



# Transitioning to a Circular Economy

3/25/2021 Town+Gown NYC Symposium





OUR PURPOSE



# Open Power

CASTLE ROCK RIDGE II, ALBERTA, CA

for a Brighter Future:

We empower sustainable progress

# Enel: a growing green energy giant

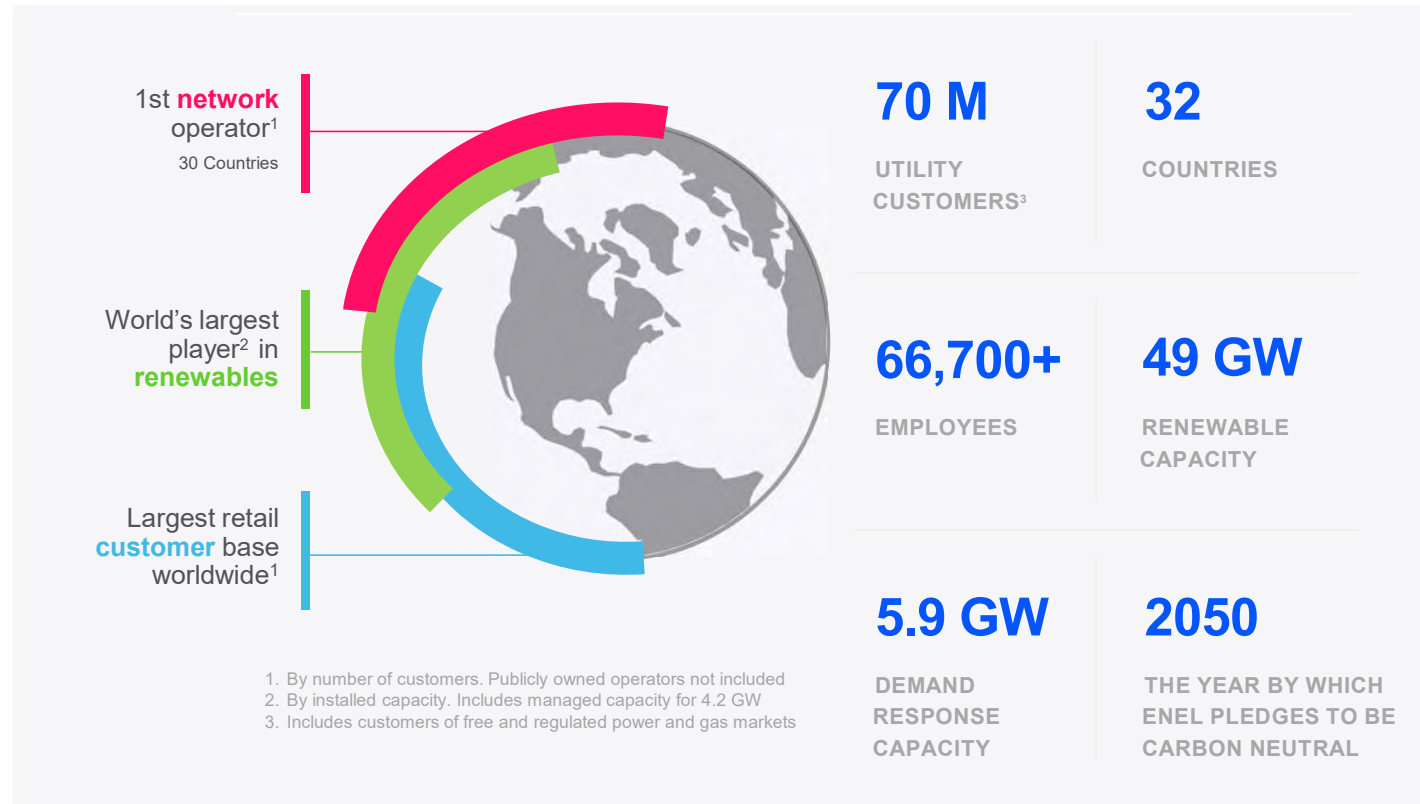
Accelerating the Energy Transition: the focus on decarbonization and electrification



Enel is a multinational power company and a leading integrated player in the global power, gas and renewables markets. We are changing the face of energy as a shaper, leader and enabler of the energy transition.

Enel began as an energy utility over 50 years ago, but today we are not the company we once were.

With a dedicated focus accelerating the energy transition through decarbonization and electrification, we have been listed on the *Dow Jones Sustainability Index* for 16 years and have been included on *Fortune Magazine's "Companies Changing the World"* list (2015, 2017, 2018).



# Enel North America

A top 5 owner and operator of renewable energy power plants



## Global Power Generation

A leading owner and operator of renewable energy power plants with 100% renewable capacity in North America (80 plants, >6 GW)

## Enel X

Market leader in demand-response services and a provider of technology-enabled energy solutions

## Energy & Commodity Management

Manages and maximizes the integrated gross energy margin, dispatching local generation fleet



Sustainability

=

Value

Planning

Actions

Metrics

Fundamental  
Parameters

Storytelling

# Sustainability is at the core of Enel strategy

Drive sustainability through growth acceleration



## Enel's commitment to the UN Sustainable Development Goals

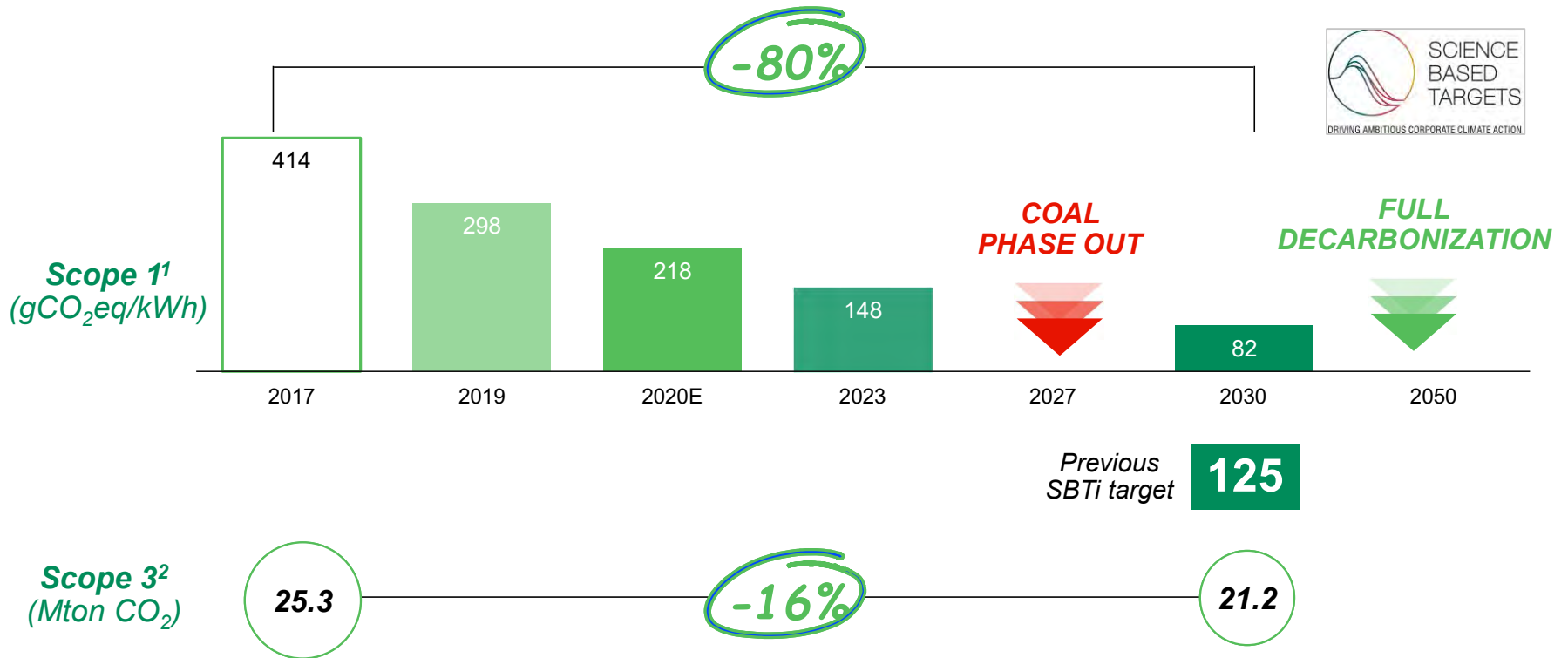
- |   |   |   |  |
|---|---|---|--|
| <p><b>4</b> QUALITY EDUCATION</p>                       | Quality Education                       | <p><b>11</b> SUSTAINABLE CITIES AND COMMUNITIES</p>     | Affordable and Clean Energy            |
| <p><b>7</b> AFFORDABLE AND CLEAN ENERGY</p>             | Affordable and Clean Energy             | <p><b>13</b> CLIMATE ACTION</p>                         | Climate Action                         |
| <p><b>8</b> DECENT WORK AND ECONOMIC GROWTH</p>         | Decent Work and Economic Growth         | <p><b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS</p> | Peace, Justice and Strong Institutions |
| <p><b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE</p> | Industry, Innovation and Infrastructure |   |  |

## Enel Sustainability Plan 2021-2023



Source: Capital Markets Day, November 2020  
26/03/2021

# GHG emissions reduction, in line with 1.5° scenario



1. Scope 1 by 2030, consistent with the 1.5 pathway of the Science Based Target Initiative and the IEA 1.5 scenario
2. Scope 3 related to gas retail activities by 2030, consistent with the 2C pathway of the Science Based Target Initiative

# From renewable energy to sustainable energy

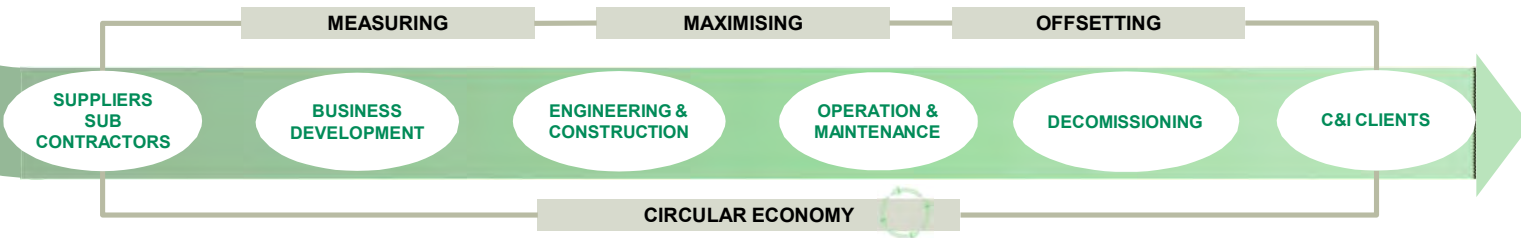
Where do we want to go?



GREEN ENERGY

From Coal to renewables, a Fair Energy Transition, bringing **socio-economic** and **environmental benefits** ...

... thanks to the **Creating Shared Value** approach integrated strategy extended to **suppliers and clients**, and leveraging on **Circular Economy**



**SUSTAINABLE ENERGY**  
A differentiation lever with Customers and Investors

## SUSTAINABLE PILLARS

Sustainable Procurement | Sustainable Design | Sustainable Construction Site | Sustainable Plant | Sustainable Decommissioning

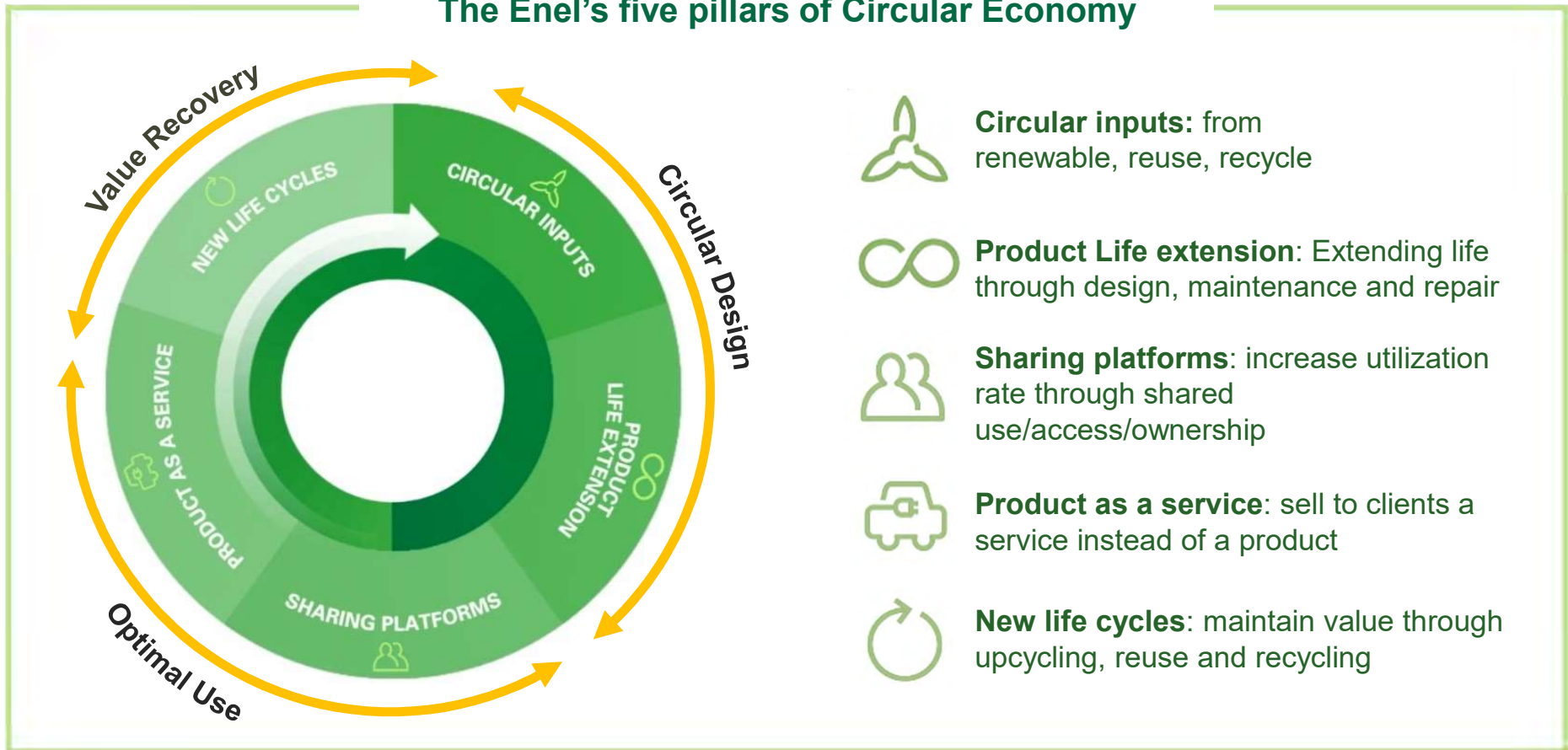




# Circular pillars: Enel Group model

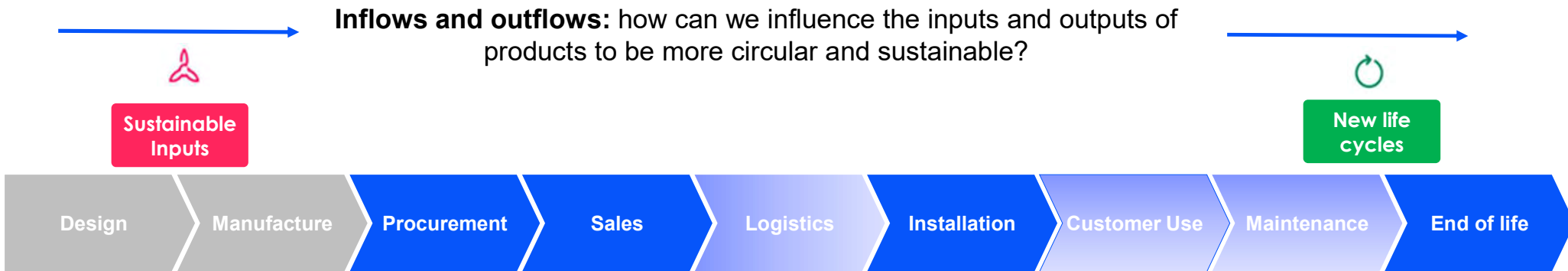


## The Enel's five pillars of Circular Economy

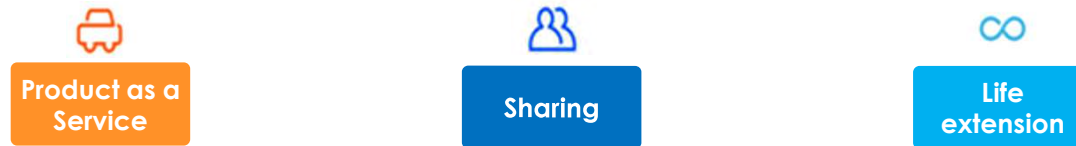


# Product or asset value chain

Assessing total product life cycle and evaluating how and where we can improve



**Business models:** how are we evaluating and innovating our decisions throughout the value chain to improve the circularity of our business?



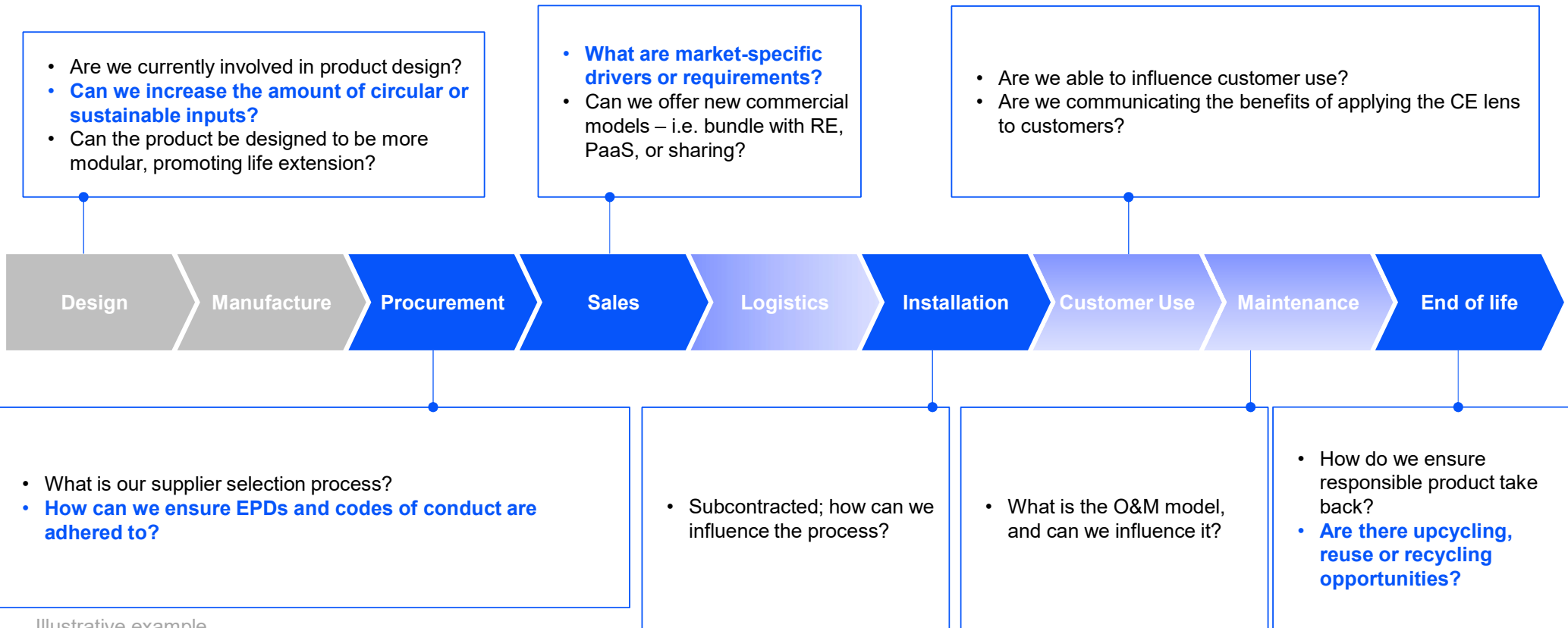
Illustrative example



Sustainability – USA & Canada | Enel North America, Inc.

# Product or asset value chain

We need to re-evaluate the levers we control to improve circularity



Illustrative example





# Thank you



**Peter Perrault, SMCP**  
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Sustainable Solutions

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# End-of-Lifetime Blade Re-Purposing Perspective: Wind Turbine and Blade Manufacturer

Jeff Elberling – Siemens Gamesa Renewable Energy (SGRE)

March 25, 2021

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**SIEMENS** Gamesa  
RENEWABLE ENERGY

## Content



- Introduction & background – Jeff Elberling
- Company overview – Siemens Gamesa
- EOL activities @ SGRE
  - Background & context
  - A growth industry – literally
  - Drivers toward blade circularity
  - Focus area for SGRE Service
  - Key players to EOL solutions
  - Next steps & challenges
- Open discussion / Q&A

# Introduction & Background – Jeff Elberling

## Introduction & Background



**Jeff Elberling**

**Chief Engineer – Service Innovation**

*Technical responsibility for development of novel products & services for operational onshore and offshore wind turbines, from technology scouting to commercial deployment, focused on blade performance, automation, and robotics.*

**2020 Chief Engineer – Service Innovation**

**2016 Team Manager – Blade Performance Service R&D**

*Team focused on aerodynamic and aeroacoustic performance improvements, surface coatings, and structural blade enhancements for SGRE's global service fleet.*

**2013 Team Lead – Blades & Composites**

*Regional expert on wind turbine blades, fiberglass nacelle canopies and protective shrouds, concrete towers, and painted surface treatments.*

**2010 Service Engineer – Mechanical Systems**

*Regional expert in hydraulics, blade bearings, lubrication, bolted connections, cooling systems, yaw gears, and structural components.*

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## Academic

**Michigan State University, 2009**



- B.S. Mechanical Engineering
- B.A. Spanish
- Study Abroad Program – Santander, Spain (Universidad Internacional de Menendez Pelayo)

## Personal

- Based in Highland, MI, USA (1 hour outside Detroit)
- Married; no kids (yet)
- Several pets: two dogs, two cats, & one fish
- Extracurricular: ice hockey (playing & coaching), bowling, golf, playing music (drums, bass, & guitar)



# Company Overview – Siemens Gamesa (SGRE)

## Three business units strongly positioned in the market



**93.1 GW**

**installed** since 1979

The **technological partner of choice** for onshore wind power project.



**16.9 GW**

**installed** since 1991

**Most experienced offshore wind company** with the most reliable product portfolio in the market.



**75.5 GW**

**maintained**

**Commitment beyond the supply** of the wind turbine **to reach the profitability goals.**

## A leading provider of wind power solutions to customers around the globe

Top 3 market share<sup>1</sup>  
position in several  
main countries



### Offshore

#1 in global Offshore market



### Onshore

#3 in global Onshore market



### Service

#2 in global Service market

▨ Onshore    ■ Offshore

<sup>1</sup> Based on MW installations | **Source:** MAKE Global Wind Turbine OEM 2016 Market Share

© Siemens Gamesa Renewable Energy S.A

# EOL Activities @ SGRE

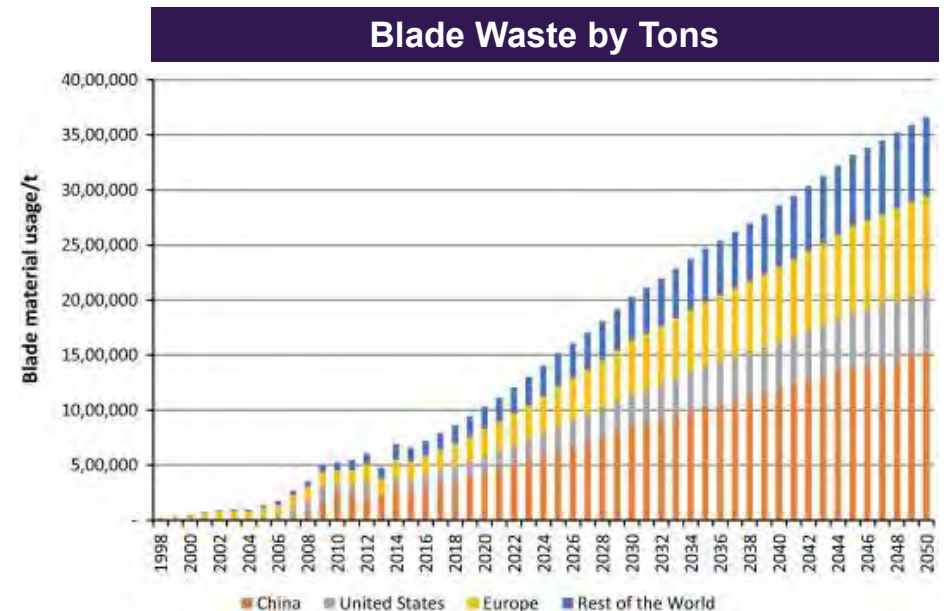
## EOL Activities @ SGRE

### Background / Context

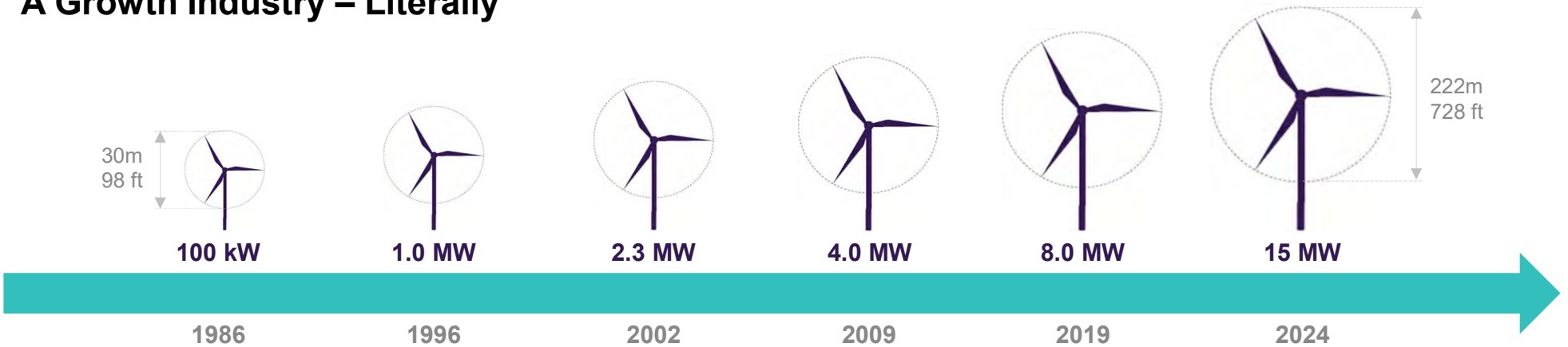
- Circular economy is expected to be pushed strongly by upcoming regulations in the EU, with other regions to follow
- Blade recycling / re-purposing is unique as blades are among the most difficult components to reintegrate into material circularity
- Responsibility of WTG decommissioning lies with the park owner; however upcoming regulations are expected to increase the OEMs accountability (EPR = Extended Producer Responsibility) as this approach has already shown impact in other industries such as PV and electronics

### Key Facts

- While the recycling of composite material remains complex and costly, **significant progress has been achieved over the last years**
- Legacy blades can be today processed post life-time by pyrolysis, grinding or within a symbiotic process setup for cement production. All processes are incapable to fully recover the characteristics of the virgin material, hence the regained material can only be used in less demanding use cases (down-cycling)
- For future blades new resin materials are being developed that allow a controlled dissolvment of the fiber-resin bond
- SGRE is involved in several projects focusing on new composite mixtures, with promising & near term development coming soon
- Legacy blades currently in operation are in focus from SGRE's Service business unit, exploring opportunities in both recycling and re-purposing applications



## A Growth Industry – Literally




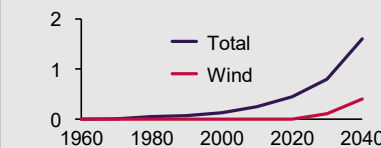
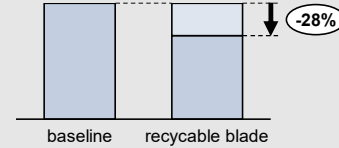


## The Siemens B75 blade: Big enough for basketball

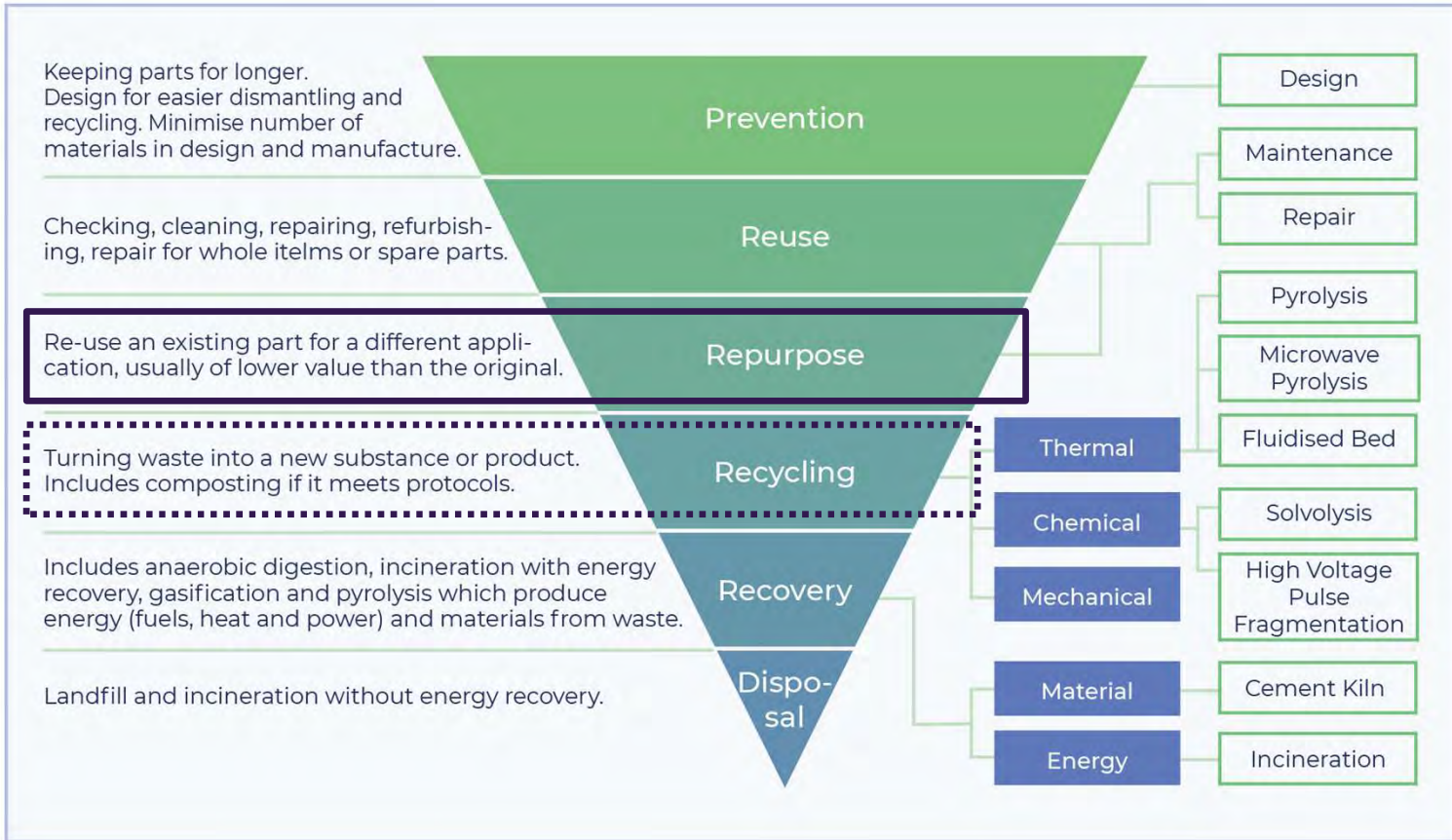
Did you know that you could play basketball inside a wind turbine blade?



# Multiple factors are driving the need for a company wide blade circularity strategy

	Up until present / legacy fleet	Present - 2024	Post 2024
 <b>Legislation</b>	<ul style="list-style-type: none"> <li>To date few regulatory requirements in place for composite waste on EU level (e.g. EUR dir. 2008/98/EC)</li> <li>Up to date: owner's responsibility</li> </ul>	<ul style="list-style-type: none"> <li>The European Circular economy action plan and other regional regulations are pushing towards a higher recycle rate for composites</li> <li>Landfill bans in GER, AUT, NL, FI → now supported by WindEurope ('25)</li> </ul>	<ul style="list-style-type: none"> <li>Increased Extended Producer Responsibility (EPR) as already adopted in electronic and PV industry</li> <li>France requiring 95% of WTG mass reusable or recyclable, other countries / regions likely to follow</li> </ul>
 <b>Business context</b>	<p>Repowering: total SGRE market 2025e = 310MW<sup>1</sup>, in ~ 30% (est) of cases legacy blade decommissioning is SGRE scope</p> <p>LTP blade exchange (in average 2-3 blade exchanges per GW per year)<sup>2</sup></p>	<ul style="list-style-type: none"> <li>Circularity becoming auction content</li> <li>Recyclability getting high on customers' agenda as they are being met with national requirements + media pressure</li> <li>Recyclability is a competitive advantage before is becomes hard requirement</li> </ul>	<ul style="list-style-type: none"> <li>Blade recycling technology is an essential pre-requisite for access to key markets</li> </ul>
 <b>Environmental responsibility</b>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><b>Composite waste generation<sup>3</sup> [Mtons / year]</b></p>  <p>Wind to grow to major composite waste contributor</p> </div> <div style="width: 45%;"> <p><b>Lifecycle CO2 emission of WTG blade<sup>4</sup> [%]</b></p>  <p>Reuse of composite improves CO2 footprint of wind</p> </div> </div>		

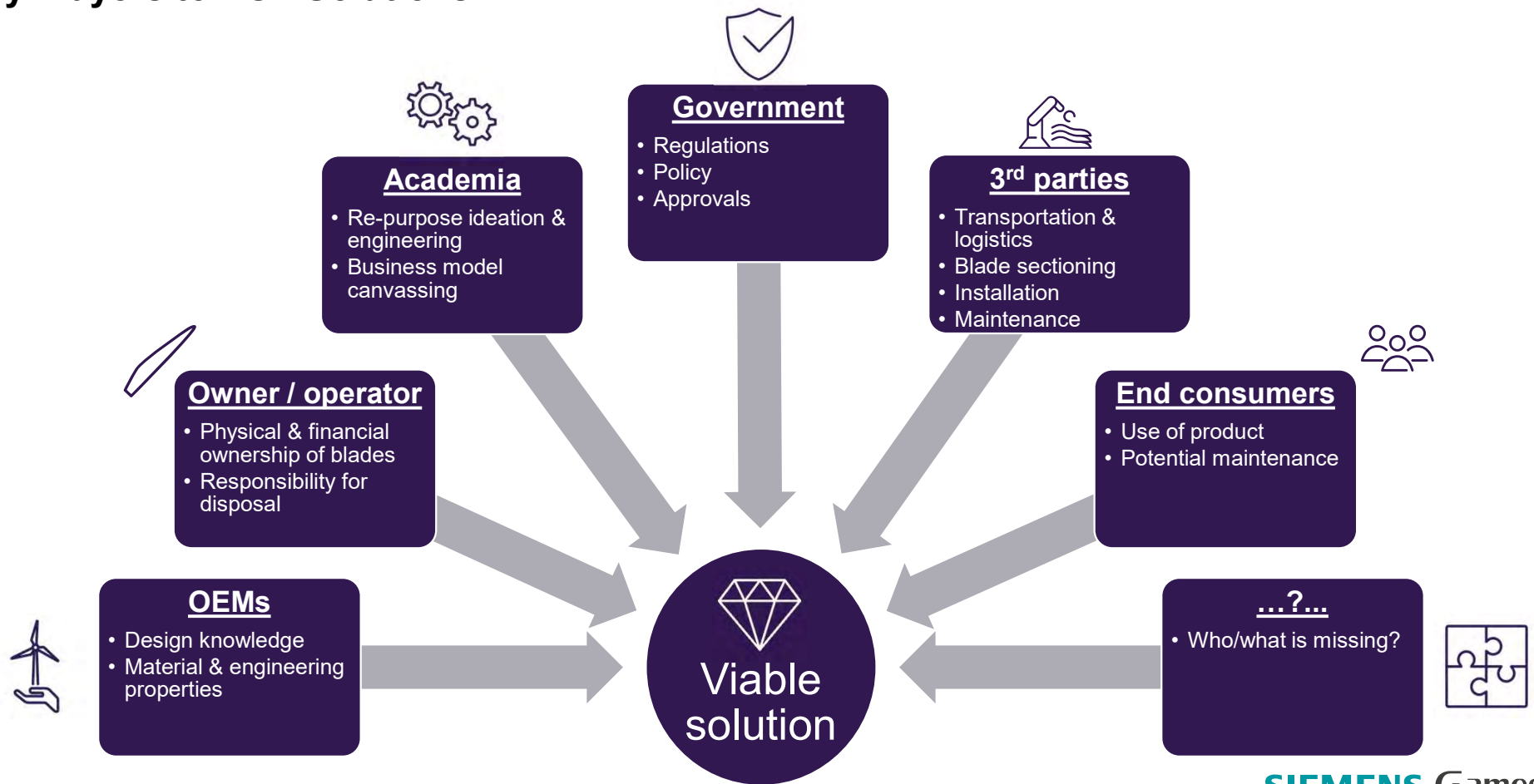
## Focus Areas for SGRE Service



Source: Bax & Company (<https://baxcompany.com/insights/circularity-of-polymer-composites/waste-management-hierarchy/>)



# Key Players to EOL Solutions



## Next Steps & Challenges

### Ongoing Developments / Next Steps

- Partnership with Georgia Tech (GAT) and National Renewable Energy Laboratory (NREL) on FY21/22 re-purposing demonstration concept
- Demonstration is heavily focused on
  - Novelty of re-purposed applications
  - Circular economy best practices
  - Replicability / scalability
  - Leveraging existing material properties to advantage
  - High value re-use conditions
  - Maximizing amount of blade re-used
  - Publicly meaningful
- Participation in International Energy Association (IEA) Wind Task 45: establishing best practices for end-of-life management of blades
- Validation of recyclable materials for new unit blade production

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### Challenges

- “Pull” from the market / end users
- Transportation & logistics costs
- Supply chain sustainability
- Scalability of developed concepts
- OEM willingness to be part of solution
- Further coordination / partnership of key players
- Public acceptance
- Cost-effectiveness of daring ideas



# Open Discussion / Q&A

**Thank you!**

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## Contact



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Government of Ireland

# Circular Economy The Policy Picture

Jean Clarke

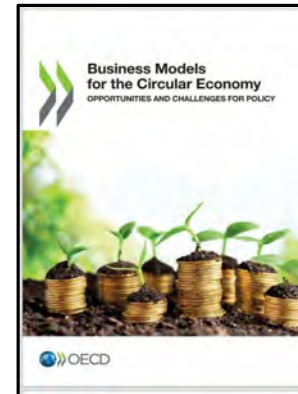
Environment Advisory Unit

Department of the Environment, Communications and Climate Action



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Government of Ireland

# Global



OECD  
The Economics and Governance of Circular Economy in Cities



How can I help as a business?

- Understand environmental and social impacts
- Identify 'hot spots' within the value chain
- Design solutions that enable and inspire individuals



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Figure 1: The European Green Deal

# EU: The Green Deal



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Government of Ireland

## Within the Green Deal:



*35 actions along the entire life cycle of products, to:*

- Make **sustainable products** the norm in the EU
- **Empower** consumers and public buyers
- **Focus also on key product value chains:** electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients
- Ensure **less waste**
- Make circularity work for **people, regions and cities**
- **Lead global efforts** on circular economy

## Key product value chains



- Improve **durability, reusability, upgradability and reparability**
- Address presence of **hazardous chemicals** and **increasing recycled content**
- Restrict **single-use** and counter **premature obsolescence**
- Incentive **product-as-a-service**
- **Digitalisation**, including digital product passport

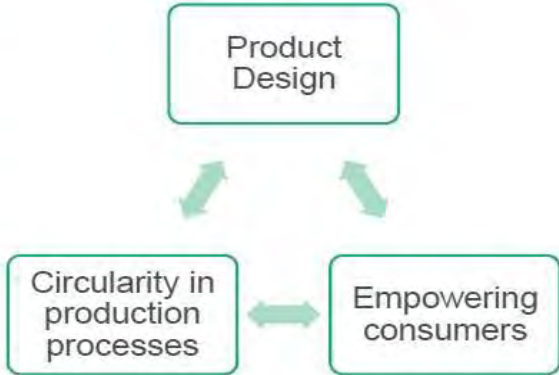




# Towards a Sustainable Product Policy Framework

- Many **products** break down too quickly, cannot be easily reused, repaired or recycled, and many are made for single use only. →
- **Consumers** do not repair products, find too many labels and some green claims are misleading. →
- **Production processes** in Europe are not resource efficient and can pollute our air, water and soil. →

## Our response



A new **overarching framework** addressing all products placed on the EU market, supporting more sustainable patterns of consumption and cutting waste by e.g. promoting better design





## Empowering consumers and public buyers

- Revision of the **consumer law**: consumers to receive trustworthy and relevant information on products at the point of sale
- Establishing a new "**Right to repair**"
- Legislative proposal to ensure companies substantiate their **environmental claims** using Product and Organisation Environmental Footprint methods
- Include more systematically durability, recyclability and recycled content in EU Ecolabel criteria



- Proposal for **mandatory Green Public Procurement (GPP)** criteria and targets in sectoral legislation
- Phasing-in **mandatory reporting** on GPP





## Less waste, more value



- *Preventing waste from being created in the first place is key*
- *Once waste has been created, it needs to be transformed into high-quality resources*

- **Specific waste reduction targets** for more complex streams
- Enhance the implementation of the requirements for **EPR schemes**
- Continue **modernising EU waste laws** (e.g. batteries, packaging, end-of-life vehicles, hazardous substances in electronic equipment )
- Propose to harmonise separate **waste collection systems**
- Review rules on **waste shipments** facilitating recycling or re-use within the EU; with also the aim to restrict exports of waste that cause negative environmental & health impacts
- Assess the scope to develop further EU-wide end-of-waste criteria for certain waste streams





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# The policy fundamentals of the recovery plan

- **The European Green Deal as the EU's recovery strategy:**
  - A massive renovation wave of our buildings and infrastructure and a more circular economy, bringing local jobs;
  - Rolling out renewable energy projects, especially wind, solar and kick-starting a clean hydrogen economy in Europe;
  - **Cleaner transport and logistics**, including the installation of one million charging points for electric vehicles and a boost for rail travel and clean mobility in our cities and regions;
  - Strengthening the **Just Transition Fund** to support re-skilling, helping businesses create new economic opportunities.



# National Measures: Waste Action Plan for a Circular Economy 2020

**GOVERNMENT LEADERSHIP ON CIRCULAR ECONOMY**

<p><b>HIGH LEVEL ALL OF GOVERNMENT CIRCULAR ECONOMY STRATEGY</b></p> 	<p><b>DEVELOP CIRCULAR ECONOMY SECTORAL ROADMAPS</b></p> 
<p><b>INCLUSION OF GREEN CRITERIA AND CIRCULAR ECONOMY PRINCIPLES IN ALL PUBLIC PROCUREMENT</b></p> 	<p><b>EXPLORE HOW IRELAND'S DIGITAL SECTOR CAN ACCELERATE TRANSITION TO A CIRCULAR ECONOMY</b></p> 



### HOUSEHOLD AND BUSINESS

**RECYCLING TARGETS FOR WASTE COLLECTORS**

**STANDARDISED BIN COLOURS ACROSS THE STATE: GREEN FOR RECYCLING, BLACK FOR RESIDUAL AND BROWN FOR ORGANIC WASTE**

**WASTE RECOVERY LEVY TO ENCOURAGE RECYCLING**

**WASTE OVERSIGHT BODY TO MANAGE CONSUMER RIGHTS**

**EDUCATION AND AWARENESS CAMPAIGN TO IMPROVE WASTE SEGREGATION**

### PLASTIC, PACKAGING AND SINGLE USE PLASTIC (SUP)

**DEPOSIT AND RETURN SCHEME FOR PLASTIC BOTTLES AND ALUMINIUM CANS**

**SINGLE USE ITEMS BANNED FROM JULY 2021:**  
COTTON BUD STICKS, CUTLERY, PLATES, STIRRERS, CHOPSTICKS, STRAWS, POLYSTYRENE CONTAINERS AND OXO-DEGRADABLE PLASTIC PRODUCTS

**SIGNIFICANTLY REDUCE SUPS BEING PLACED ON THE MARKET BY 2026**

**ALL PACKAGING REUSABLE OR RECYCLABLE BY 2030**

### EXTENDED PRODUCER RESPONSIBILITY (EPR)

**MANDATORY EPR FOR ALL PACKAGING PRODUCERS BEFORE 2024 EU DEADLINE**

**NEW RULES FOR EPR SCHEMES TO INCENTIVISE GOOD PRACTICE IN WASTE RECYCLING AND DRIVE BETTER PRODUCT DESIGN**

**PRODUCERS LIABLE FOR MODULATION FEES**

### TEXTILES

**TEXTILE ACTION GROUP TO EXPLORE OPTIONS TO IMPROVE FUTURE CIRCULARITY IN TEXTILES**

**CONSIDER GLOBAL IMPACTS OF THE INTERNATIONAL TRADE IN USED TEXTILES**

**WORK WITH IRISH DESIGNERS AND RETAILERS TO PROMOTE ECO-DESIGN FOR CLOTHING AND TEXTILES**

### FOOD WASTE

**HALVE OUR FOOD WASTE BY 2030**

**WASTE SEGREGATION INFRASTRUCTURE FOR APARTMENT DWELLERS**

**SUSTAINABLE FOOD WASTE MANAGEMENT OPTIONS FOR ALL HOMES AND BUSINESSES**

### CONSTRUCTION AND DEMOLITION WASTE

**STREAMLINE BY-PRODUCT NOTIFICATION AND END-OF-WASTE DECISION MAKING PROCESSES**

**REVISION OF THE 2006 BEST PRACTICE GUIDELINES FOR C&D WASTE**

**WORKING GROUP TO DEVELOP NATIONAL END-OF-WASTE APPLICATIONS FOR PRIORITY WASTE STREAMS**



# Construction Waste Challenges

- **Promote waste prevention in the first instance;**
- **Follow best available techniques;**
- **Expand the range and use of recycled products;**
- **Create a market demand for recycled products and segregating more material on-site to allow for recycling; and**
- **Meet the target of preparing for reuse, recycling and other material recovery (incl. beneficial backfilling operations using waste as a substitute) of 70% by weight of C&D non-hazardous waste (excluding natural soils & stone).**

## Some Key Measures Addressing the Challenges:



- **Working with stakeholders to seek national end of waste decisions on specific C and D waste streams**
- **Detailed guidance on Article 26 by-product processes for specific C and D materials**
- **Complete review of 2006 C and D Waste Management Plan Guidance**
- **Incentives to encourage the use of recycled materials**
- **Work with stakeholders to expand the inclusion of green criteria in procurement**
- **Develop reuse and recovery targets for plastics from construction**
- **Stronger enforcement measures**





## Some Next Steps:

- **CE Strategy launch – end March 2021**
- **New legally binding recycling targets**
- **Implement policy measures that drive greatest change – *ecodesign, EPR, financial instruments***
- **Reconfigure EPA's Waste Prevention Programme as a Circular Economy Programme – *encourage new business models***
- **Participate with ambition in negotiation of 2020 EU Circular Economy legislative package – *sustainable products, waste reduction targets, GPP, plastics reduction***



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# Thank You

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RESILIENCE  
STRATEGY



RESILIENT BELFAST



FUTURE PROOFED CITY  
**BELFAST**  
A CLIMATE PLAN  
FOR BELFAST



**BELFAST**



FUTURE PROOFED CITY  
**BELFAST**  
CLIMATE  
PLAN

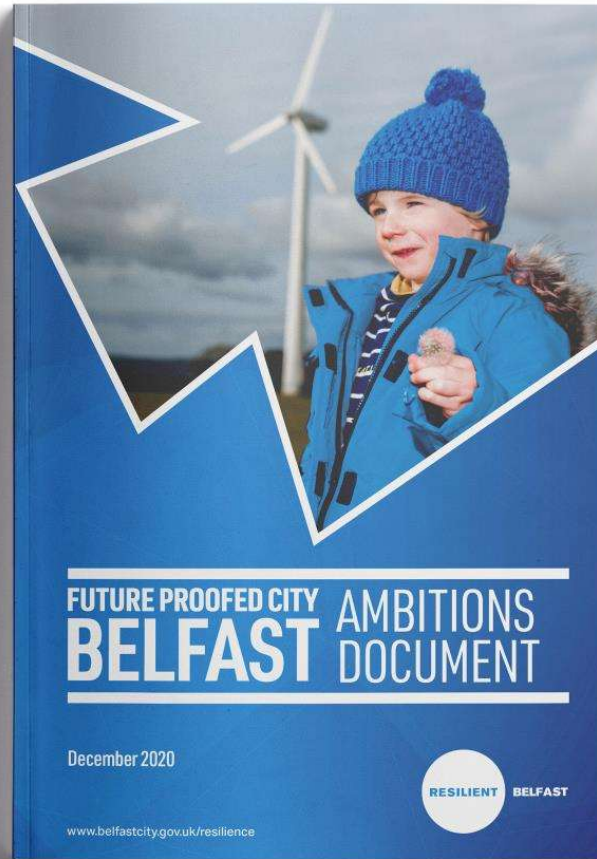
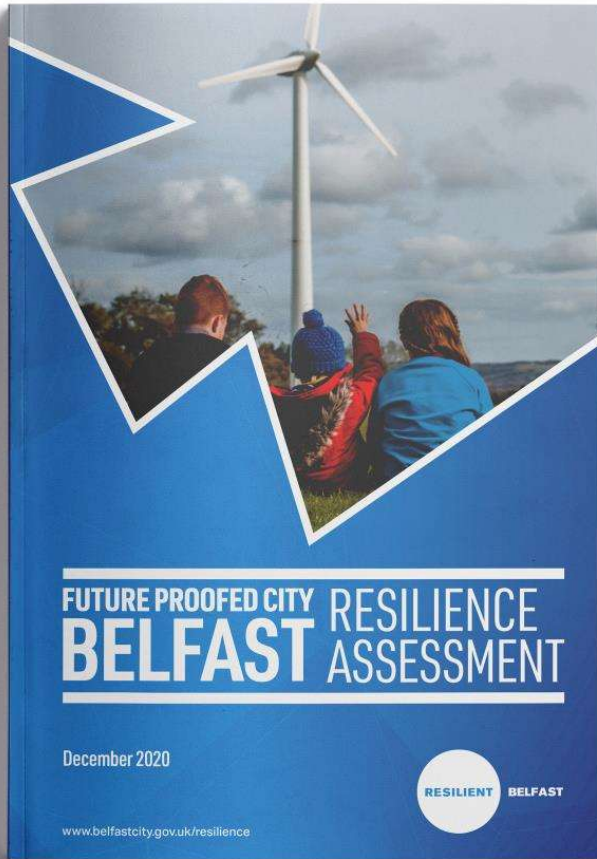


**BELFAST**



# STRATEGY AS THREE DOCUMENTS

FUTURE PROOFED CITY  
**BELFAST**  
RESILIENCE  
STRATEGY



# SHOCKS AND STRESSES

## SHOCKS



Infrastructure capacity



Public health



Cyber resilience



Condition of existing housing stock



Flooding and extreme weather events



UK Exit

## STRESSES



Economic recovery capacity



Climate change



Mental ill-health



Poverty and inequality



Housing supply in the city



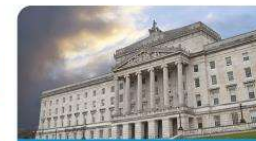
Use of prescription drugs



Population change



Segregation and division



Governance and financing of risk



Carbon intensive systems

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## OUR GOAL

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Our goal is to transition Belfast to an inclusive, net zero-emissions, climate resilient economy in a generation.

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**BELFAST**  
RESILIENCE  
STRATEGY





# RESILIENT BELFAST: 2020



We have identified three 'multiple problem solvers' - where we tackle several shocks or stresses at once.

A strategic focus on each of these areas will build the city's resilience, over time. They are:



**CLIMATE  
ADAPTATION  
AND MITIGATION**



**PARTICIPATION  
OF CHILDREN  
AND YOUNG PEOPLE**



**CONNECTED, NET  
ZERO-EMISSIONS  
ECONOMY**





## CLIMATE ADAPTATION AND MITIGATION

FUTURE PROOFED CITY  
**BELFAST**  
RESILIENCE  
STRATEGY

1. New city-wide structures to collaborate on climate action
2. Delivery of Recommendations in Belfast's Mini Stern: A Net Zero Carbon Roadmap for Belfast
3. Climate change risk assessment
4. Belfast City Council Climate Adaptation and Mitigation Plan
5. Belfast Harbour - Green Port
6. Queen's University Environmental Solutions Centre
7. Sustainable District
8. Belfast Region City Deal
9. One Million Trees
10. Local Development Plan: a Critical Lever for Resilience
11. Sustainability and Food



## PARTICIPATION OF CHILDREN AND YOUNG PEOPLE



12. A Permanent Platform for Involving Children and Young People on Climate Change

13. Quality of urban childhood

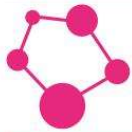
14. Ulster University Architects for Change Programme

15. A Playful City

16. City centre public realm play Spaces

17. Ulster University MSc in Planning and City Resilience

18. Public transport



## CONNECTED, NET ZERO-EMISSIONS ECONOMY



20. Sustainable drainage

21. A Zero Emissions city bus fleet by 2030

22. Delivering Belfast's Net Zero Carbon Roadmap: Buildings

23. A Bolder Vision for Belfast

24. Electric vehicle infrastructure

25. Investment in existing NIHE stock

26. Developing a Hydrogen Eco System

28. Training and skills for an inclusive low-carbon economy

29. Innovation and Inclusive Growth Commission

30. Fuel Poverty

# FUTURE PROOFED CITY

Our governance structure




City wide



Council

  
City wide climate adaptation and mitigation plan

  
Our own Climate adaptation and mitigation plan by 2021

  
All-party climate working group

  
**Belfast Agenda**  
A sustainable city shared and loved by all its citizens

  
**Resilience Strategy**  
Transition to an inclusive low carbon climate resilient economy

  
**Resilience and Sustainability Board**

  
**BELFAST CLIMATE COMMISSION**

Approval process

  
**SP&R**

  
**Council**



Delivered by

Produce

Advised by





[Home](#) » [Belfast: One Million Trees](#)

## Belfast: One Million Trees



Over the last year, we have been working with partners from organisations across the city to create a process for collective tree planting across Belfast. The idea originated with Belfast Metropolitan Residents Group and has become an ambitious partnership initiative coordinated by Belfast City Council, which aims to make our city greener, cleaner and healthier. Our ambition is to see one million trees planted over a 15-year period.

**Why is planting trees important?**

### Lifecycle



#### Securing Commitment

During the last year, we have been working to secure commitment to our Million Trees Programme

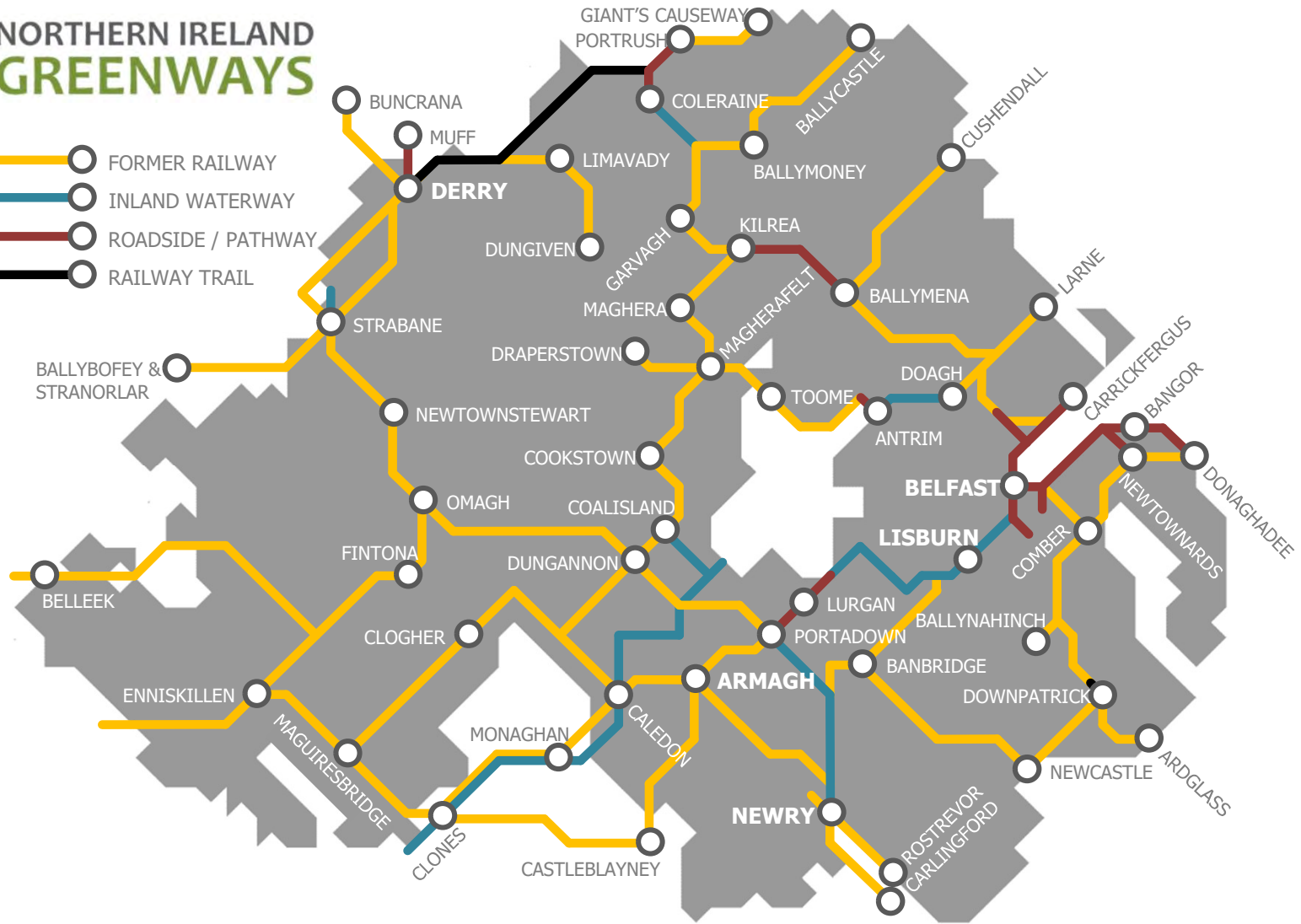


#### Getting Started

Launch of our Million Trees Programme. Tell us your ideas

# NORTHERN IRELAND GREENWAYS

-  FORMER RAILWAY
-  INLAND WATERWAY
-  ROADSIDE / PATHWAY
-  RAILWAY TRAIL



(15)

VICEREGAL COMMISSION

on  
IRISH RAILWAYS

including  
LIGHT RAILWAYS  
1906.

Scale:— Ten Statute Miles to One Inch  
Miles 10 15 20 25 30 35 40





(15)

VICEREGAL COMMISSION

on

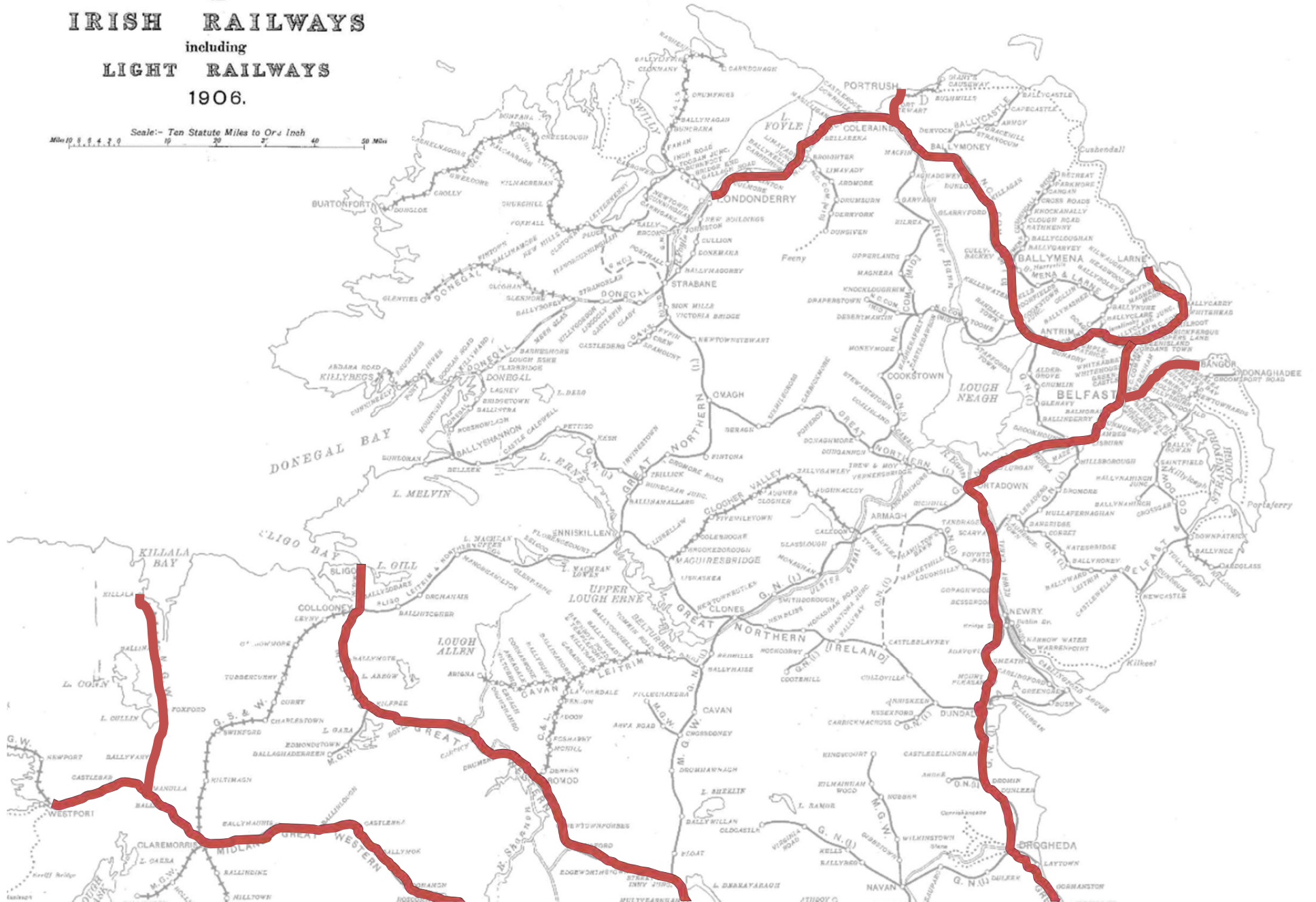
IRISH RAILWAYS

including

LIGHT RAILWAYS

1906.

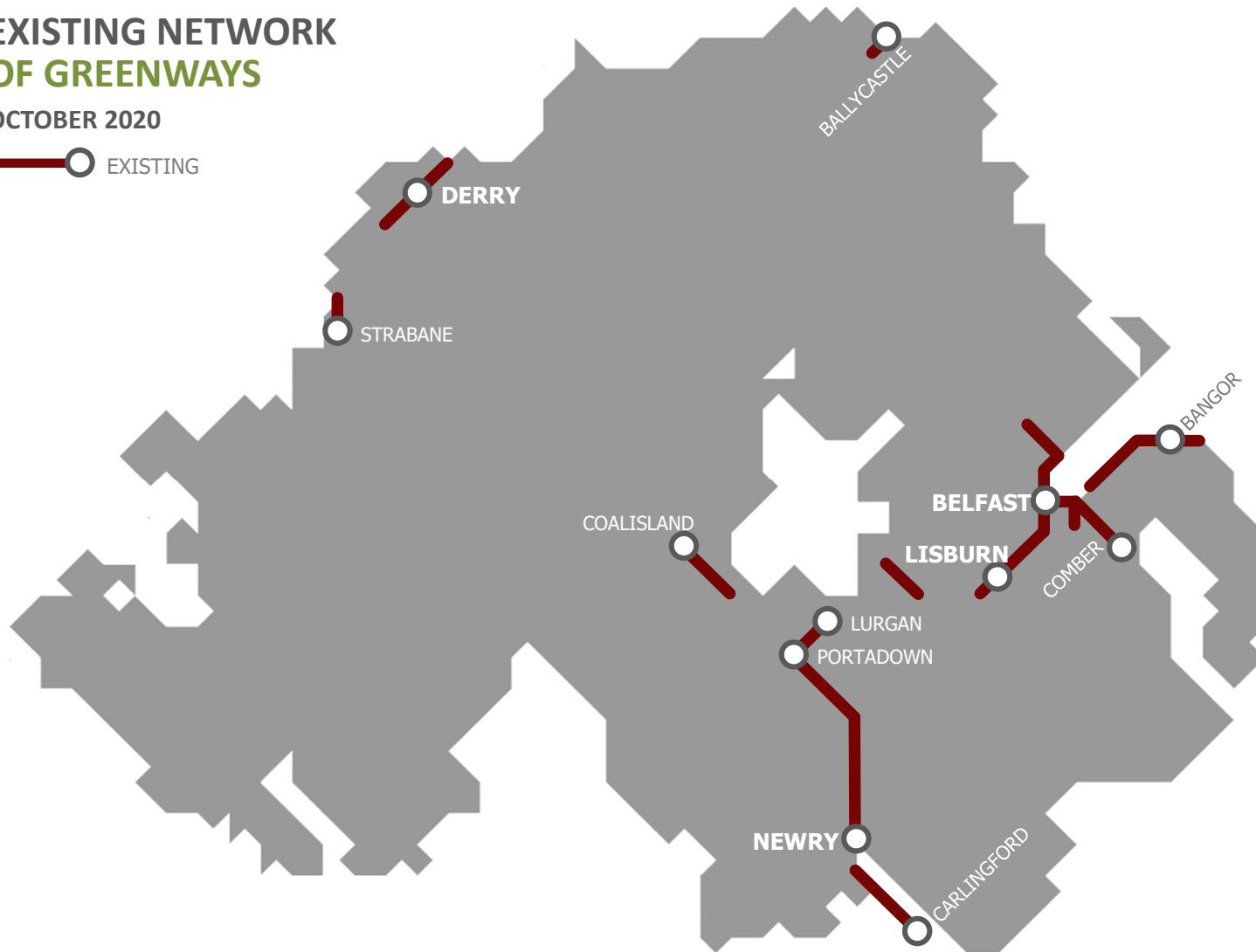
Scale:— Ten Statute Miles to One Inch  
Miles 10 20 30 40 50  
Inches 1 2 3 4 5



# EXISTING NETWORK OF GREENWAYS

OCTOBER 2020

 EXISTING





**LAGAN TOWPATH  
15KM RURAL ROUTE  
OPENED 1763**



**COMBER GREENWAY  
9KM URBAN AND RURAL ROUTE  
OPENED 2008**



**CONNSWATER COMMUNITY GREENWAY  
16KM URBAN ROUTES (EAST BELFAST)  
COMPLETED 2017**



**BALLYMENA, CUSHENDALL AND RED BAY RAILWAY  
GLENARIFF FOREST PARK**

GOOGLE MAPS

Google



**BALLYMENA, CUSHENDALL AND RED BAY RAILWAY  
GLENARIFF FOREST PARK**

**VISIT SEPTEMBER 2014**

# GLENS OF ANTRIM GREENWAY

# Ballymena ← 19 miles → Cushendall

□ to □  
□ Larne ○ Broughshane

Martinstown Cargan

NORTHERN IRELAND GREENWAYS

# GREENWAY OF THRONES

# Ballymoney ← 15 miles → Ballycastle

□ to □  
□ Garvagh / Coleraine

Dervock Armoiy

NORTHERN IRELAND GREENWAYS

Photo credit: © by Graham Gilbert (Belfast) and Jim Dill (Belfast) CC BY-NC 2012 0110.com/1001010101





Department for  
**Infrastructure**  
An Bord  
**Bonneagair**  
www.infrastructure.gov.ie

# Exercise Explore Enjoy

A STRATEGIC PLAN  
FOR GREENWAYS

NOVEMBER 2016

**1**

'Greenways are traffic-free routes connecting communities to all kinds of destinations for commuting, everyday journeys or leisure and recreation'

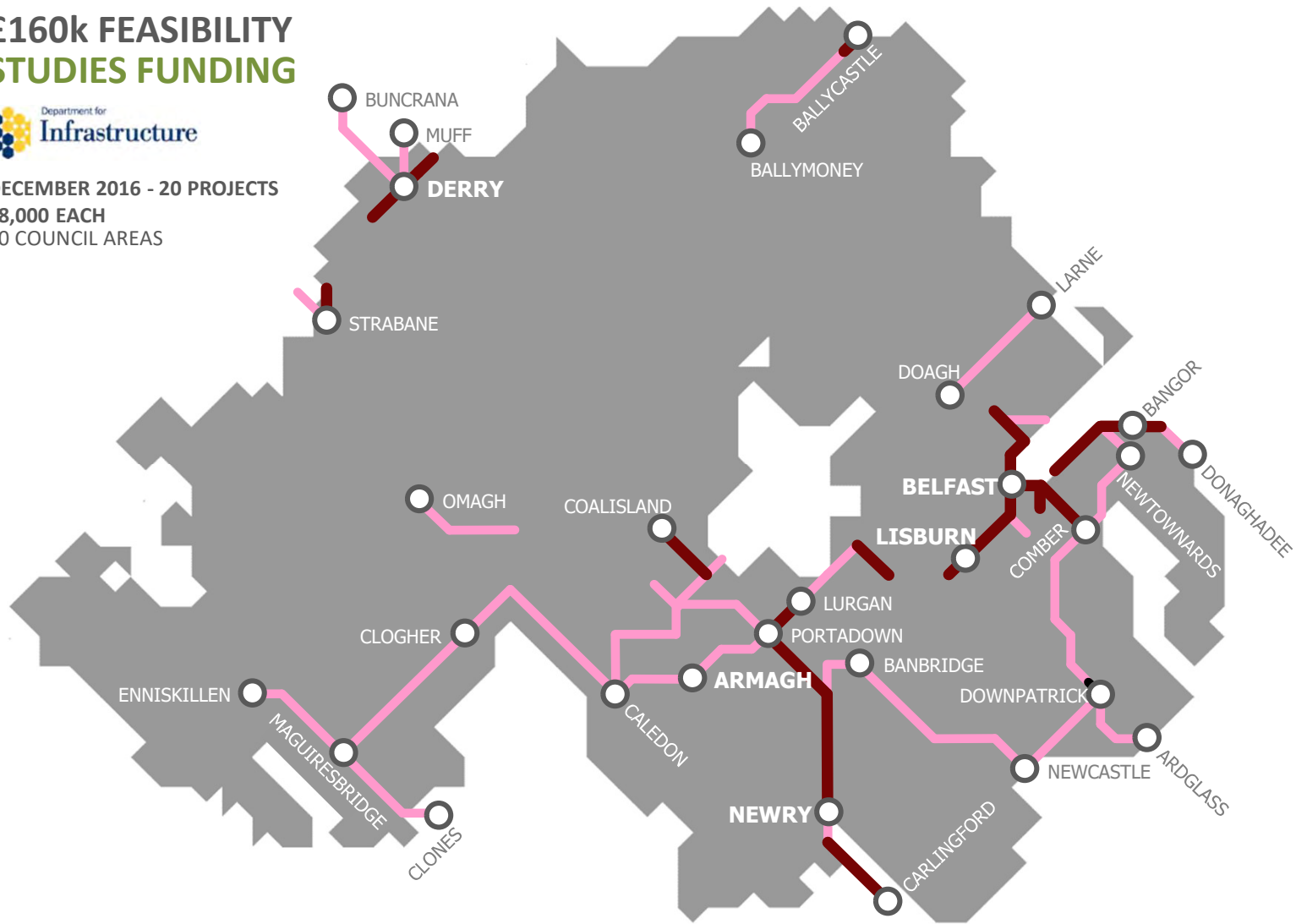


Figure 1. Map of Primary and Secondary Greenway Routes

# £160k FEASIBILITY STUDIES FUNDING



DECEMBER 2016 - 20 PROJECTS  
£8,000 EACH  
10 COUNCIL AREAS



# €23M CROSS-BORDER GREENWAYS



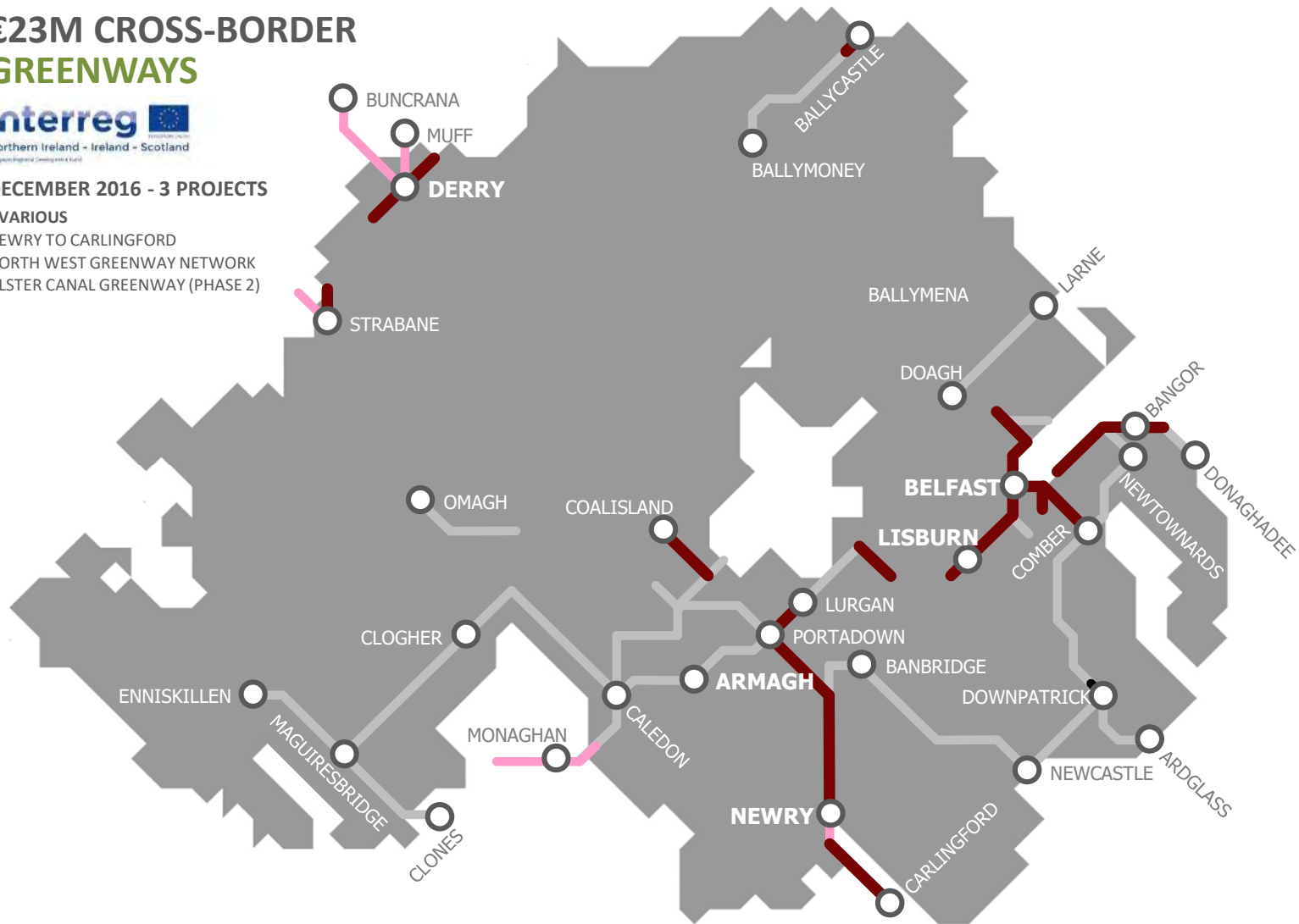
DECEMBER 2016 - 3 PROJECTS

€VARIOUS

NEWRY TO CARLINGFORD

NORTH WEST GREENWAY NETWORK

ULSTER CANAL GREENWAY (PHASE 2)



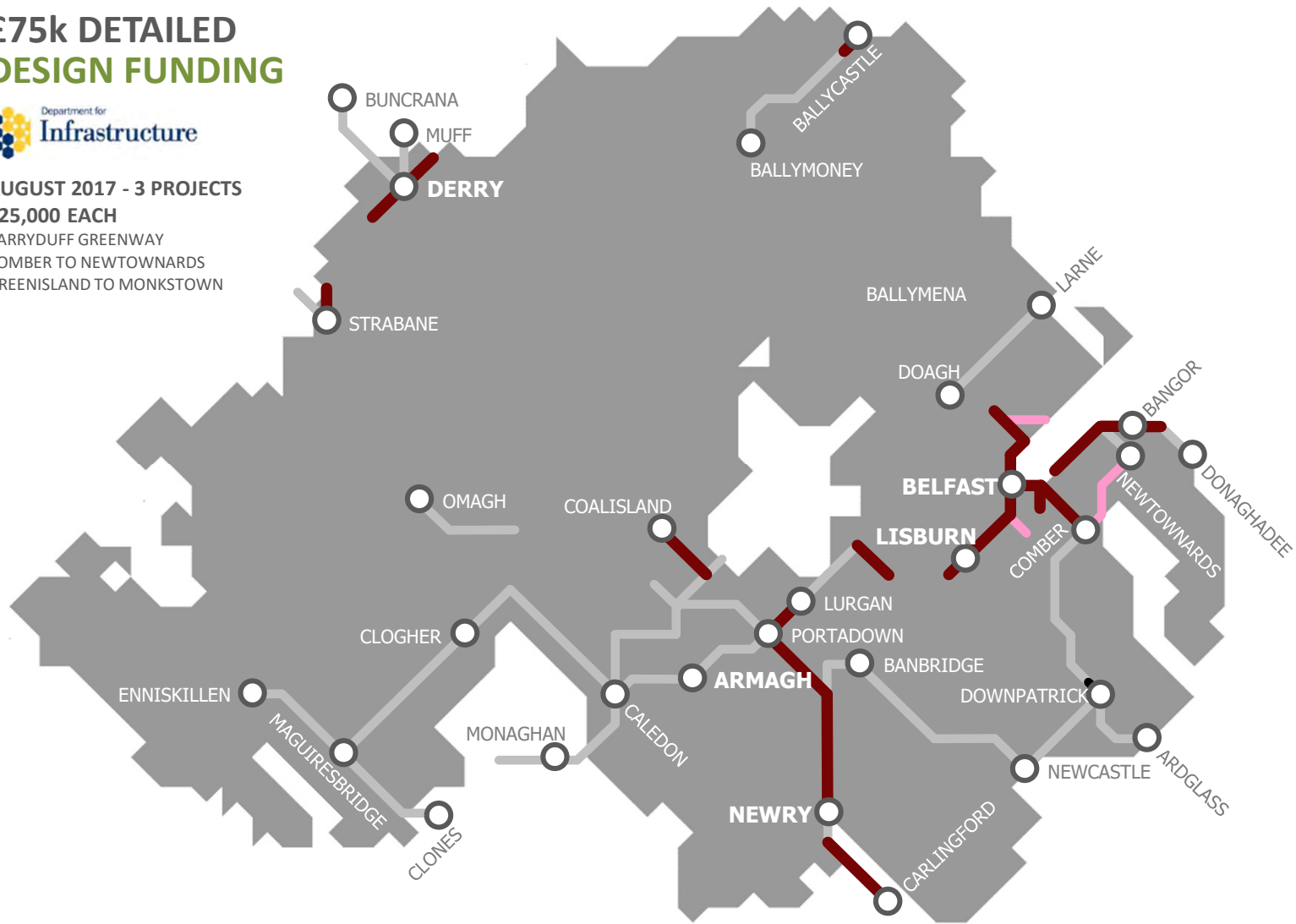
# £75k DETAILED DESIGN FUNDING



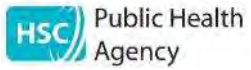
AUGUST 2017 - 3 PROJECTS

£25,000 EACH

- CARRYDUFF GREENWAY
- COMBER TO NEWTOWNARDS
- GREENISLAND TO MONKSTOWN

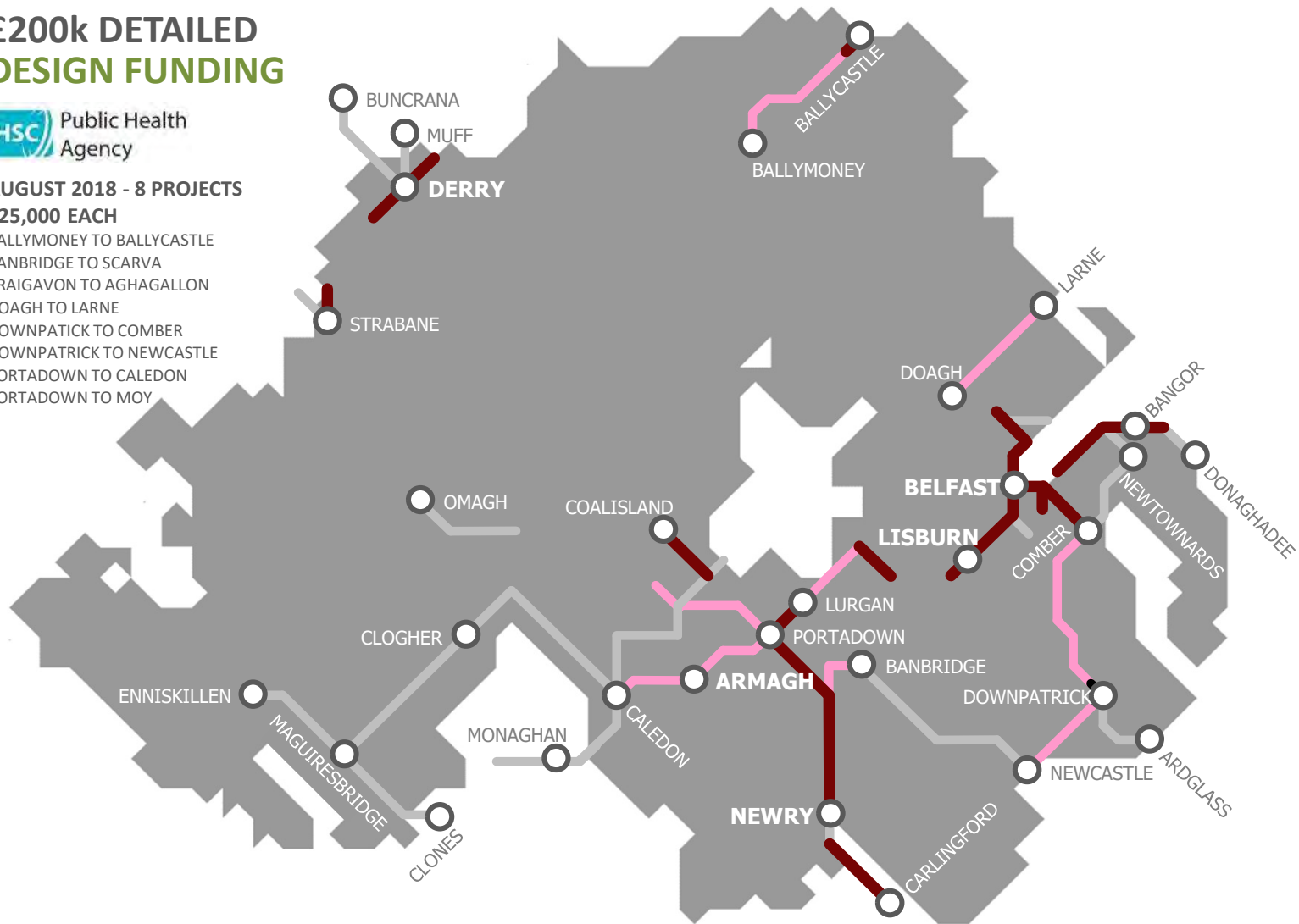


## £200k DETAILED DESIGN FUNDING



**AUGUST 2018 - 8 PROJECTS  
£25,000 EACH**

- BALLYMONEY TO BALLYCASTLE
- BANBRIDGE TO SCARVA
- CRAIGAVON TO AGHAGALLON
- DOAGH TO LARNE
- DOWNPATICK TO COMBER
- DOWNPATRICK TO NEWCASTLE
- PORTADOWN TO CALEDON
- PORTADOWN TO MOY



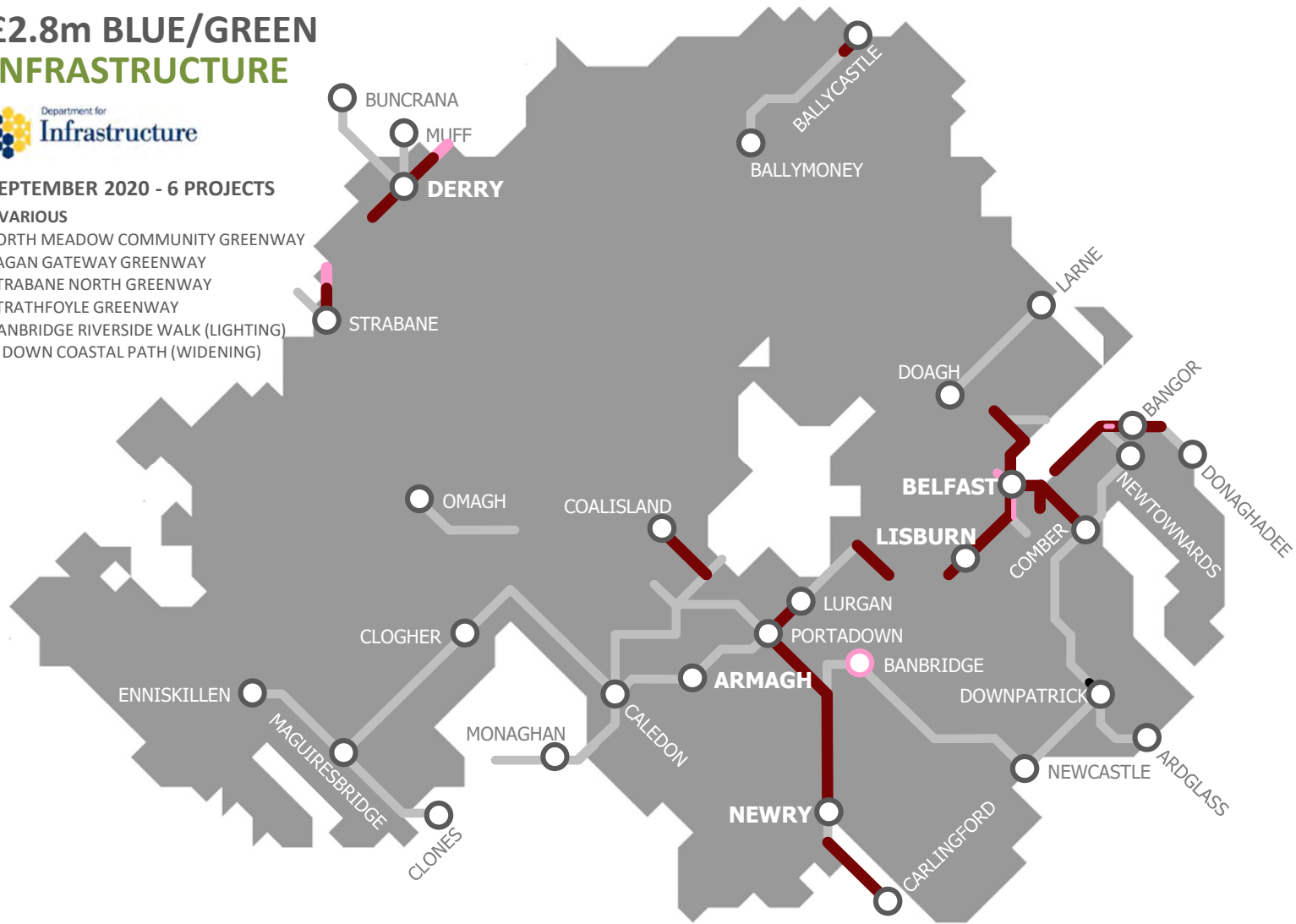
# £2.8m BLUE/GREEN INFRASTRUCTURE



SEPTEMBER 2020 - 6 PROJECTS

£VARIOUS

- FORTH MEADOW COMMUNITY GREENWAY
- LAGAN GATEWAY GREENWAY
- STRABANE NORTH GREENWAY
- STRATHFOYLE GREENWAY
- BANBRIDGE RIVERSIDE WALK (LIGHTING)
- N DOWN COASTAL PATH (WIDENING)



# SHARED IRELAND FUND TO 2025

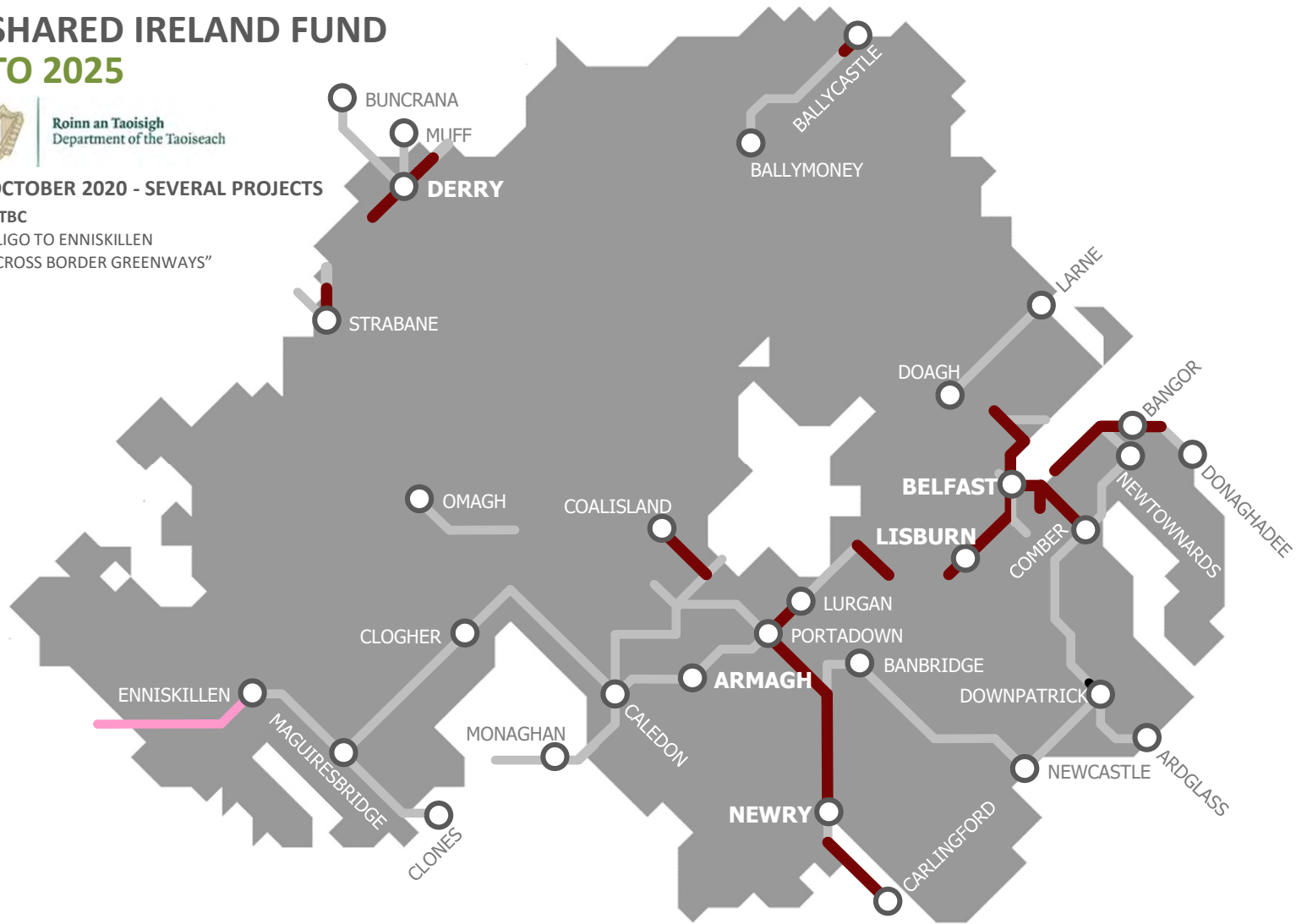


Roinn an Taoisigh  
Department of the Taoiseach

OCTOBER 2020 - SEVERAL PROJECTS



€TBC

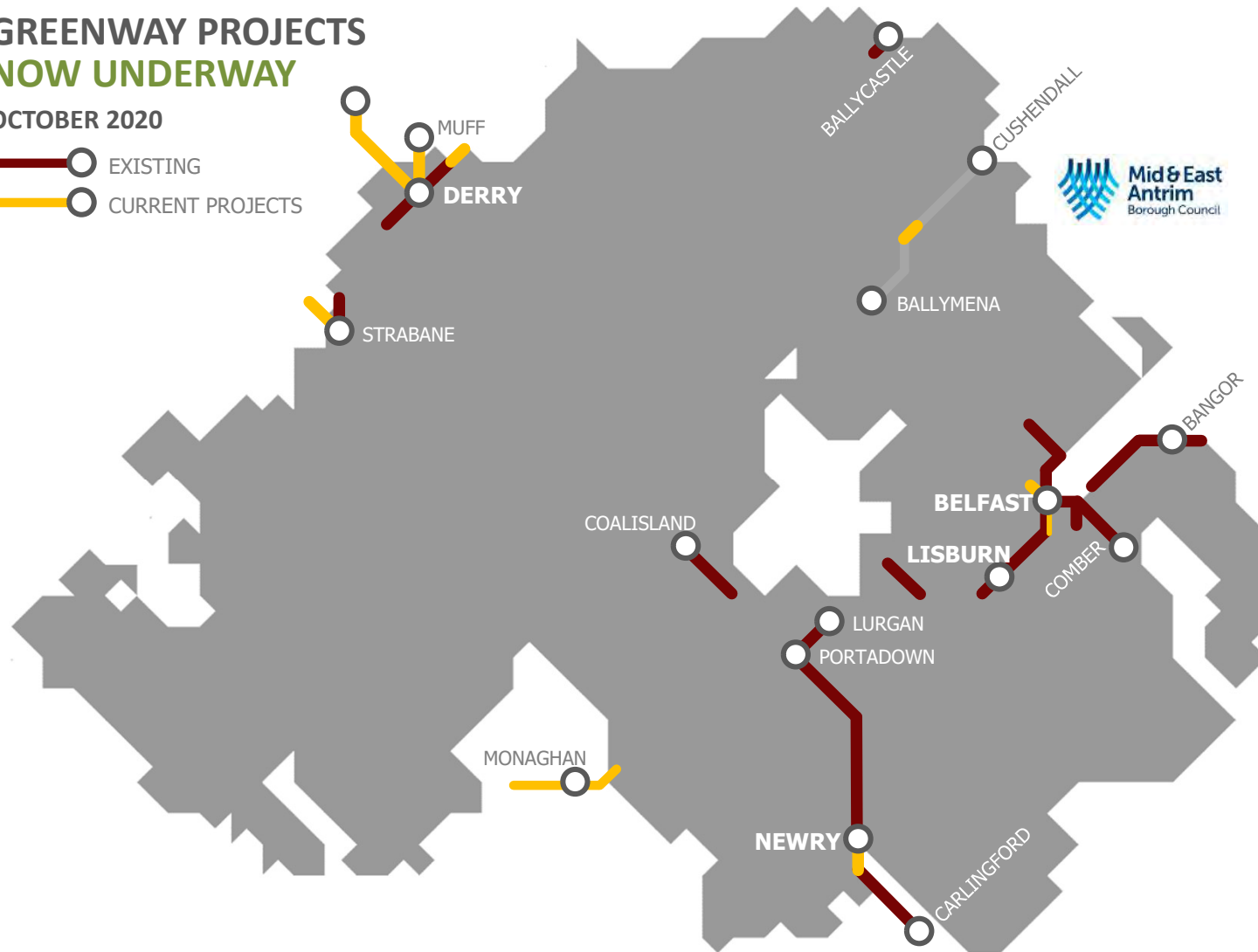
SLIGO TO ENNISKILLEN  
"CROSS BORDER GREENWAYS"



# GREENWAY PROJECTS NOW UNDERWAY

OCTOBER 2020

-  EXISTING
-  CURRENT PROJECTS



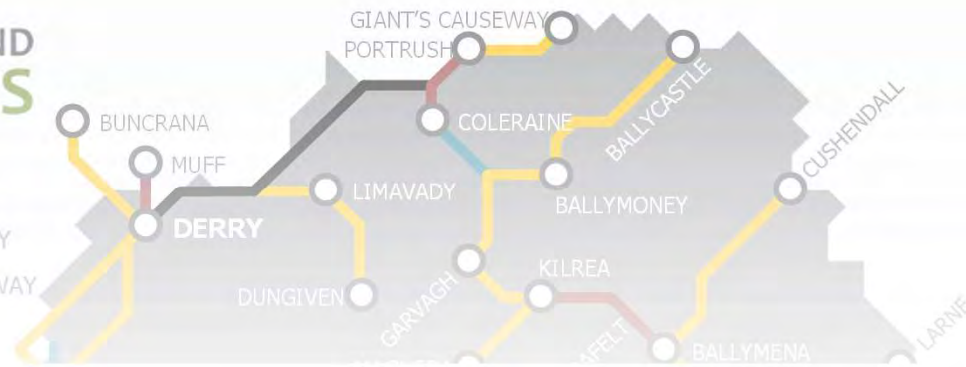


**FUTURE PRIORITIES  
TO PROGRESS THE GREENWAY STRATEGY**

- Expectation of a multi-year Capital Grants Programme
- Develop dedicated resources within central / local government
- Continued focus on cross-border projects
- Work to address issues with land access

## NORTHERN IRELAND GREENWAYS

-  FORMER RAILWAY
-  INLAND WATERWAY
-  ROADSIDE / PATHWAY
-  RAILWAY TRAIL



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 [BIKEFAST.ORG](https://www.bikefast.org)

 [@NIGREENWAYS](https://twitter.com/nigreenways)

