Internal walls, load- and non-load bearing	X	X	X	X	X	X	X
Floor slabs	X	X	X	X	X	X	X
Internal doors	X	X	X	X	X	X	X
Stairs and ramps	X	X	X	X	X	X	X
Wall and ceiling interior finishes and coverings	X	X	X	X	X	X	X
Flooring materials	X	X	X	X	X	X	X
Suspended ceilings	X	X	X	X	X	X	X
Internal finishes							
Lifts and escalators	X	X	X	X	X	X	X
Building services							
Electricity system	-	-	X	X	X	X	X
HVAC system	X	X	X	X	X	X	X
Renewable energy systems	X	X	X	X	X	X	X
Water system	X	X	X	X	X	X	X
Sewage system	X	X	X	X	X	X	X
Other systems (e.g. firefighting)	-	-	X	X	X	X	X
External works	only if included in the area definition	-	only external structures on yard	-	-	-	-
Furnishing							
Fixed furniture	-	-	X	-	-	-	-
User furniture	-	-	-	-	-	-	-

Country/Region	(in place or proposed) Regulation	RSP	Floor area definition	external wall thickness	Primary functions	Secondary functions (e.g. circulation area, storage)	Internal walls and columns	Basement/cellar	Stairs	Common facilities (in multi-units, incl. staircase, lift, vertical voids)	Enclosed car park connected to building	Attic	Roof/terrace	Plantrooms on roof	Balcony	External area including car park
Denmark	Danish Building regulation (BR28) – embodied part	50	reference area	X	X	X	X	If ceiling height > 1.25 m	X	counted for all floors	included with 50%	Only if > 1.5 m high	included with 25%	X	-	included with 25% (for external areas only when connected to the building)
	Danish Building regulation (BR28) – operational part	50	heated gross floor area	X	Included if heated	X	If ceiling height > 1.25 m included with 40%	-	counted for all floors	-	-	Only if > 1.5 m high	-	-	-	-
Estonia	Proposed method for climate declaration (2021)	50	heated net floor area	-	Included if heated	X	Included if heated	-	-	-	-	-	-	-	-	-
Finland	Proposed method for climate declaration (2021)	50	heated net floor area	-	Included if heated	X	X	X	X	-	X	X	X	X	X	-
Norway	TEK17	50	gross floor area	X	X	X	X	Included if > 1.9m high for a width of ≥ 0.6m	-	-	X	Included if > 1.9m high for a width of ≥ 0.6m	Included in enclosed by glass	X	-	-
Sweden	Klimadeklaration 2022	N/A (50)	gross floor area	X	X	X	X	X	-	-	X	Included if > 1.9m high for a width of ≥ 0.6m	-	X	X	-
	Swedish Building regulation (BBR29) Operational energy calculation	50	heated net floor area	-	Included if heated	X	X	X	X	Included if heated	-	Included if heated	-	-	-	-
Europe	Level(s) – Office	50	IPMS 3 Useful floor area	-	X	X	X	If in exclusive use	-	-	-	-	Separate item	-	Separate item	-
	Level(s) – Residential	50	IPMS 3B Useful floor area	-	X	X	X	Separate item	Only on ground floor	-	Separate item	Separate item	Separate item	Separate item (unless common facility)	Separate item	-

UK Built Environment Emissions



Progress: 2018-2024



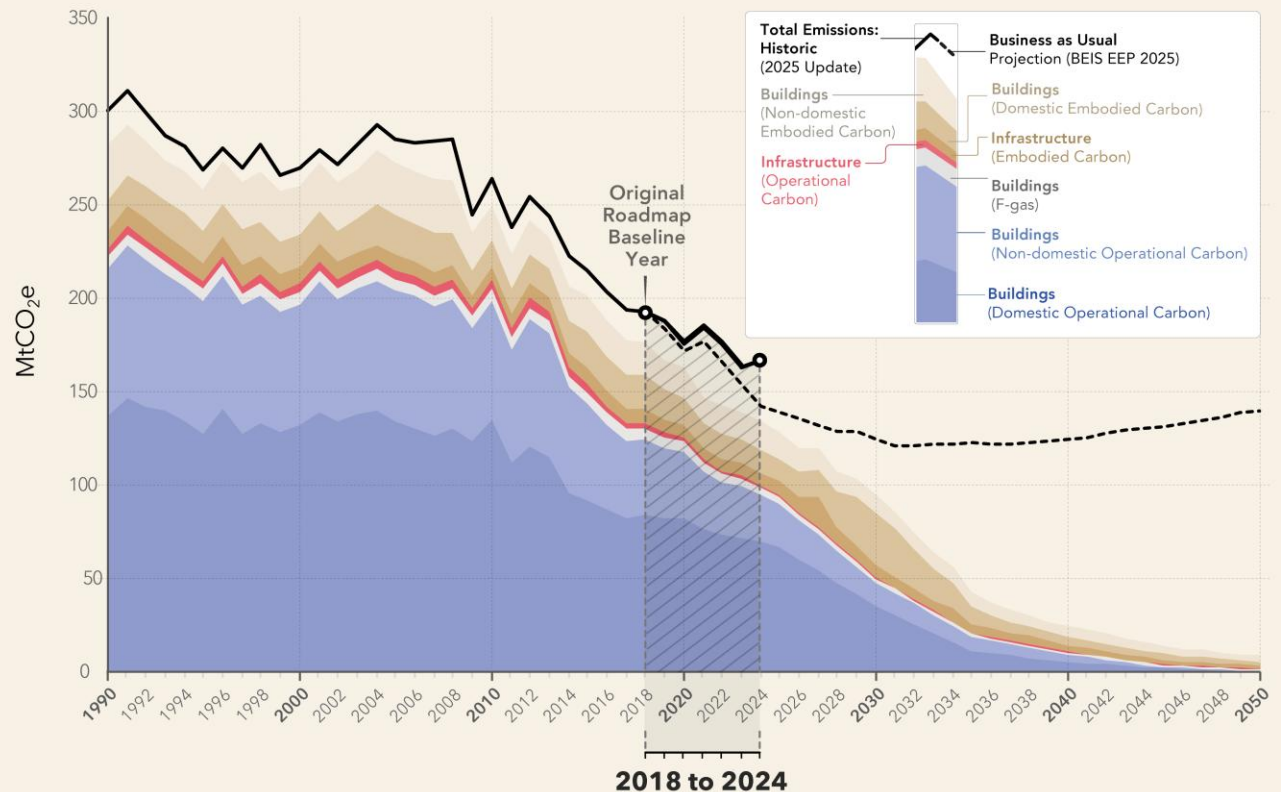
1 UK built environment emissions reduced **14%** since 2018, falling short of the 24% reduction needed.

2 Annual embodied carbon rose by **5%** compared to the 20% reduction needed

3 Committed policies are making progress but still **falling short of the rates required** to deliver decarbonisation by 2050.

FIGURE 1: HISTORIC BUILT ENVIRONMENT EMISSIONS (1990-2024)

Excluding Transport, with Business as Usual Projections Overlaid onto the 2021 UKGBC Net Zero Whole Life Carbon Roadmap Data.



Trends & drivers



Operational carbon

Annual operational emissions reduced significantly, by **21%**, falling just short of the Roadmap trajectory (24%).



Embodied carbon

Annual embodied carbon **rose** by **5%** compared to the 20% reduction needed



Grid decarbonisation

The carbon intensity of electricity has fallen **24%** since 2018, compared to the 67% predicted.

FIGURE 2: REQUIRED EMISSIONS REDUCTIONS

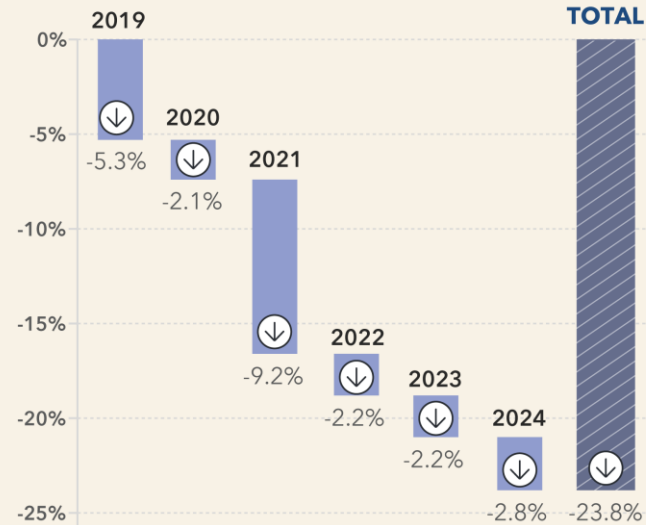
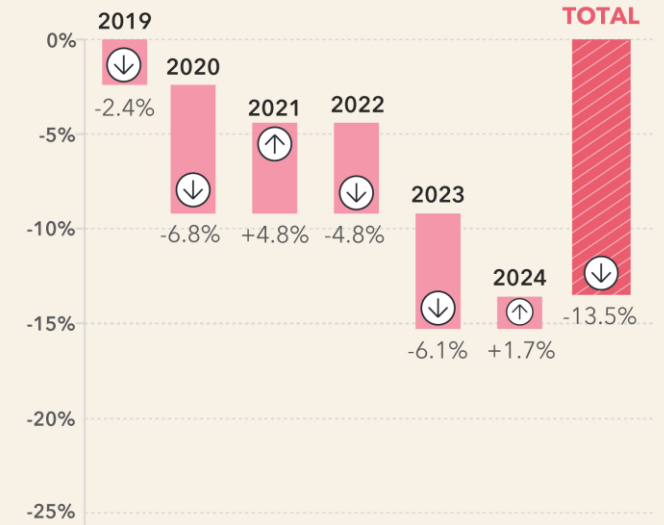
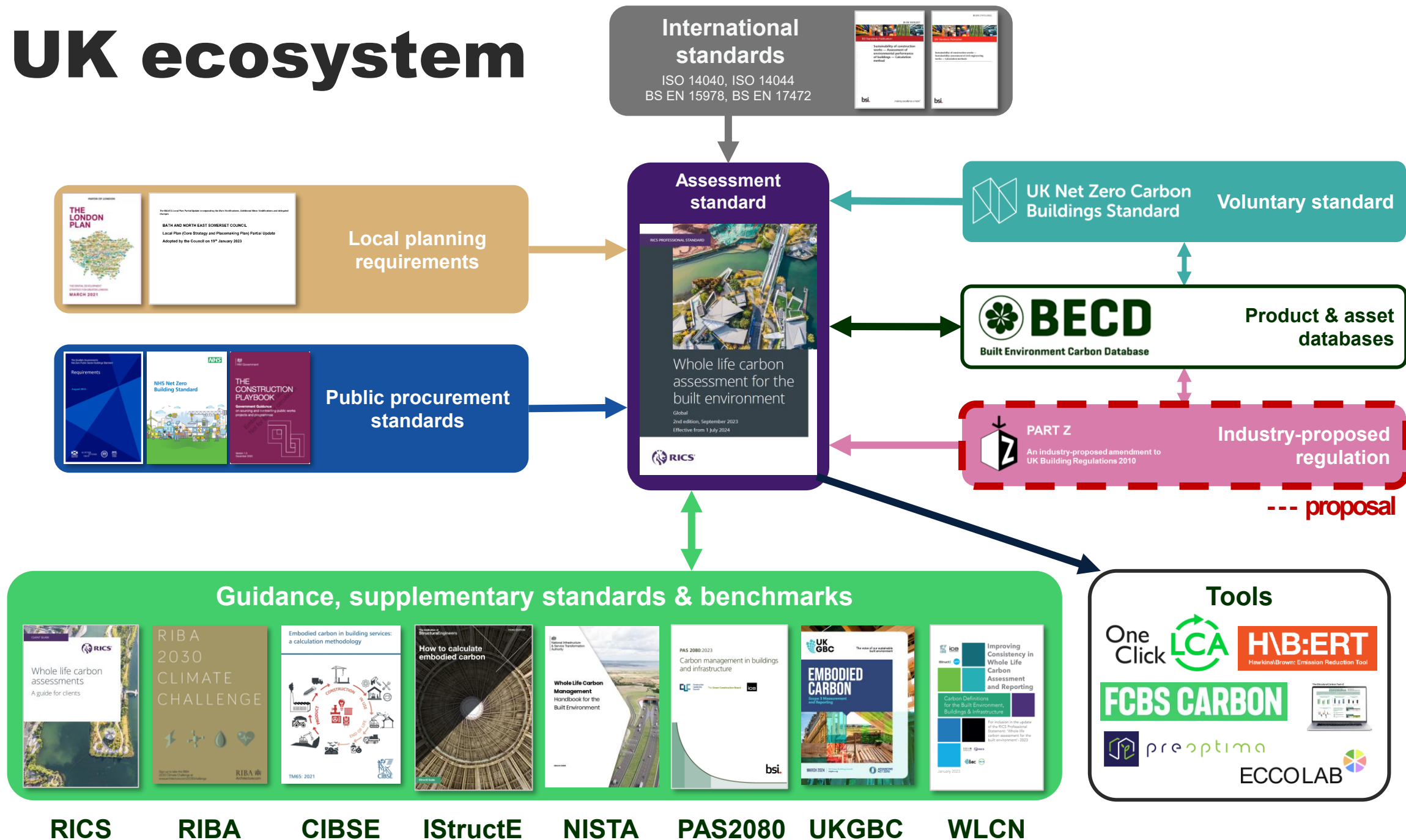


FIGURE 3: ACTUAL EMISSIONS REDUCTIONS



UK ecosystem



RICS

RIBA

CIBSE

IStructE

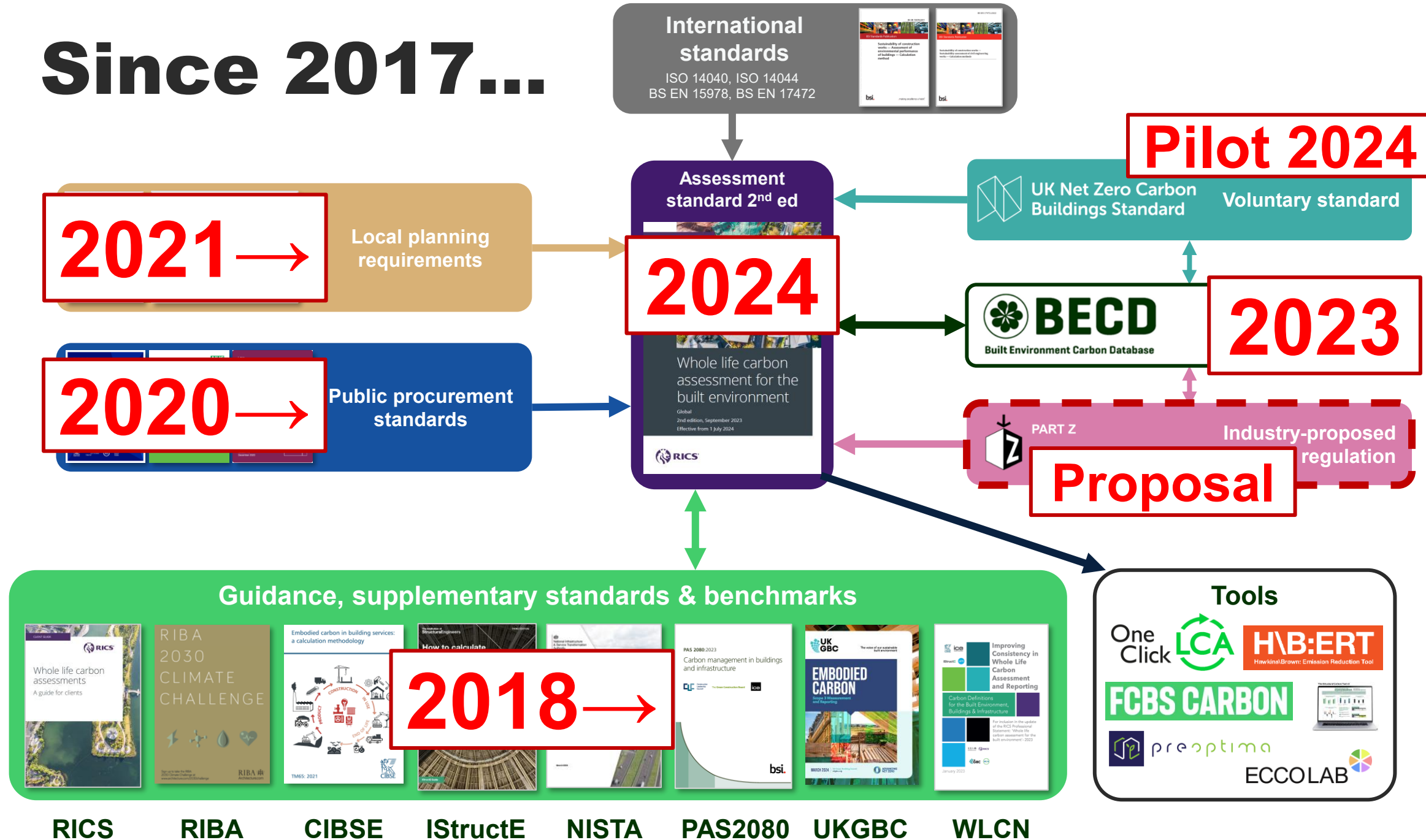
NISTA

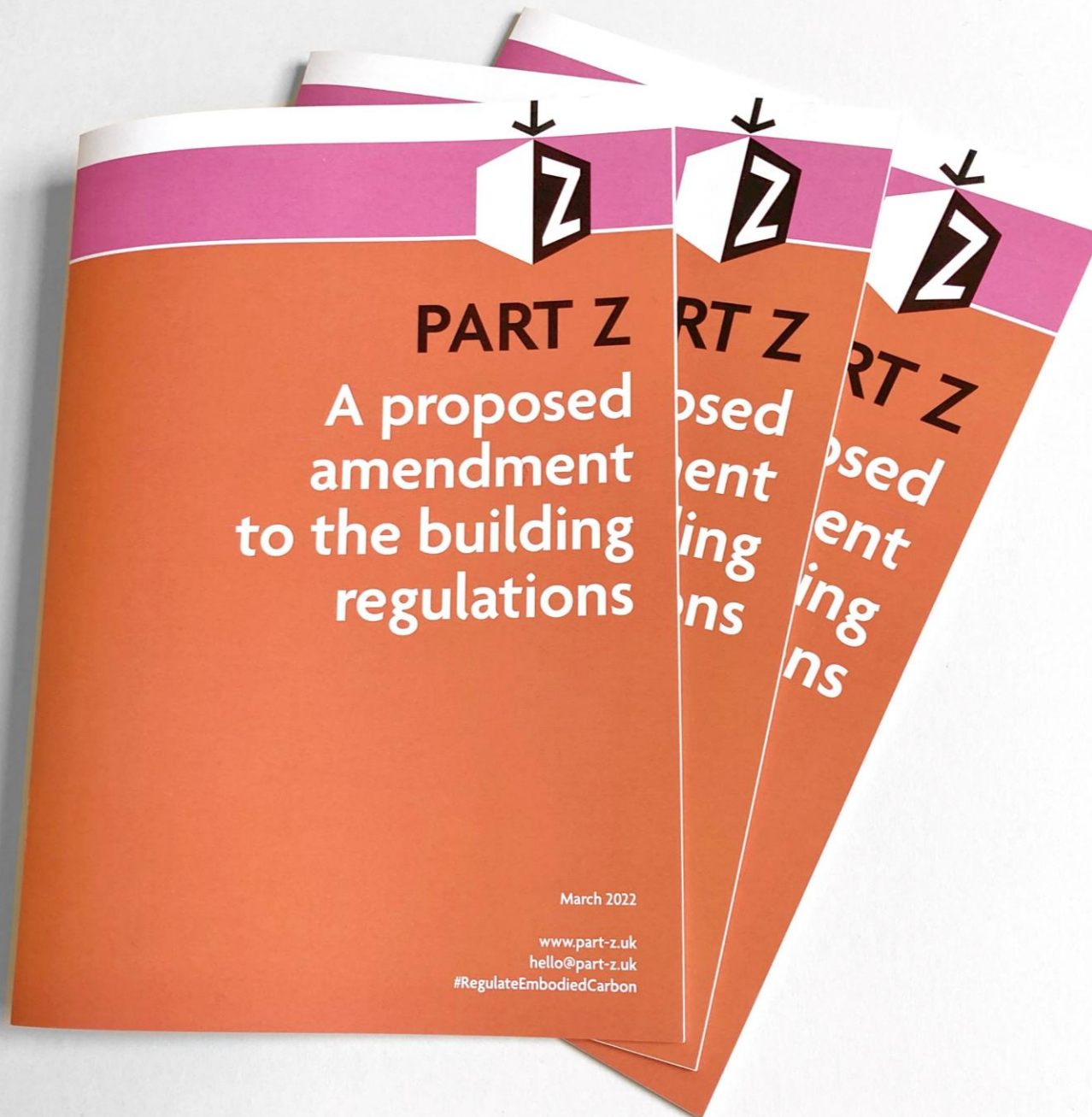
PAS2080

UKGBC

WLCN

Since 2017...





Part Z

Industry led proposed amendment to Building Regulations in England and suggested document for approval



Part Z authors



Will Arnold



Tim den Dekker



Dr Jannik Gieseckam



Dr Julie Godefroy



Simon Sturgis



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Glasgow



Statements of support



Barratt Developments “welcome regulation to mandate the reporting of whole life carbon, leading to the eventual introduction of embodied carbon limits in construction”

“**JLL** supports amendments to Building Regulations requiring assessment of whole life carbon emissions and limitation of embodied carbon emissions”

“**abrdn** Investments are supportive of the regulation of embodied carbon.”

“**Royal London Asset Management** endorses the concept of regulation that mandates the reporting of – and sets limits on – embodied carbon emissions in the built environment.”

“**Stanhope** fully supports the principle of regulating upfront embodied carbon in construction.”

“**Landsec** [...] fully supports these assessments becoming a legal requirement as part of Building Regulations.”

See more at part-z.uk/industry-support

UK parliamentary consideration

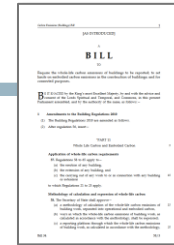
Feb 2022
Carbon Emissions (Buildings) Bill
 Duncan Baker MP



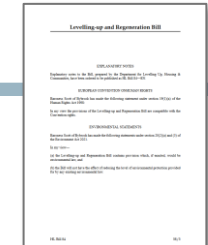
May 2022
Environmental Audit Committee
 Building to net zero: costing carbon in construction



Nov 2022
Carbon Emissions (Buildings) Bill
 Jerome Mayhew MP



Mar 2023
Amendment 280 to Levelling-up & Regeneration Bill
 Lord Ravensdale



Nov 2025
Environmental Audit Committee
 Environmental sustainability and housing growth



Sep 2025
Amendment 180 to Planning & Infrastructure Bill
 Lord Ravensdale



Dec 2024
Carbon Emissions from Buildings (Net Zero) Bill
 Dr Ellie Chowns MP



Jan 2024
Policy Position Paper
 RICS, RIBA, IStructE, ICE etc



July 2026 adjournment debate



“The Government's position is that **embodied carbon in new buildings is important**. The direction of travel is towards better measurement and reduction...Let me be clear about what the Government are not saying. **We are not saying that embodied carbon is too difficult to address, we are not saying the Government will have no role to play**, and we are not saying complexity is a reason to put this issue in the “too hard” box. However, we are saying that complexity matters; unintended consequences matter; burdens on industry, local authorities and consumers matter; housing delivery and building safety matter; and net zero matters. The right policy must hold these objectives together...we are considering the next steps very carefully. Ahead of any potential intervention, we want to understand the impacts on the sector. So **we have commissioned research** to help improve our understanding of the data currently available on embodied carbon, and identify where gaps and challenges lie. We will continue to work with industry, local government, professional bodies, environmental organisations and parliamentarians to consider the right levers for action.”

NPPF consultation Government response



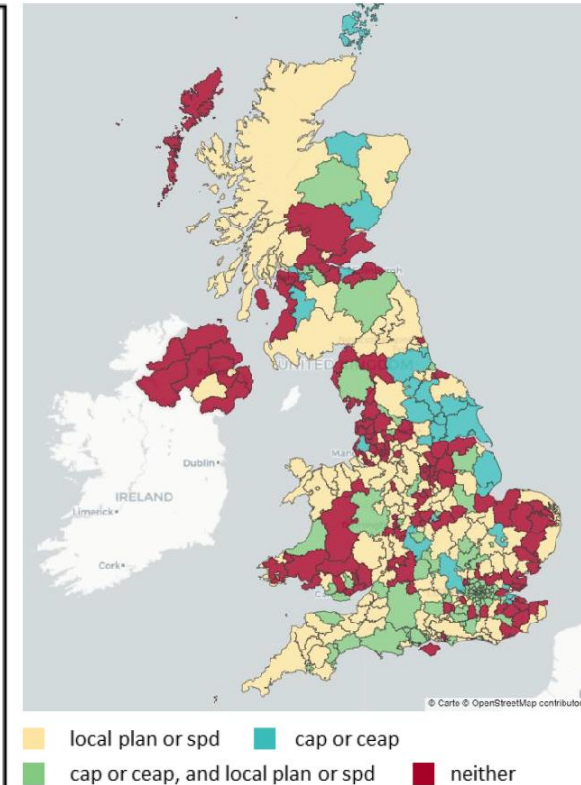
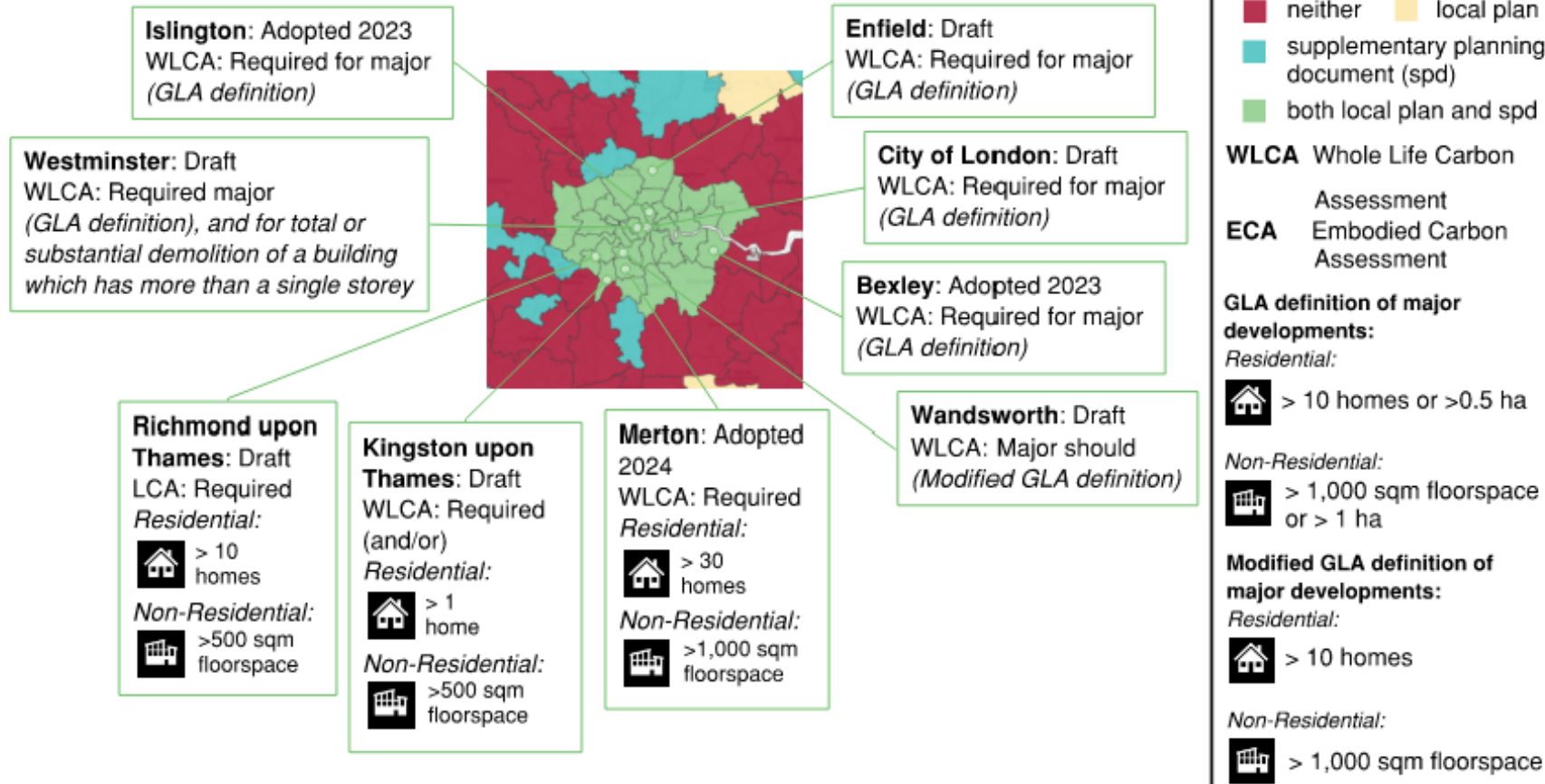
Government response to the proposed reforms to the National Planning Policy Framework and other changes to the planning system consultation

August 2026

- "In relation to carbon assessments...**the government does not consider it proportionate to introduce new mandatory national requirements at this stage**, given the potential burdens, evidence requirements and viability impacts. However, it recognises that such assessments can support plan-making and decision-making when applied appropriately. **Planning Practice Guidance will be updated to support clarity and consistency in their use.**"
- "Many respondents emphasised the role of whole-life carbon assessment..with some advocating mandatory national requirements. Others raised concerns about the proportionality, evidence requirements and viability impacts of such approaches, and the need for clearer guidance and standardised methodologies"...**"the government is not requiring whole-life carbon assessments through planning at the present time (which this does not preclude assessments being used for specific schemes where appropriate)."**

Proliferation of local requirements

LPA's within Greater London Authority (GLA)



Requirements beyond London

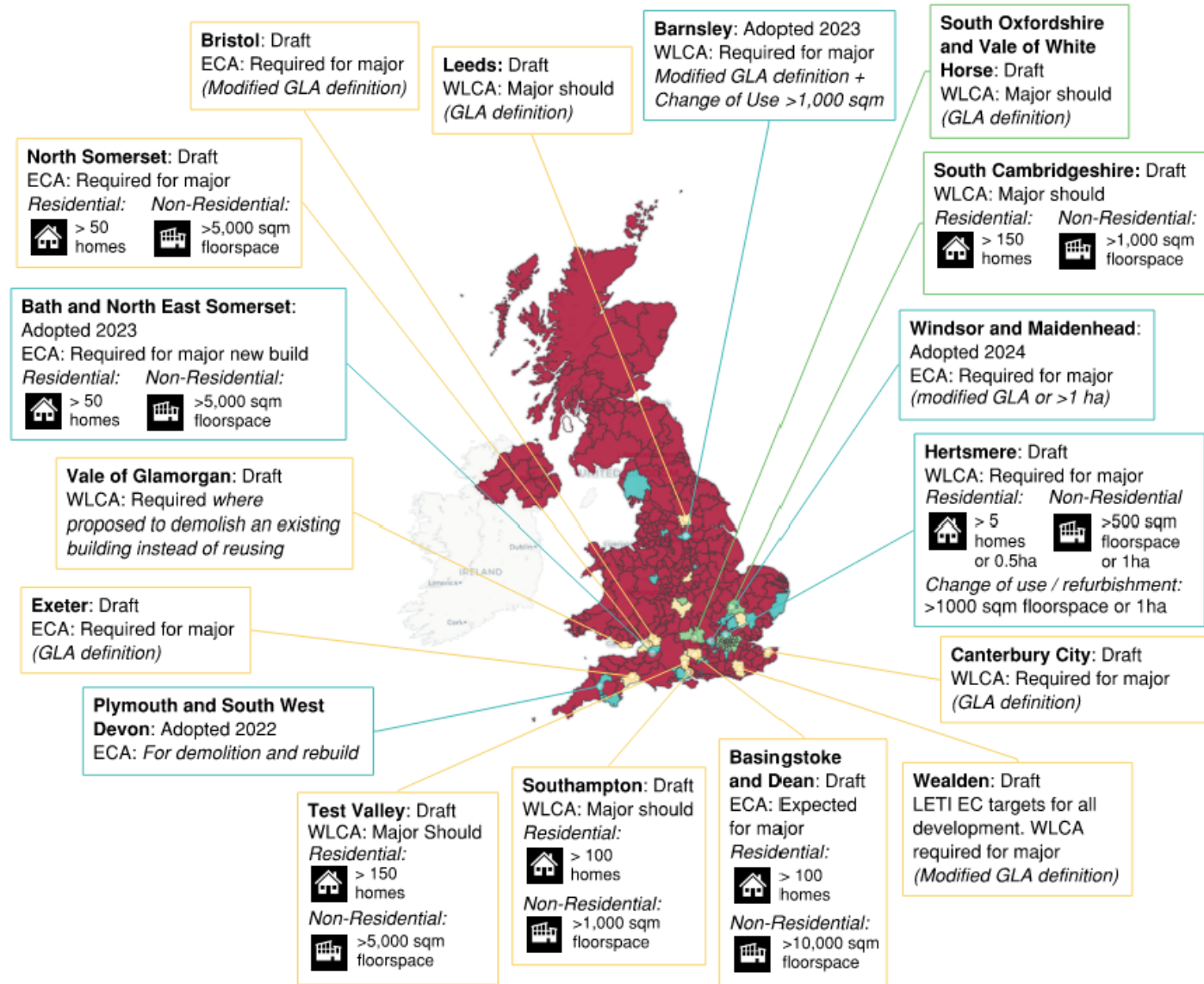


Figure from review by Graham et al. (2024) [Embodied Carbon and the Circular Economy: Analysing UK Planning Systems and Policy](#)

Experiences of leading local authorities

- Recent workshops with 25 leading local authorities highlighted the need for greater support (e.g. with templates, tools for verification & skills) & common desire for national approach
- Challenges are particularly acute for smaller authorities

Embodied Carbon and the Circular Economy: Opinions from LPA workshops
(21 participants, values shown as %)

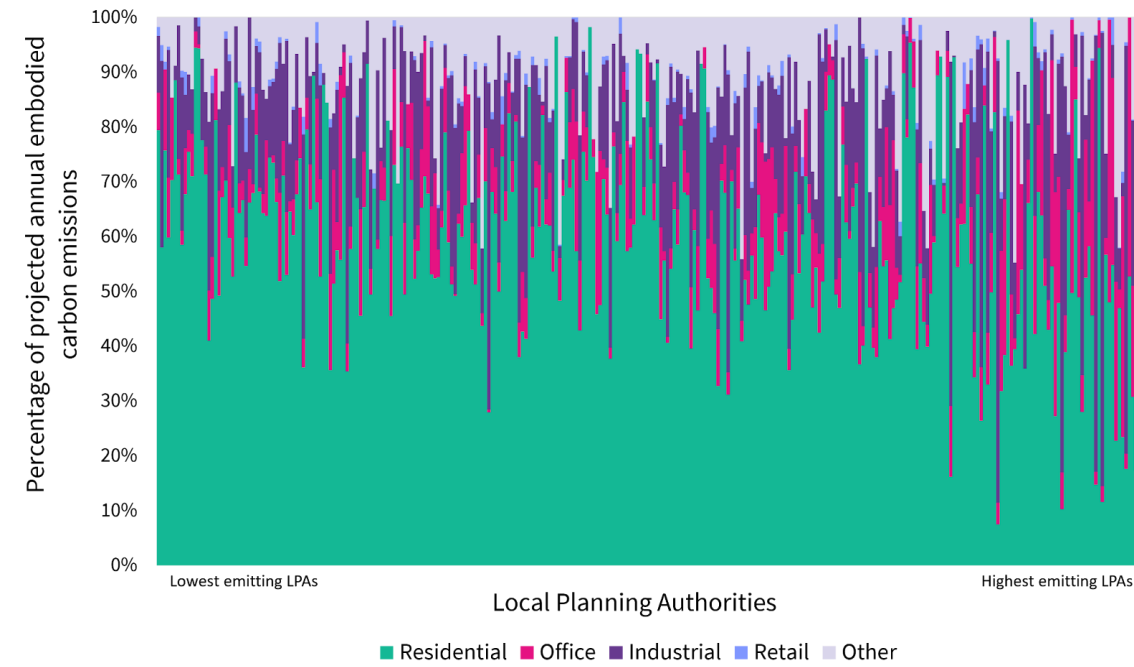
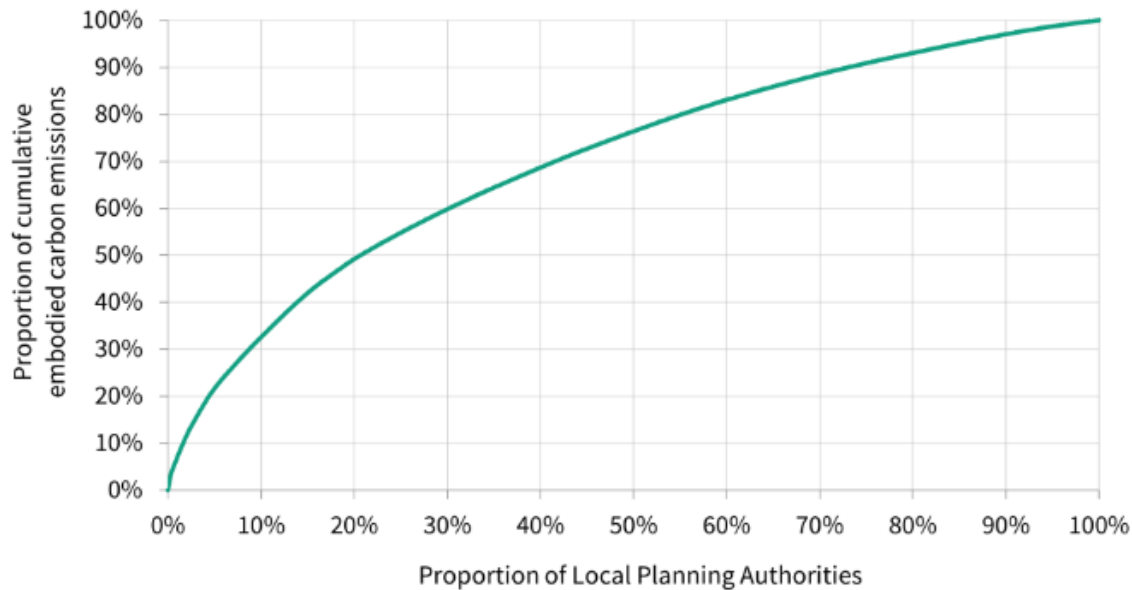
	Disagree	Indifferent	Agree	Don't know
Embodied carbon assessment / WLCA policy at a project level is required to address embodied carbon in the built environment.	0	0	95	5
Policy intervention is needed to encourage reuse and retrofit of existing buildings and prevent demolition.	0	0	90	10
Technical standards are generally consistent across authorities (in line with industry standards), however there are choices within these causing fragmentation.	19	10	33	38
Variation in WLCA policy across authorities creates difficulties for authorities and/or applicants.	0	19	62	19
There is concern within the authority of developments moving to other LPAs if stricter limits / requirements were implemented in my LPA and not in other LPAs.	24	24	33	19
Resource and skill constraints limit our ability to verify and appraise assessments.	0	19	57	24
Our planning team would benefit from accessible, planner-focused guidance and training.	0	5	81	14
Planning is best suited for early-stage design influence, whereas building control is better suited for later stage accountability.	10	10	62	19

National Government Recommendations for Whole Life Carbon Assessment (WLCA), pre-redevelopment audits and demolition audits:
(21 participants, values shown as %)

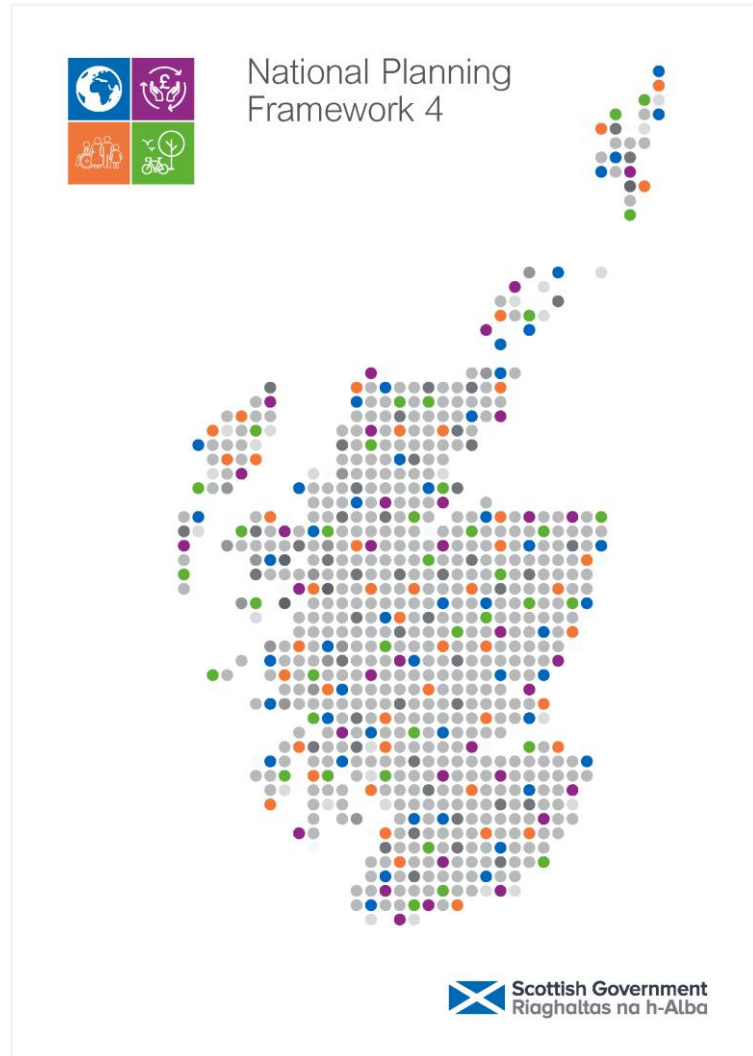
	Would be problematic	Is unlikely to be beneficial	Indifferent	Is likely to be beneficial	Is needed	Don't know
Provision of consistent templates and reporting formats	0	0	0	57	38	5
Standardisation of technical frameworks	0	0	5	38	48	5
A standardised central evidence base, including centralised research on practical options and implications of embodied carbon reduction and circular economy measures for projects.	0	0	0	52	43	5
National digital tools for verification and appraisal	0	0	0	43	52	5
National WLCA requirement (supported by the above measures)	0	0	0	38	57	5

Projected emissions by local authority

- England's embodied carbon emissions are diffusely distributed across local authorities & current local policies only affect ~1% of projected embodied carbon



NPF4 Policy 2



“

Development proposals will be sited and designed to minimise lifecycle greenhouse gas emissions as far as possible”

NPF4 Policy 2 Guidance

NPF4 Planning Guidance

Policy 2 - Climate Mitigation and Adaptation

June 2025



- Stresses need for proportionate approach with initiation at earliest design stages
- Suggests quantitative assessments for most projects (except changes of use, householder developments, proposals <10 residential units & non-residential <1000m² - suggests qualitative statement for those)
- Links to many widely used standards (e.g. RICS Professional Standard, PAS 2080)

Key gaps

- Knowledge sharing & information synthesis
- Assessments of policy impacts & efficacy
- Lack of common approach (e.g. thresholds, limits etc.)
- Lack of common resources (e.g. reporting templates)
- Skills within planning community

Lessons for Scotland from elsewhere

- There is no single perfect policy approach
- Start simple & expand scope over time
- There's value in consistency between jurisdictions
- Sharing best practice is key to rapid learning
- The largest emission reductions will likely be from the first step of requiring widespread assessment

Upcoming report



Includes:

- Literature heatmap
- Outcomes from extensive stakeholder engagement
- Set of building blocks policy options
- Implementation workflows, resource requirements, role descriptions, legal set up, enforcement options etc
- Developer toolbox

Things to watch out for

- Upcoming Zero Waste Scotland report – [sign up link](#) to receive when published
- New SSN capacity building network around NPF4 Policy 2
- DESNZ development of new [Embodied Emissions Reporting Framework](#)
- [Nordic Climate Forum for Construction](#) 2026 – Sept 30th