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**Retrofitting
Buildings
to Improve
Energy
Efficiency**

Retrofitting and Sustainability 22nd September 2021



HI THERE!

In 2018, KRA Renewables was born of a decades long interest in sustainability, and the desire to take real action.



KRISTYNA RAWICZ
Managing Director

SAMPLE ON-GOING PROJECTS:

- ISLAND-WIDE ENERGY TRANSITION PLAN FOR A WEST-COAST COMMUNITY (CATERING TO 50,000 TOURISTS).
- PROJECT COORDINATOR FOR ~€1.5M OF RETROFIT AND RENEWABLE ENERGY UPGRADE WORKS APPLYING FOR SEAI GRANT FUNDING UNDER THE BETTER ENERGY COMMUNITIES SCHEME.
- LEAD AUTHOR OF GOVERNMENT GUIDANCE DOCUMENT FOR ENERGY EFFICIENCY IN TRADITIONAL BUILDINGS.
- WRITING SUSTAINABILITY PLANS FOR VARIOUS BUSINESS PARKS , HOLIDAY PARKS AND OTHER TOURIST DESTINATIONS.
- COMPILING AN ENERGY MASTER PLAN FOR AN HISTORIC MILITARY BARRACKS IN IRELAND'S MIDLANDS.
- DESIGN, TENDERING, PLANNING AND FINANCE FOR €250K ROOFTOP SOLAR PV SYSTEM IN CENTRAL DUBLIN.



WHY RETROFIT?

CLIMATE COLLAPSE

- THE GREAT ACCELERATION
- ANTHROPOCENE

BIODIVERSITY COLLAPSE

- Extinction – around 1m species
- 23% earth's habitats by 2100
- Ireland's Biodiversity loss accelerating



“The economy is a subsystem of society, which in turn is part of the biosphere.

This means that **OUR GLOBAL ECONOMY** is a wholly owned subsidiary of the biosphere, and not the other way around.”

Harman E. Daly



CURRENT CLIMATE ACTION PLAN

Targets:

- Reduce CO₂eq emissions from the sector by 40 - 45% emissions relative to pre-NDP 2030 projections
- Sharply reduce fossil fuel use, given the current heavy reliance on gas, oil, coal and peat in the sector
- Complete 500,000 building retrofits to achieve a B2 BER /cost optimal equivalent or carbon equivalent
- Install 600,000 heat pumps (400,000 to be in existing buildings)
- Increase the number of Sustainable Energy Communities to 1,500
- Complete the rollout of the SSRH, including support for biomass and anaerobic digestion heating systems
- Deliver two initiatives of municipal scale which have the potential to provide heat equivalent to the needs of about 50,000 homes

Ireland Enacts Ambitious Climate Law

Minister Ryan said:

"Today is a landmark day, as we turn climate ambition into law, and set out on a journey to net zero emissions. The extreme weather events around the world over the past month have shown us all that we must act quickly, to protect ourselves and our planet. Our immediate target of halving emissions by 2030 is challenging, but it is also an opportunity to transform our economy, create new jobs, protect our environment and build a greener and fairer future. We will all need to work together to achieve this, in renewable energy, active and sustainable travel, in business, agriculture and across government. But the signal we are sending today is that now is the time for action."



Ireland is now on a legally binding path to net-Zero emissions no later than 2050, and to a 51% reduction in emissions by the end of this decade. The Act provides the framework for Ireland to meet its international and EU climate commitments and to become a leader in addressing climate change.

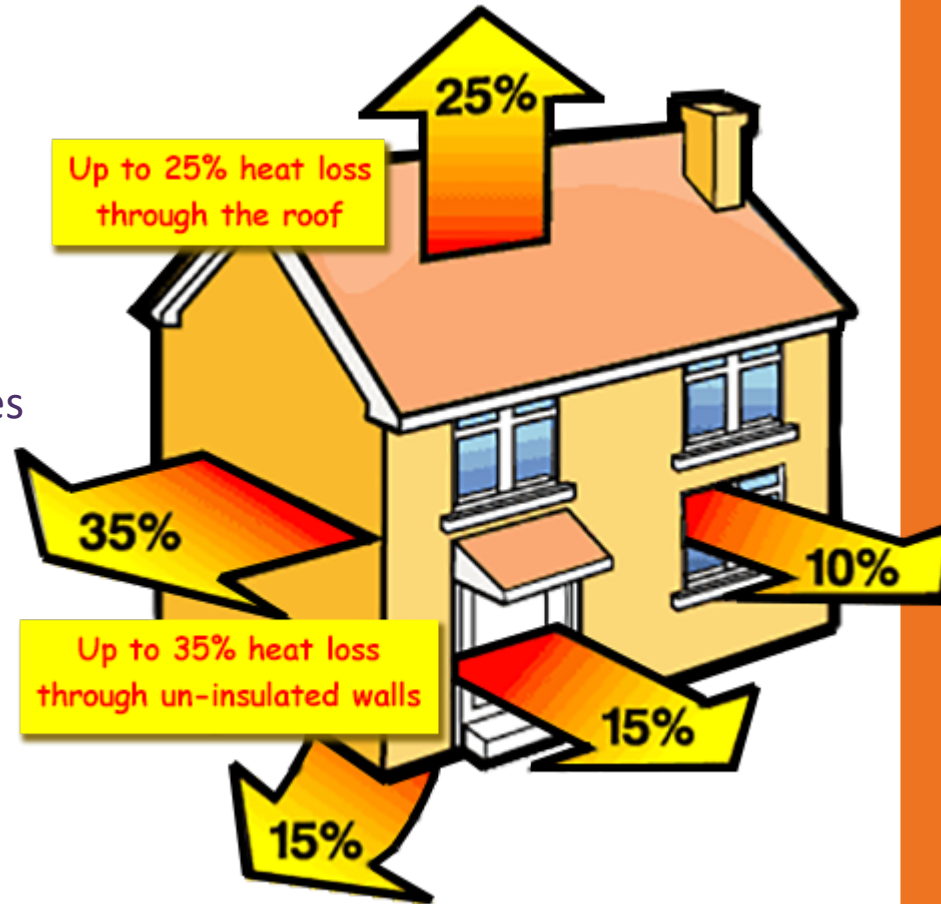
Next steps:

1. The preparation of regulations on carbon accounting, in consultation with the Climate Change Advisory Council and consistent with the Paris Agreement and EU rules.
2. The production of carbon budgets by the Climate Change Advisory Council
3. Sectoral emissions ceilings



TYPES OF RETROFIT

- Domestic
- Commercial
- Public
- Schools
- Deep
- Shallow
- Shallow with renewables



“FABRIC FIRST”

A ‘fabric first’ approach to building design involves maximising the performance of the components and materials that make up the building fabric itself, before considering the use of mechanical or electrical building services systems.

CHALLENGES

Extremely complex and difficult to get right

500,000 homes to be retrofitted by 2050 (Climate Action Plan)

60,000 homes each year from 2021

Costs? Estimates vary from €15,000 to €90,000 per home.

Resources? Who will do this work?

Skills shortages – professional and trade

Standards?

The Construction Industry Federation will be seeking an informal advisory group with industry, the SEAI and the Department of Communications, Climate Action & Environment with a view to implementation.

PROBLEMS

- Condensation
- Mould
- Ventilation
- Cost
- Grant system
- Oversight and regulation
- Lower energy savings than anticipated
- Embodied Carbon



Issues to consider



Historic buildings and protected structures



Shallow retrofits and renewables



Financing retrofits and renewables

Green finance
Zero or low interest loans
Grants
Direct funding



SCSI

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OPPORTUNITIES

- “ENERGIESPRONG” MODEL
- RETROFIT AT SCALE
- COMMERCIAL RETROFIT
- BUILDING RENOVATION PASSPORTS
- NEW MODELS OF DELIVERY
- HOW CAN SURVEYORS DRIVE RENOVATION AND RETROFIT?



What else should we be thinking about?

- Whole life carbon assessment of buildings (Finland – statutory requirement)
- Sustainable Energy Communities and community energy production
- Microgrids and local energy resilience
- The future of transport, electric car charging and vehicle to building/vehicle to grid technology





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