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Energy Retrofit of Traditional Buildings

22.10.2019

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Stewart IN2 KEANE ENVIRONMENTAL LTD OBEA ORS PHILIPLEE sap SEAN HARRINGTON ARCHITECTS REHA CHARTERED SURVEYORS

3cea DUBLIN acutrace AERECO AerHaus Bathquip bda CARR ARCHITECTS

Carroll Gas Services CroneyArchitects Costello ecocel Energy Elephant ETS GANNON Geraghty Greenbuild

HCoA House 2 Home JOULE malcolm hollis McNally Handy MEEHAN GREEN Meitheal MURPHY Neal Lawler

ocsc Partel PASSIVATE SAMMON smet SYNERGY Townlink TOWNMORE

Westar Group Wall Design Ydb Zoobox 2eva.ie

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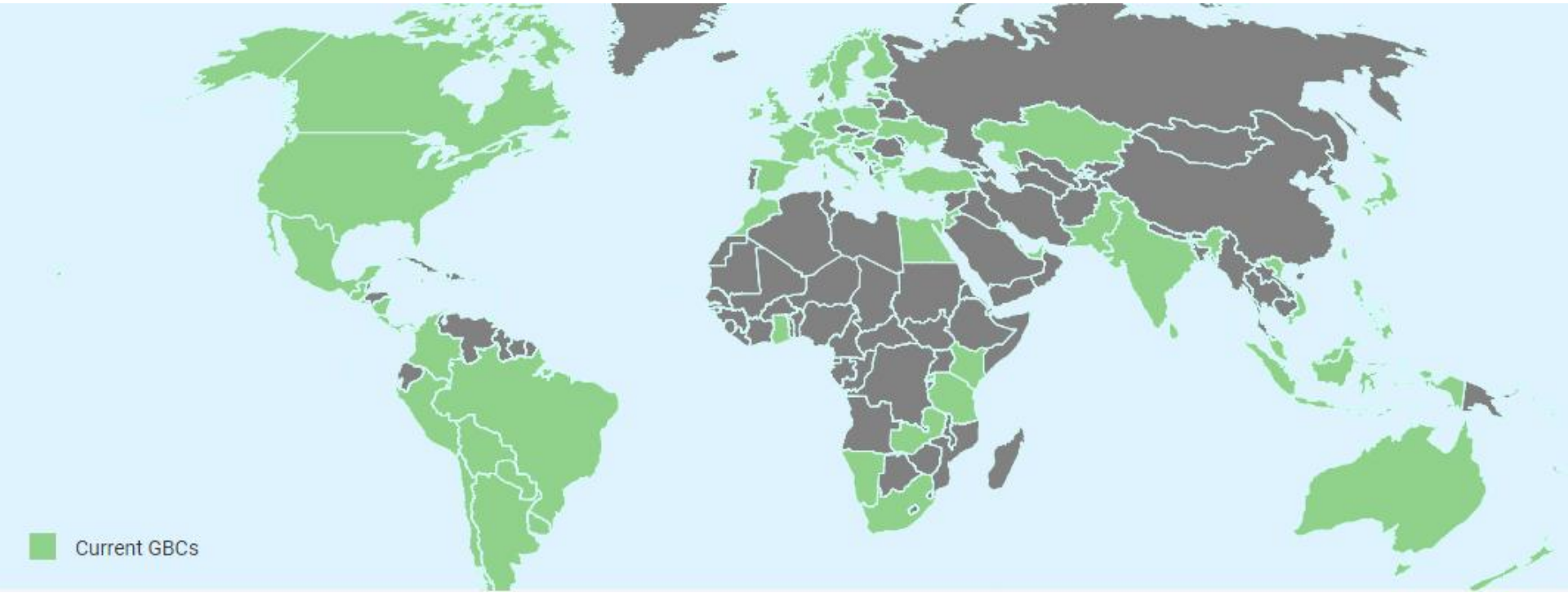
A GLOBAL NETWORK FOR CHANGE



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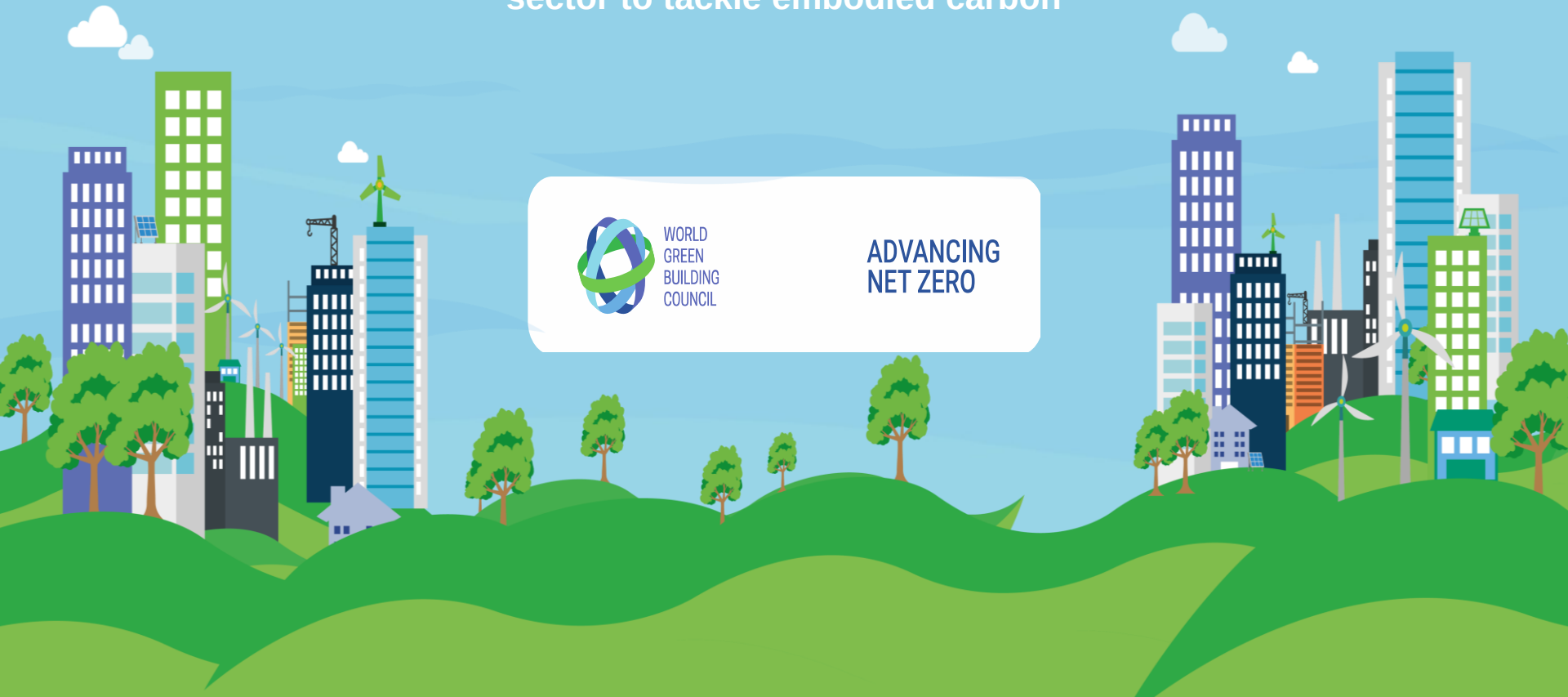
Bringing embodied carbon upfront

Coordinated action for the building and construction sector to tackle embodied carbon



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ADVANCING NET ZERO

WHY EMBODIED CARBON?

- Building responsible for 39% of carbon emissions
  - 28% are from the operation of buildings
  - **11%** of global emissions are from the upfront emissions associated with the construction of buildings.
- By 2060 the total global area of buildings will double
- We cannot meet a commitment under COP21 Paris without eliminating all emissions from both operational and embodied.

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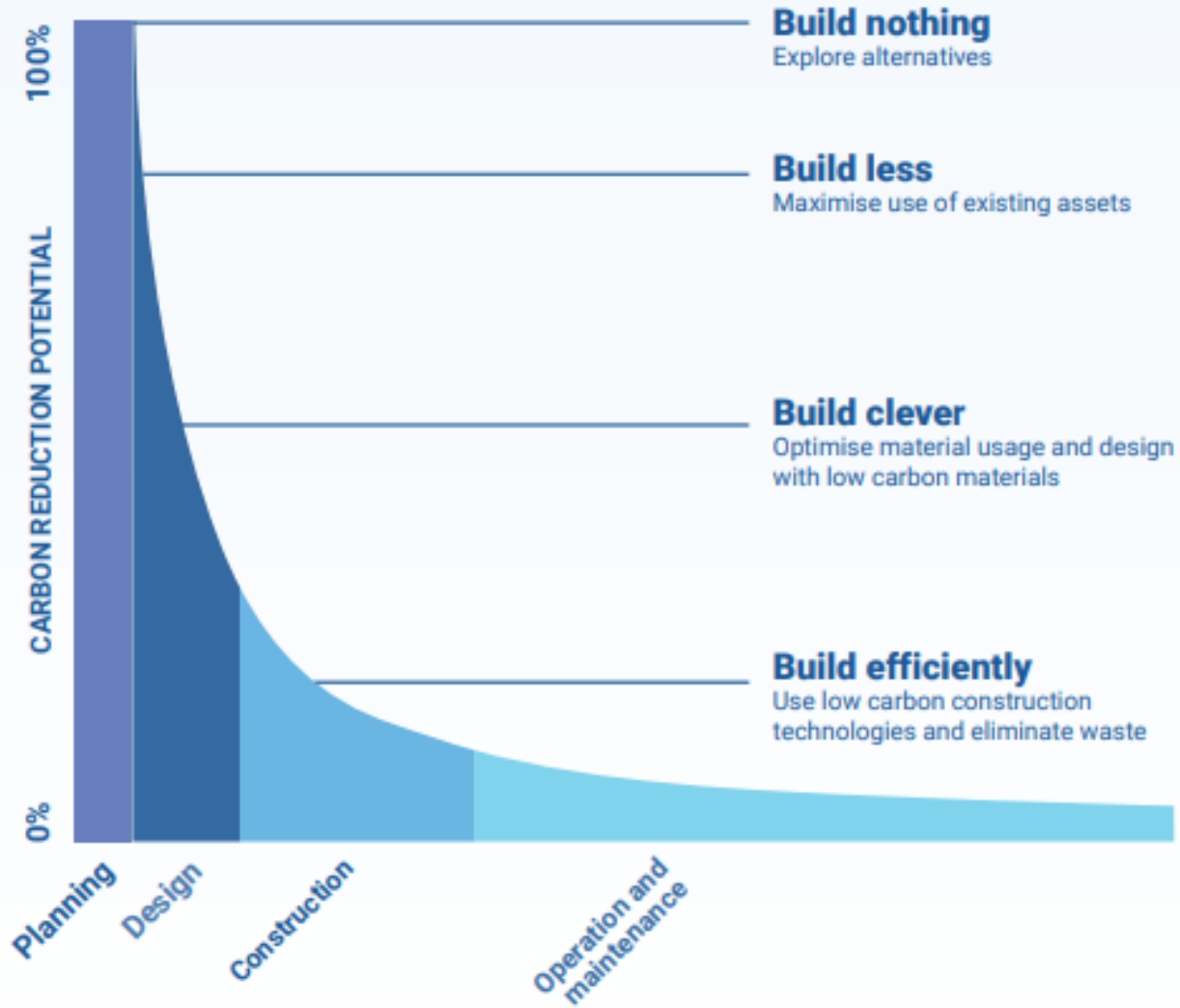
Carbon reduction potential



English (United Kingdom)

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OBJECTIVES OF THE REPORT

- Spark a global conversation around the value and importance of aiming for net zero embodied carbon (NZEC)
- Communicate the urgency and set goals and milestones for achieving NZEC
- Stimulate demand for NZEC and show it can be achieved through industry collaboration, transparency and immediate action
- Advocate for policy and regulation towards NZEC

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DEFINITION

Net zero **embodied carbon** should be pursued as part of a whole lifecycle approach to carbon reduction that includes net zero **operational carbon**. Our definition of net zero embodied carbon in practice:

A net zero **embodied carbon** building (new or renovated) or infrastructure asset is highly resource efficient with **upfront carbon** minimised to the greatest extent possible and all remaining **embodied carbon** reduced or, as a last resort, offset in order to achieve net zero across the lifecycle.

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ACT NOW! Immediately, all stakeholders must…

- **COLLABORATE** to create action roadmaps
- **COMMUNICATE** ambitions, successes and research
- **ADVOCATE** for embodied carbon reduction policies at regional, national and international level
- **EDUCATE** all relevant members of the value chain

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ROADMAP FOR IRELAND TO REGULATION EB/LCA

Capacity

- Build capacity of professionals to do it
- Accredit professionals

Data

- Create demand for EPD
- Create comprehensive construction product databases www.epdireland.org
- Develop national generic data to fill gaps where no EPD

Regulation

- Integrate into development plan –initially where developers looking to demolish structures
- (perhaps require them to offset the demolition with a higher RER to compensate for lost embodied energy (Part L 2017 is 0.2)
- 2 Integrate into GPP requirements
- 3 Require in building regulations for all office and residential

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WHAT IS A BUILDING RENOVATION PASSPORT?

Renovation Roadmap
A document outlining a long-term (up to 15 or 20 years) step-by-step renovation roadmap for a specific building, resulting from an on-site energy audit fulfilling specific quality criteria established in dialogue with building owners.

Logbook
A repository of all building-related information (e.g. energy consumption and production, executed maintenance and building plans).

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A BUILDING RENOVATION PASSPORT FOR IRELAND

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FIVE STEPS TOWARDS A ROADMAP

1. Initial contact

2. On-site visit

3. Model the present Building state

4. Definition of renovation steps

5. Production of the roadmap

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RENOVATION ROADMAP

Your Building Today


House_side 1


Hous_side 2


House_side 3


House_side 4

ENERGY CLASS	Building Data	User Influence on Energy	Technical Data
G	**Year of Construction of the Building** 1994 **Building Type** Single Family House **Number of Floors** 3 **Number of Residential Units** 1 **Living Space Area** 250 m^2 **Previous Renovations**	**Attendance Time** **Hot Water Use Habits** several persons take a shower daily and take a bath at least once a week **Ventilation Use Habits** during heating period one window open for several hours per day	**Renewable Energies** **Year of Construction of the Heating System** 1994 **Energy Bill** 4600 €/a

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RENOVATION ROADMAP

	ENERGY CLASS G	ENERGY CLASS E	ENERGY CLASS D	ENERGY CLASS B	ENERGY CLASS A
	Your Building **Moment of delivery**	**Renovation Step 1** **When Boiler needs to be exchanged**	**Renovation Step 2** **2025 - 2030**	**Renovation Step 3** **2030 - 2035**	**Renovation Step 4** **2035 - 2040**
Measures		**Measures** • Add a thermal solar system	**Measures** • External Wall insulation	**Measures** • Substitution of the old windows • Roof insulation	**Measures** • Installation of a heat recovery unit • Substitution of the heating system by a heating pump
Energy Use	**Primary Energy Demand** 250 kWh/m²a **Main Energy Source** Natural Gas **Final Energy Demand Main Source** 200 kWh/m²a	**Primary Energy Demand** 210 kWh/m²a **Main Energy Source** Natural Gas **Final Energy Demand Main Source** 200 kWh/m²a	**Primary Energy Demand** 160 kWh/m²a **Main Energy Source** Natural Gas **Final Energy Demand Main Source** 150 kWh/m²a	**Primary Energy Demand** 100 kWh/m²a **Main Energy Source** Natural Gas **Final Energy Demand Main Source** 80 kWh/m²a	**Primary Energy Demand** 100 kWh/m²a **Main Energy Source** Electricity **Final Energy Demand Main Source** 30 kWh/m²a

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RENOVATION ROADMAP

Renovation Step 4

ENERGY CLASS

A

Renovation Step 4

2035 - 2040

Primary Energy Demand

100 kWh/m²a

Main Energy Source

Electricity

Final Energy Demand Main Source

30 kWh/m²a

Final Energy Demand second Source

15 kWh/m²a

Auxiliary Energy Source

Electricity

Final auxiliary Energy Demand

15 kWh/m²a

Energy Bill

900 €/a

Carbon Emissions

10 kg/(m²a)

Investment Costs for Renovation Step

26000 €

Measure	Installation of a heat recovery unit
Improvement	Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.
Technical Details	Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.
Renovation Costs	8000 €
Included Costs for Maintenance	8000 €
	Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

Measure	Substitution of the heating system by a heating pump
Improvement	Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.
Technical Details	Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.
Renovation Costs	18000 €
Included Costs for Maintenance	18000 €

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LOGBOOK

Start page

My buildings

Data Store
- Building states
- Repository
- My documents & plans

Building diagnosis

Alerts & Reminders

Roadmaps

Glossary

Repository

Building state – 2019-02-11

Building state 2019-02-11

+ New building state | Manage building states

General and Administrative Information

Building Construction Information

Building Energy Performance

Building Operation and Use

Smart Information

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NEXT STEPS

2019

Dec.:
10 Auditors recruited

Jan:
1-day Training

2020

Feb.-April
Pilot Phase
20+ Single-family homes

July
Feasibility Study

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THANK YOU

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