

LOCAL NET ZERO HUBS

PUTTING NET ZERO ON THE BALANCE SHEET



HOUSEKEEPING

- Please keep your camera and microphone off
- The session will be recorded
- If you have any questions, please use the chat function



AGENDA

13:00-13:05 Introduction and Housekeeping

Ciara Shannon, Green Finance Lead, North West Net Zero

13:05 –13:20 Introduction to Hull & East Riding Internal Carbon Pricing & Insetting

Harry Baross, Regional Project Manager, Hull and East Yorkshire, North East Net Zero Hub

13:20–13:28 Q&A

13:28-13:38 Pilot Approaches to Carbon Insetting

Dan Wrench, Climate and Carbon Project Officer, Climate Change Taskforce, Shropshire Council

13:38 –13:43 Q&A

13:43–13:53 Greater Manchester Natural Capital Investment Plan

Krista Patrick, Natural Capital Co-ordinator Greater Manchester Combined Authority

13:53 – 13:58 Q&A

13:58 Wrap-up

Ciara Shannon, Green Finance Lead, North West Net Zero Hub



Hull and East Riding Internal Carbon Pricing

Harry Baross – Net Zero Coordinator

Hull and East Yorkshire Business Growth and Skills Hub

North East and Yorkshire Net Zero Hub



Current State of Play

Think Like an Accountant

What is an Internal Carbon Price?

How to set an Internal Carbon Price?

How to use an Internal Carbon Price?

Next steps

Current State of Play

- ✓ Climate Emergency
- ✓ Climate Change Strategy and Action Plan
- ✓ Grant Funded Climate Change Projects
- ✗ Non-Grant Funded Climate Change Projects
- ✗ Embedding Climate Change into other Projects

Current State of Play



Costs in language and number that decision makers understand



Benefits in language and number that decision makers understand



Think Like an Accountant

- A collaborative scoping project between the North East and Yorkshire Net Zero Hub, Hull and East Yorkshire Business Growth and Skills Hub, Hull City Council, and East Riding of Yorkshire Council.
- Expert external consultancy from Anthesis.
- To be used across the public sector, especially within local government



Think Like an Accountant

- ✓ Up front and running costs
- ✓ Long term revenues and cost savings
- 🧠 Achieving targets
- 🧠 Avoiding abatement costs
- 🧠 Social value benefits



Internal Carbon Pricing

What is Internal Carbon Pricing?

A way of putting a financial value to the carbon that an activity emits or saves

Implicit Cost

- Price based on the presumed cost of carbon reduction activity for your organisation, including offsetting and insetting (also called Mitigation Cost)
- $$\frac{\text{cost of carbon reduction measure(s)}}{\text{tonnes CO2e reduced}}$$

Social Cost

- Price based on the projected financial damage to society caused by the carbon an activity emits, or financial saving from carbon saved
- Factors include health, infrastructure, prosperity etc. and can be hard to calculate robustly

What is Internal Carbon Pricing

Meet Net Zero Targets



Implicit Cost Price

Focus on Social Value



Social Cost Price

UK Govt Preference

How to set an Internal Carbon Price

With thorough stakeholder engagement and data analysis, find a way to set a price:

- High enough to make a difference
- Low enough to be acceptable
- Robust enough to be defensible
- Flexible enough for different circumstances and changes over time

External benchmarks will be useful as a starting point and as a comparison if creating your own price.

External Prices are likely the only way to go for a Social Cost Price.

How to set an Internal Carbon Price

UK Green Book Traded Carbon Price – £63-84/tCO₂e – based on industrial and carbon markets

UK Green Book Non-Traded Carbon Price – £128-384/tCO₂e – based on wider society mitigation costs and used in policy evaluation

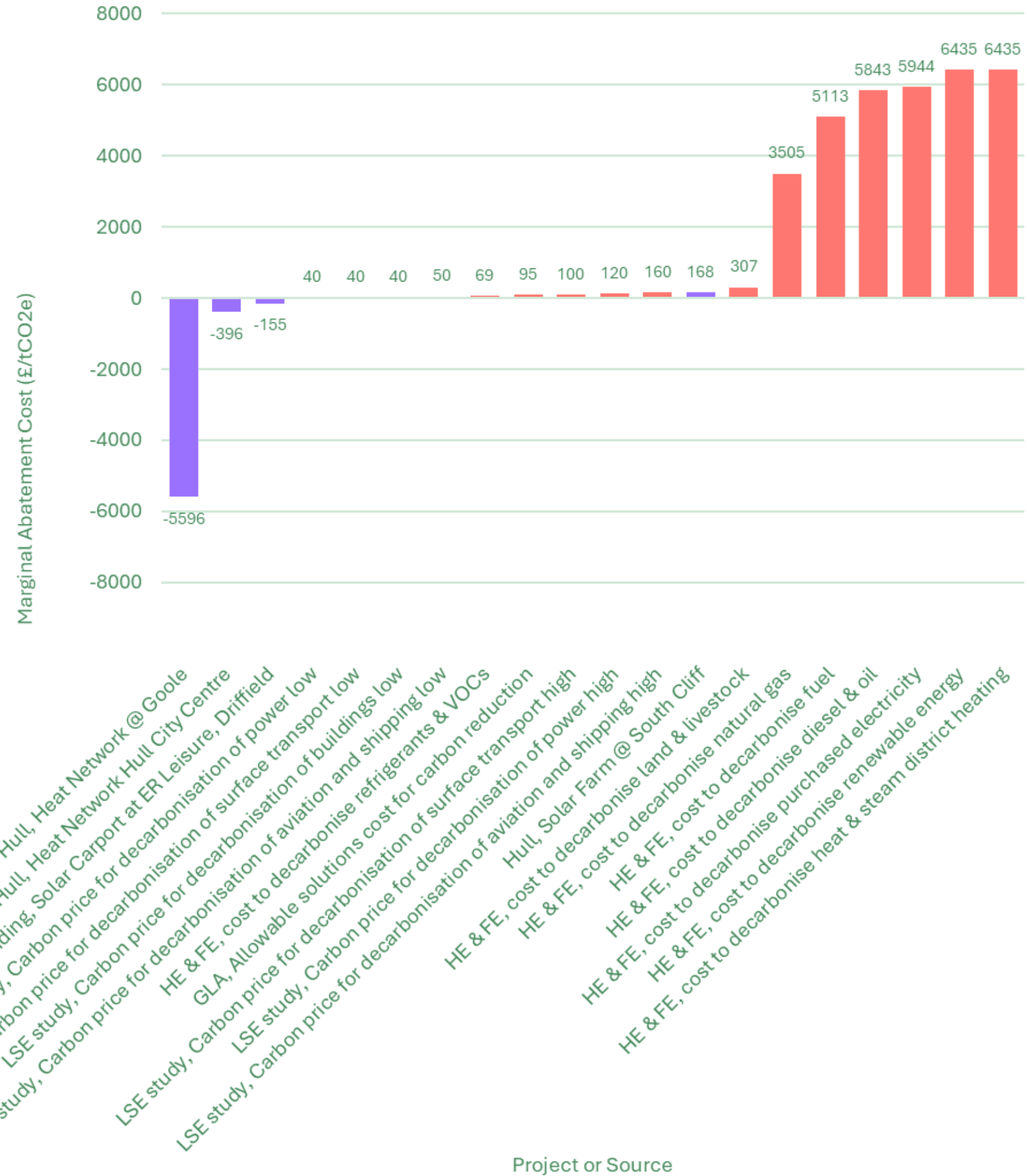
World Bank Carbon Pricing Corridors – \$40-80/tCO₂e – globally relevant prices, last reviewed in 2017

Networking for Greening the Financial System - £88-192/tCO₂e – prices across multiple scenarios depending on appropriate targets

Levitt Bernstein – £330-880/tCO₂e – report produced for 18 London Boroughs

Calculate your own based on previous and/or planned projects

Implicit prices



Year	Low series	Central Series	High Series
2020	120	241	361
2021	122	245	367
2022	124	248	373
2023	126	252	378
2024	128	256	384
2025	130	260	390
2026	132	264	396
2027	134	268	402
2028	136	272	408
2029	138	276	414
2030	140	280	420
2031	142	285	427
2032	144	289	433
2033	147	293	440
2034	149	298	447
2035	151	302	453
2036	153	307	460
2037	156	312	467
2038	158	316	474
2039	161	321	482
2040	163	326	489
2041	165	331	496
2042	168	336	504
2043	170	341	511
2044	173	346	519
2045	176	351	527
2046	178	356	535
2047	181	362	543
2048	184	367	551
2049	186	373	559
2050	189	378	568

How to use an Internal Carbon Price

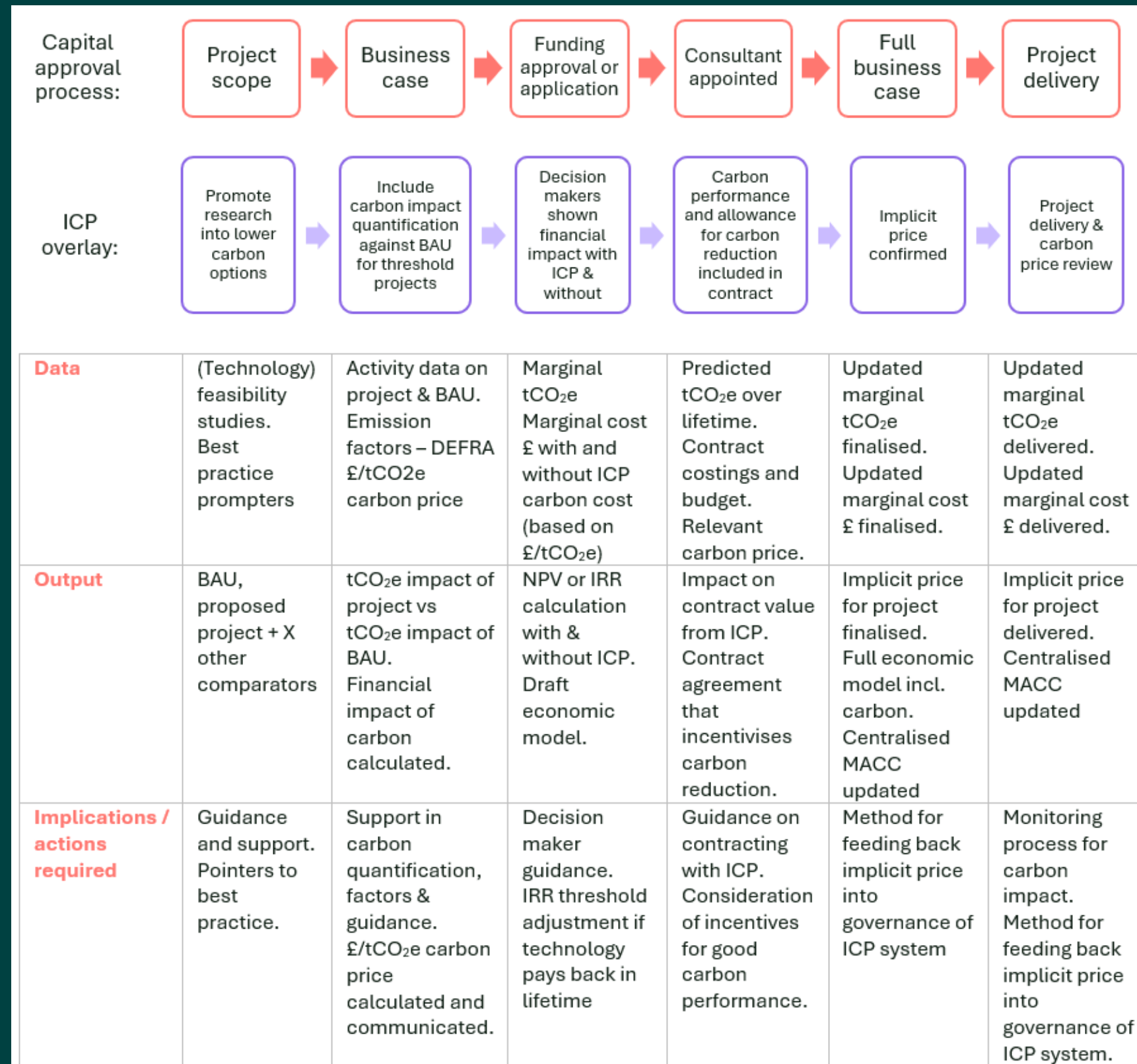
Shadow Price

- Used for information only in decision making
- Able to justify higher spends on net zero elements when comparing options
- Often at a high value set by either implicit or social costs
- Risk that expensive net zero projects don't meet the price benchmark

Carbon Tax

- An internal tax levied on projects per tCO₂e emitted
- Creates an internal funding pot for net zero projects if activity isn't change to be net zero
- Often set at a lower value to be more palatable, using an implicit price
- Risk that internal funding pot is not successfully deployed

How to use an Internal Carbon Price



- Capital approval process seen as a good starting point
- It already has in-built options appraisals and cost-benefit analyses
- Often a large source of short-term and long-term emissions
- Can apply to pure net zero projects and net zero being embedded in other projects

How to use an Internal Carbon Price

The same principles can apply to service design and decision making.

Scarborough Borough Council's 2022 decision to trial HVO in its fleet was influenced by reference to Green Book Non-Traded Values as a shadow price.

The project was able to save c.900tCO₂e over a year with a carbon cost of £168/tCO₂e, which was below the central Green Book Non-Traded cost of £248/tCO₂e.



Next Steps

- Hull City Council are set to trial Internal Carbon Pricing in their capital approval process from 2024 and will share updates and a review
- Our Scoping Report contains a 12 step guide to getting to a similar point, with strong recommendations around stakeholder engagement and starting with a trial
- We would love to hear your experiences with similar initiatives

Thank you

Harry Baross – h.baross@HEYBusinessGrowthSkillsHub.com

Pilot approaches to Carbon insetting in Shropshire



Dan Wrench
Climate & Carbon
Project Officer

1. Introduction

Shropshire Council:

- Declared a climate emergency in May 2019
- Adopted a Climate Strategy and Action Plan in December 2020:
Carbon net-zero council by 2030 – including Scope 3!

We have team leaders on:

- Power Up – renewable energy production. Self-sufficient in energy by 2030
- Power Down – reduction in emissions from buildings and transport
- Carbon Capture and Storage – carbon storage in trees, soil, minerals and materials.



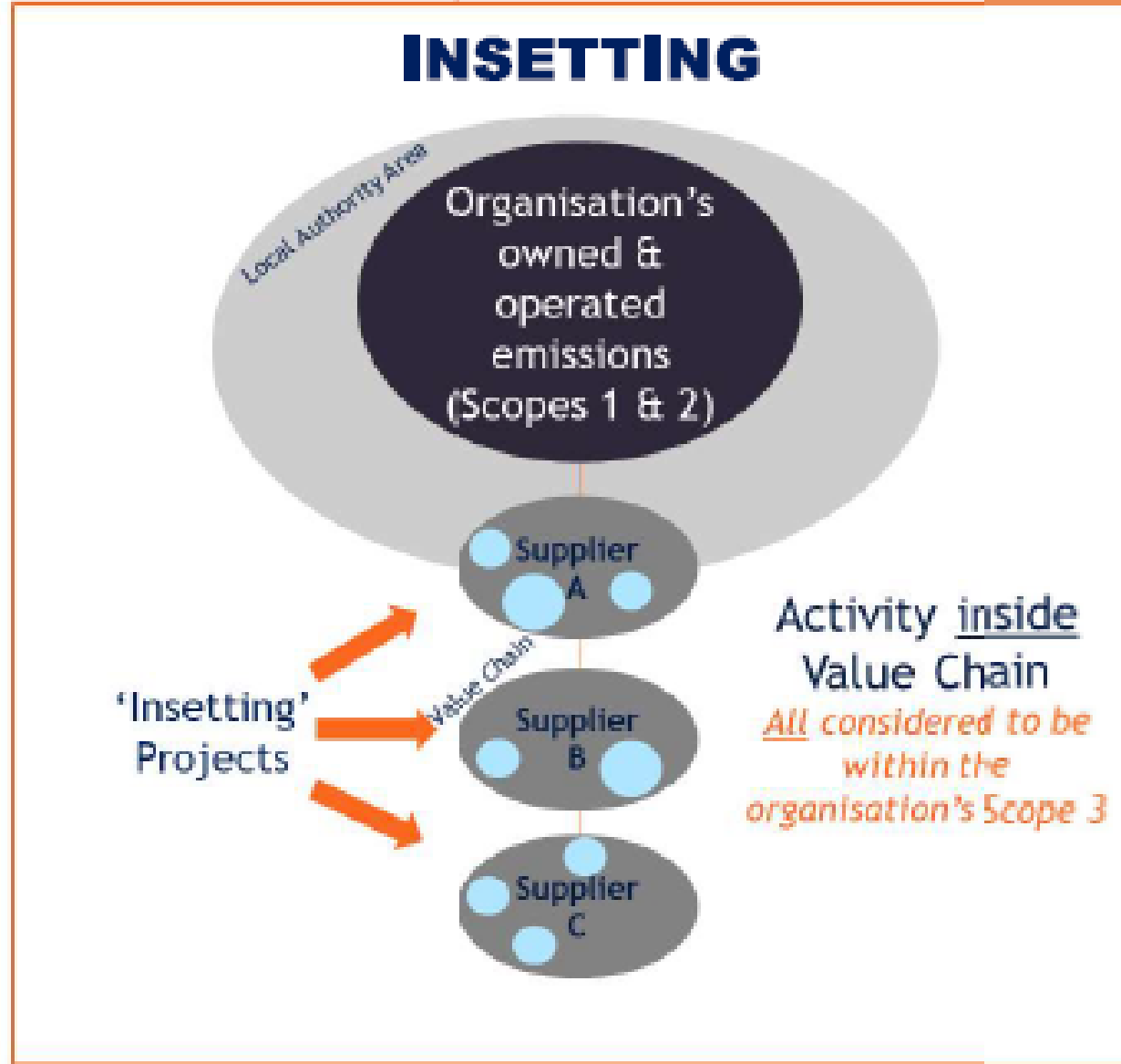
CONTEXT

WHAT IS AREA BASED INSETTING (ABI)?

Area Based Insetting (ABI) is a new mechanism that builds on the principles of traditional 'insetting', by shifting the focus of the carbon saving project from a value chain into the geographic boundary of a local authority. The authority boundary could be set at an individual district or unitary borough, along with counties and combined authority boroughs.



- Key principles and processes may be transferrable to Area Based Insetting, such as project validation
- Carbon credits can be sold help finance projects that may otherwise struggle to obtain funding



- Insetting can enable mutual benefits to be generated between project funder and developer
- Projects can have a direct link to the funder's local stakeholders, such as customers & employees

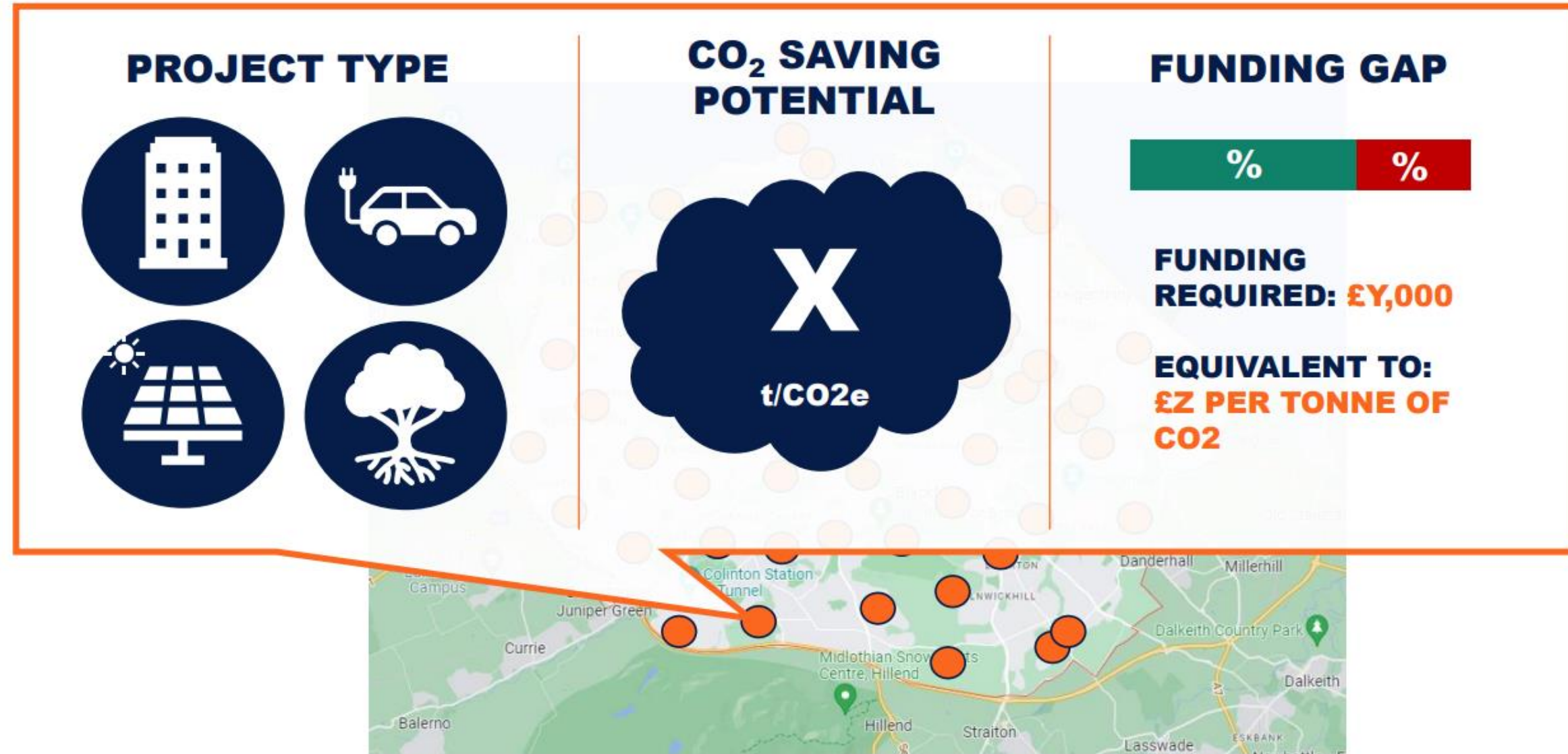


- ABI applies selected principles and learnings from offsetting, including the use of credits to attract funds
- It also seeks to retain insetting's potential to connect local stakeholders and generate mutual benefits

Figure 1: Diagrams which demonstrate the traditional format for insetting (left) and a new format for Area-based insetting (right).

Area Based Insetting (ABI)

- Worked with Anthesis and several Local Authorities on the development of a framework for insetting within the Local Authority area
- Several projects proposed leading to 3 validated projects which are available on the Anthesis
- Difficulties remain with Monitoring, Reporting and Verification for purchasers of the credits
- Funding hasn't been available to continue with ABI at this time



Area Based Insetting



 Sign In or  Create Account

Welcome to ABI Registry

Add Project

Sort Shropshire

Project type

Co-benefits



Tree Planting

Type: **Natural Environment**
£/t CO2e: **300**
Status: **Unvalidated**
Funding Required: **£36,000**
Funding Complete: **0%**

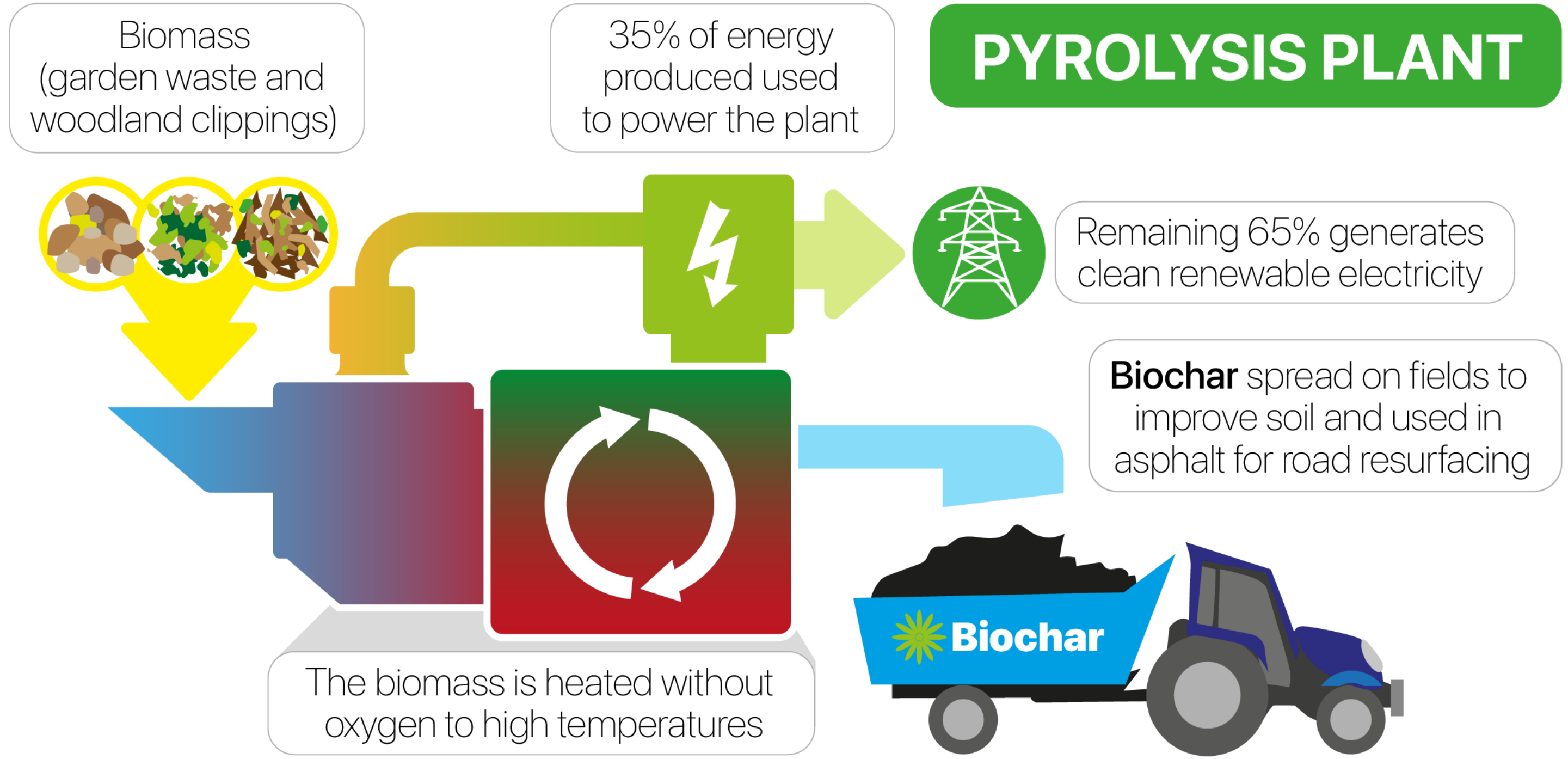


Future Homes

Type: **Domestic Buildings**
£/t CO2e: **5,320**
Status: **Validated**
Funding Required: **£44,100**
Funding Complete: **0%**



Pyrolysis process



Biomass for pyrolysis

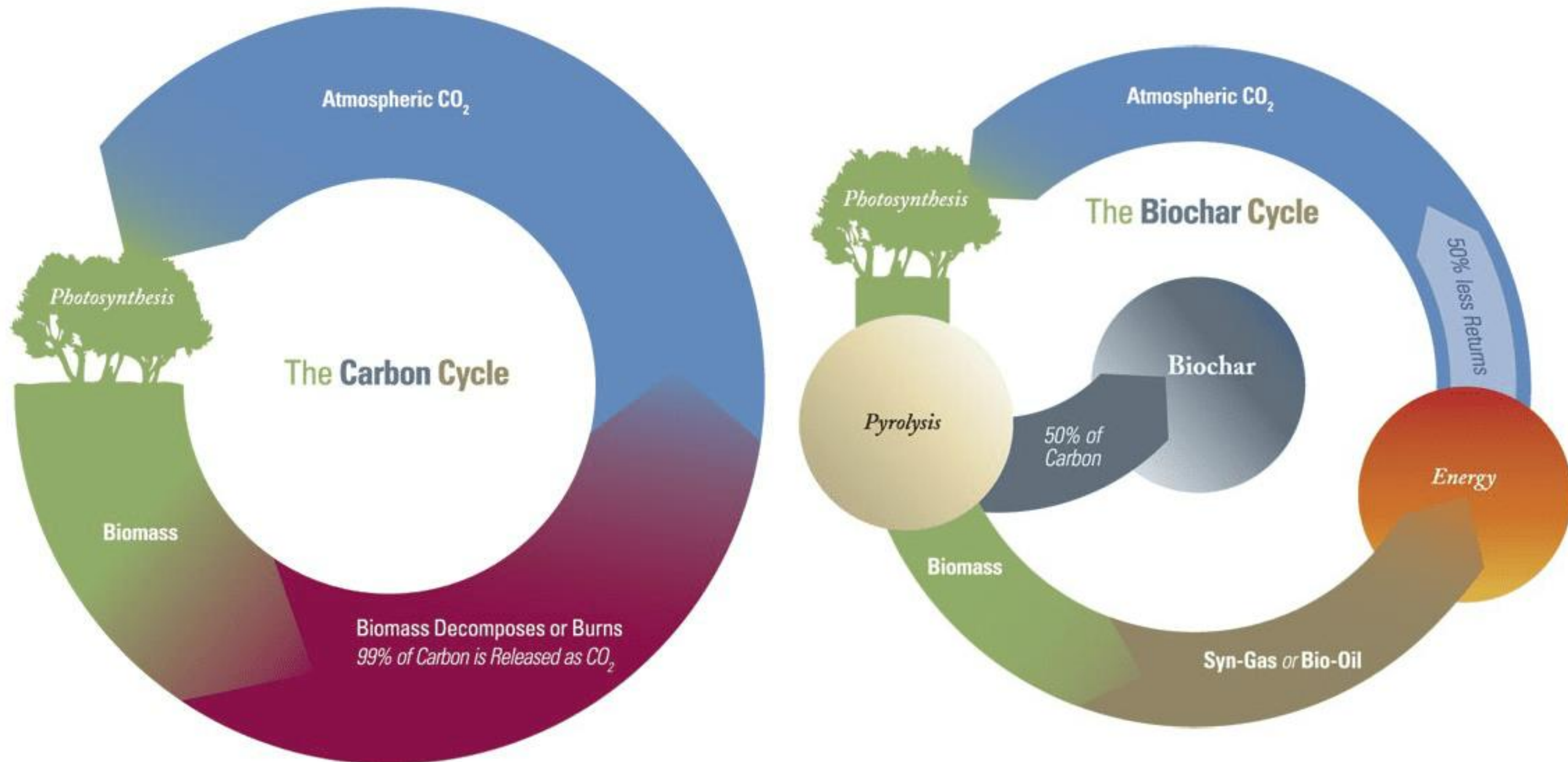
Key types of biomass

- Compost oversize / green bin
- Chipped roadside trees including diseased ash
- Grass cuttings from road verges or parks
- Scrub
- Bracken, gorse and heather
- Sewage sludge
- Food waste



Carbon cycle

How pyrolysis can help store carbon





Small scale pyrolysis



- 'TAWI Stove'. Very small scale. Domestic use
- Produces enough biochar for personal use in garden and compost heaps.
- Reduce smells in compost caddy's and improves resulting compost
- Costs from £285
- Shropshire Council has 7 of these for loan to local community groups and forest schools

Small scale pyrolysis



- ‘Flame curtain’ effect circulates combustible gas and particulates back into the fire to reduce GHG and pollution
- 20 uses could produce max of 3t of biochar – 8 tCO₂
- Costs about £3200
- Uses for conservation managers, farmers, hedge layers, etc
- A downside is that the energy isn’t used
- Shropshire Council has 3 of these and have started loaning them out.

C-1000 pyrolysis unit produced by Woodtek Ltd



- 670 tonnes of biochar per year
- 3800 tonnes of biomass feedstock
- **1,600 carbon credits (tCO₂e)**
For comparison, Shropshire Council's direct carbon emissions in 2022 was 2,424 tCO₂
- 1.3 mW/h of thermal energy for over 8000 hours per year
- Existing electricity generator produces 65 kW/hr (40 kW/h net as 35% is used to power the unit)
- 480mWh of thermal energy per year if electricity generated
- Around £1.5m cost for hardware: kiln, energy generators, feedstock drier, etc.



Shropshire Council's pyrolysis based insetting



- Pyrolysis identified early as a key means of reaching net zero using durable CO₂ removal
- Globally, biochar Carbon Dioxide Removal credits receive only 7% of funding but deliver over 92% of 'retired' credits.
- September 2023 Shropshire Council approved £2m to purchase a pyrolysis unit. Predicted to pay for itself in under 5 years
- April 2024 Council approved establishment of a Joint Venture with Woodtek Ltd to purchase a C1000 to operate at their own site.

Shropshire Council's pyrolysis based insetting



- Two C1000 pyrolysis units would negate Shropshire Council's direct (Scope 1,2) emissions.
- Initially we plan to sell the credits to help reinvest in other pyrolysis units
- The Shrewsbury North West Relief Road needs to secure local offset credits as part of its planning condition. These would need to be generated by pyrolysis as no other verified credits are available locally.

Shropshire Council's pyrolysis based insetting



Trial underway studying ammonia reduction using biochar in poultry litter

- Publication of our Council Paper and other comms has led to significant interest from around 14 other Local Authorities
- Interest from the farming community. Biochar can hold onto water and nutrients, and reduce pollution – think activated charcoal
- We persuaded our road surfacing sub-contractor, Miles Macadam, to use biochar in asphalt. Carbon neutral asphalt is now a key product.
- High energy users like Bridgnorth Aluminium are interested in pyrolysis as a means of industrial decarbonisation. Carbon negative energy

Ongoing and future plans

1. Completion of the JV installation and commissioning of the first pyrolysis unit near Welshpool. Gaining first-hand experience of the markets for biochar Carbon Dioxide Removal credits and for biochar.
2. Procurement of an additional pyrolysis unit and installation in Ludlow in 2025
3. Production of a framework and set of templates to facilitate other local authority and business adoption of pyrolysis as a carbon removal insetting method – due later in 2024
4. Development of pyrolysis Joint Ventures with other Local Authorities and businesses
5. Re-engaging with Area Based Insetting to seek external investment

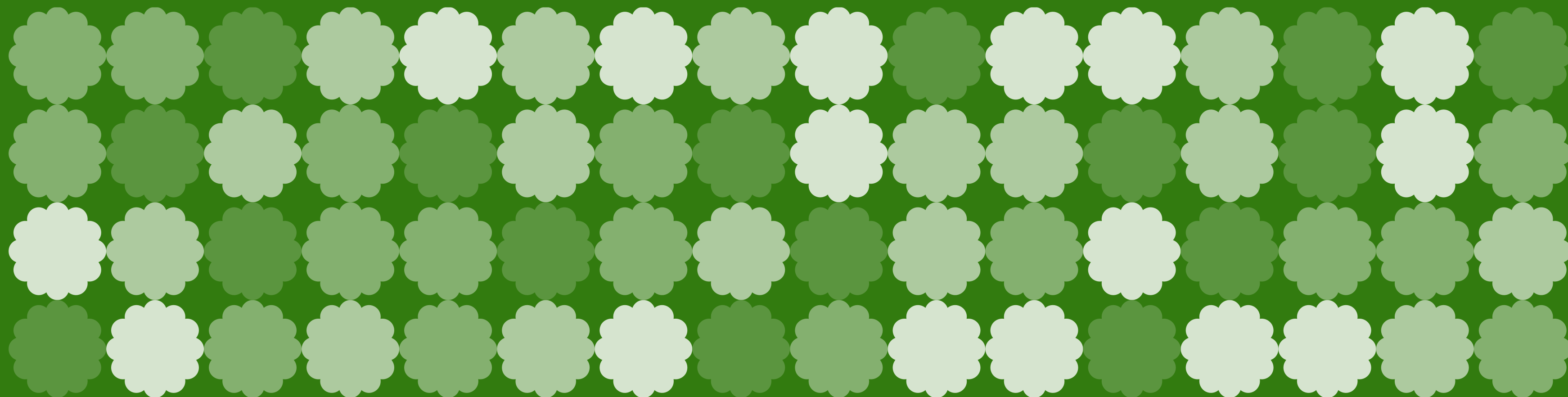
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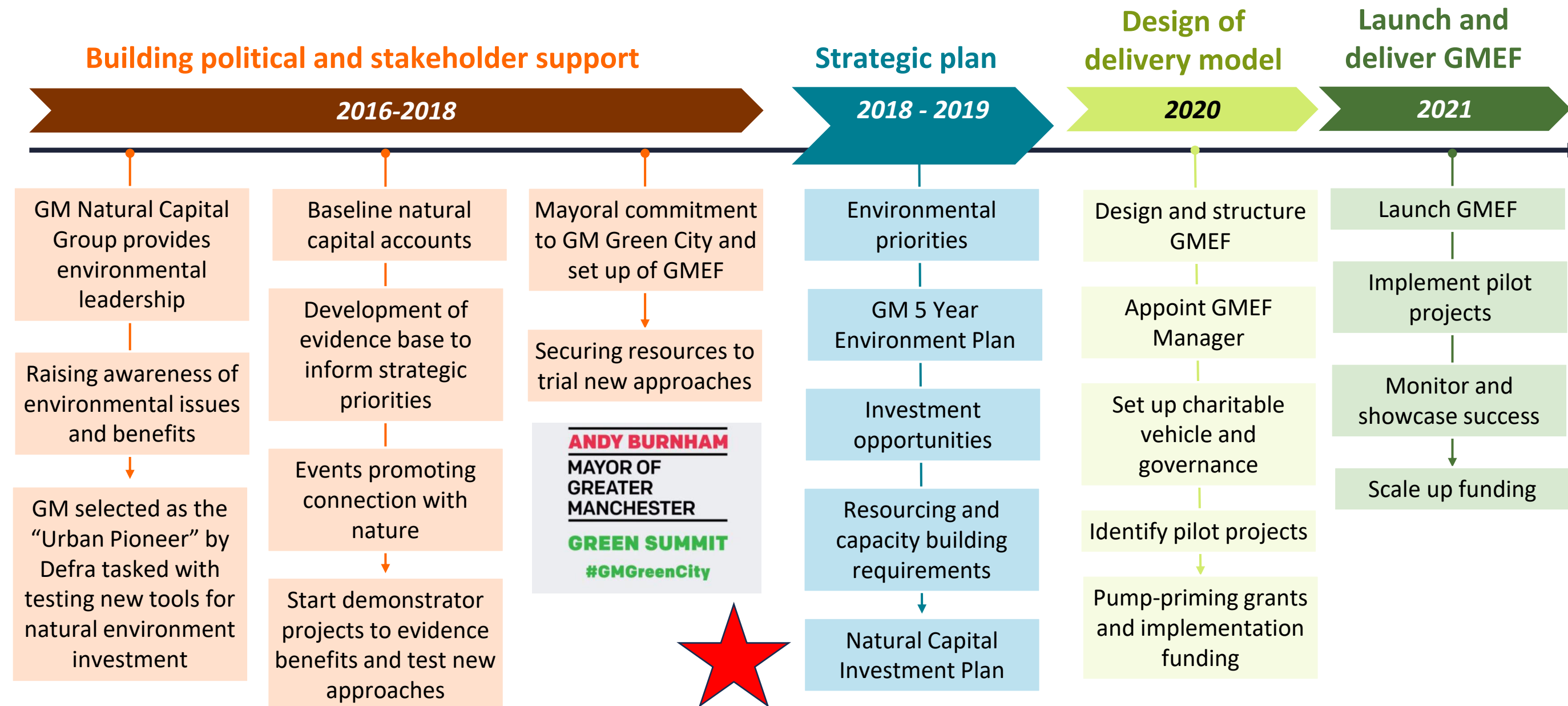
dan.wrench@shropshire.gov.uk

Investing in nature to cool climate, create jobs and boost public health

Krista Patrick – Natural Capital Coordinator at GMCA



Our Natural Capital Journey



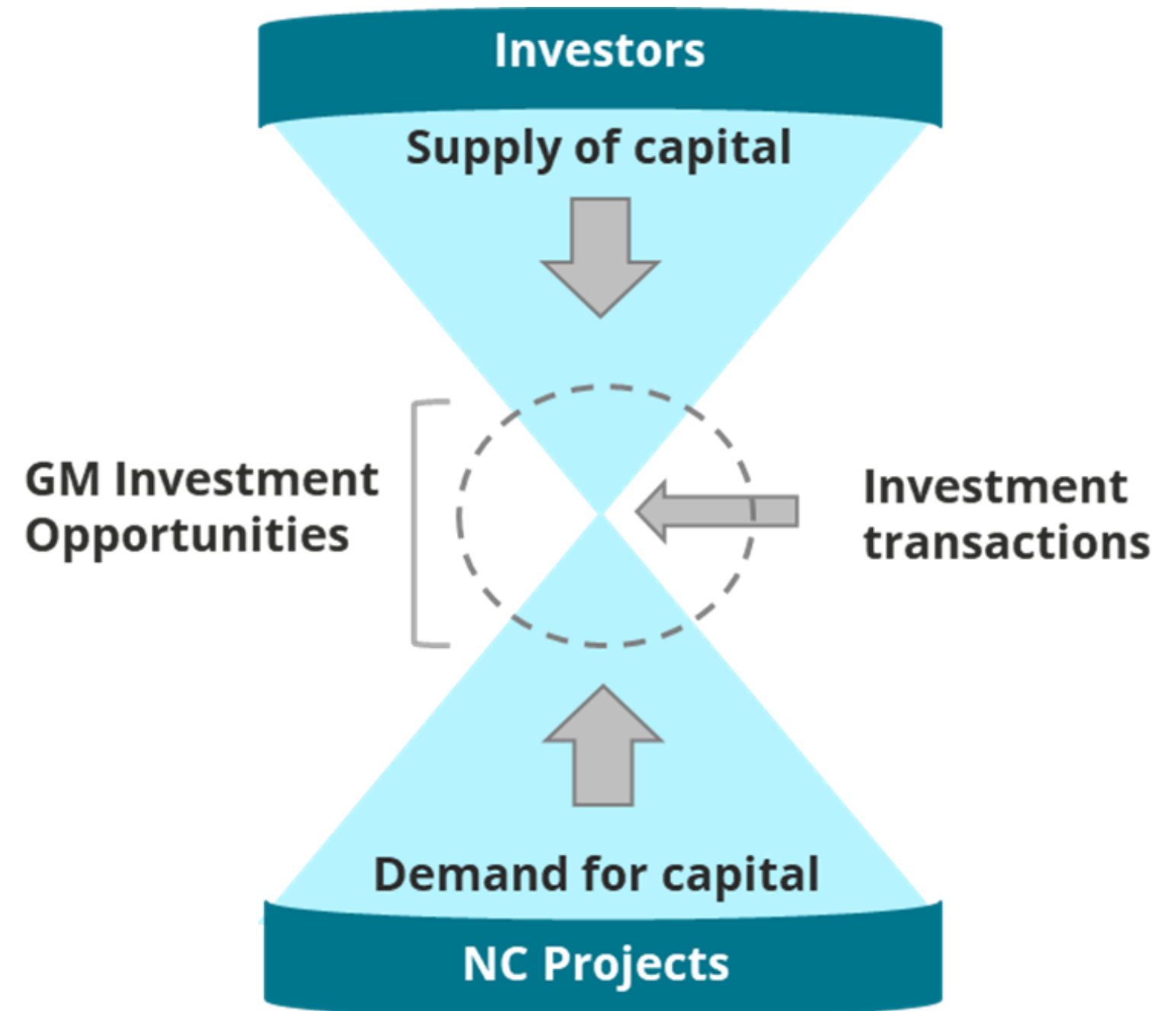
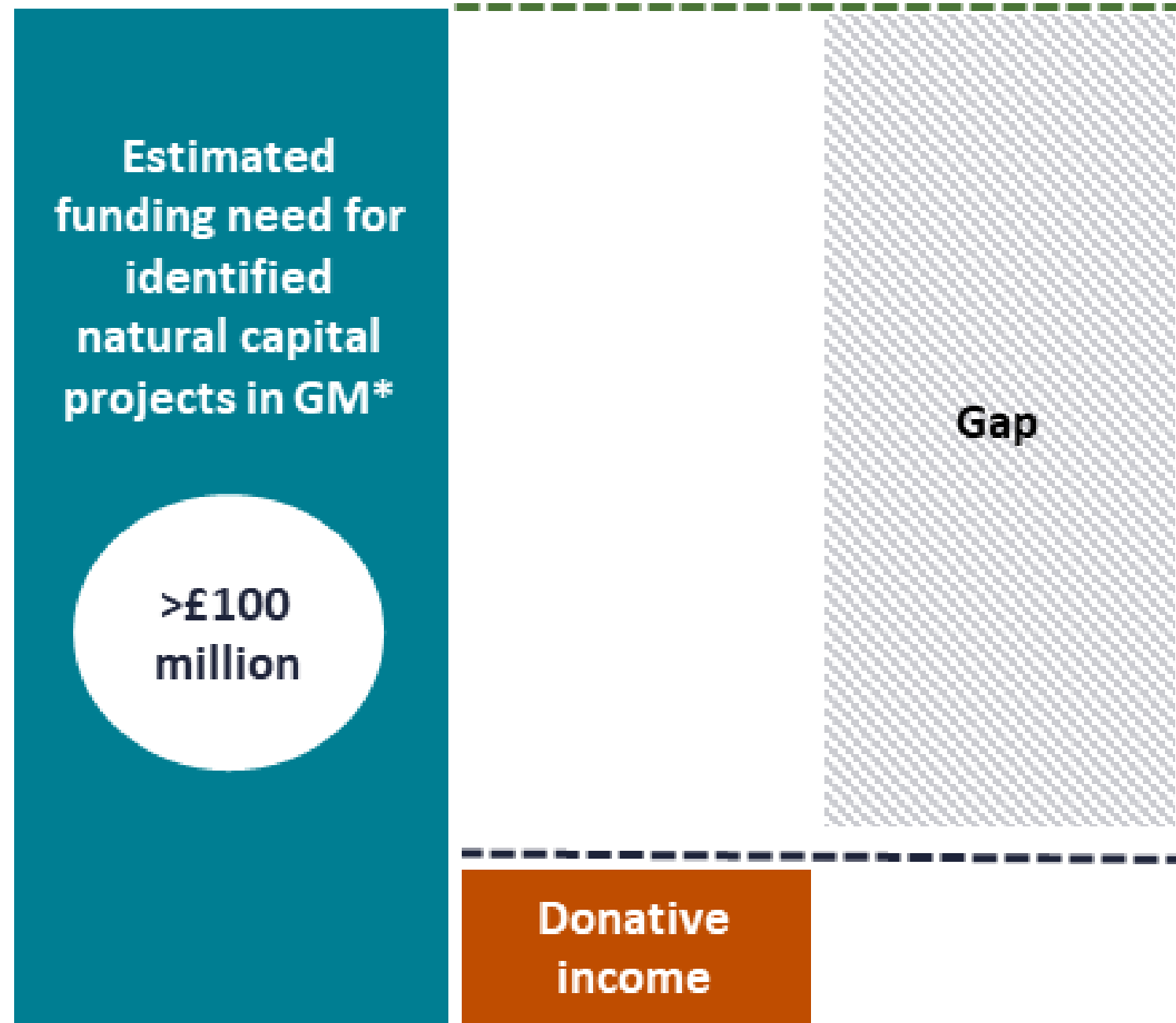
Natural Capital Investment Plan

The investment plan aims to support the agreed vision of:

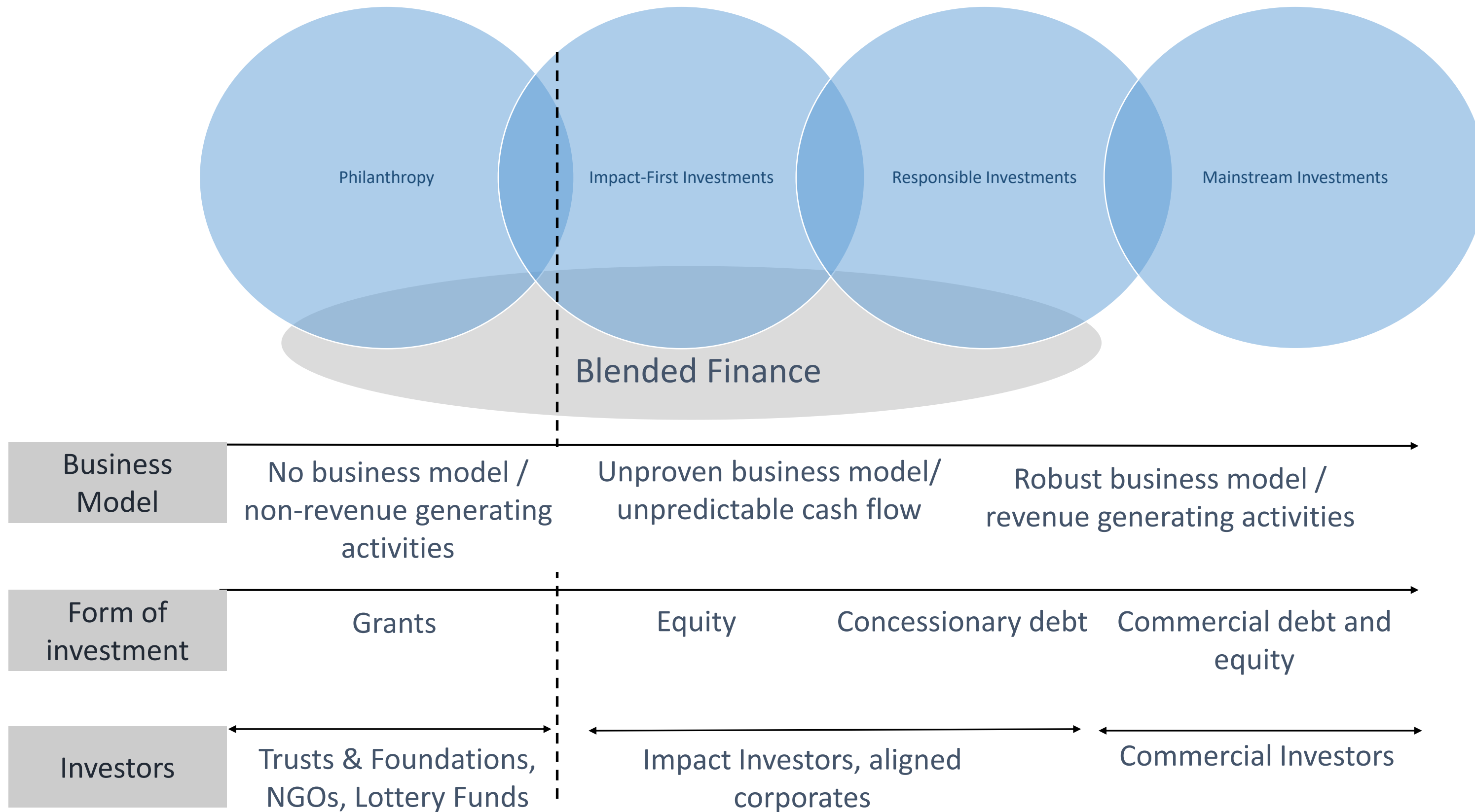
“A Greater Manchester where investments in natural capital enhance the long-term social, environmental, and economic health and wellbeing of its people and businesses.”



The Natural Environment Funding Gap



The Natural Capital Investment Market



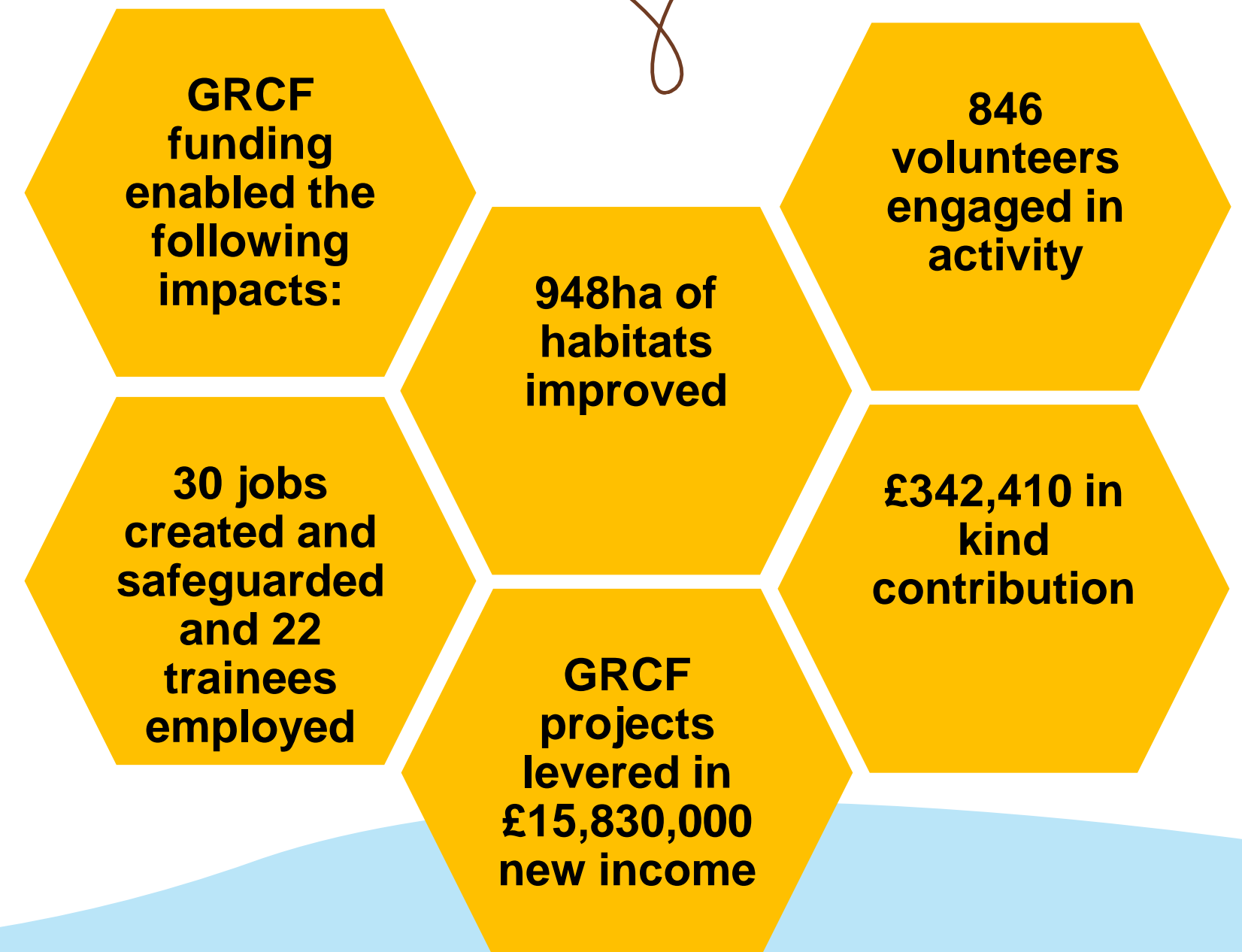
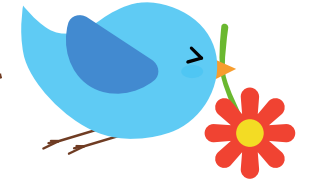
Recommendations

- **Public sector to be an investment commissioner**, developing a supporting financial environment, and business plans for specific investment opportunities.
- **GMCA and partners would need to create an Investment Readiness Fund (IRF).** This fund was estimated to require a minimum of £1m from various sources.
- **Actions to deliver the investment plan -**
 - Develop business plans for priority investments
 - Take forward policy actions to incentivise investments
 - Define governance systems for investments

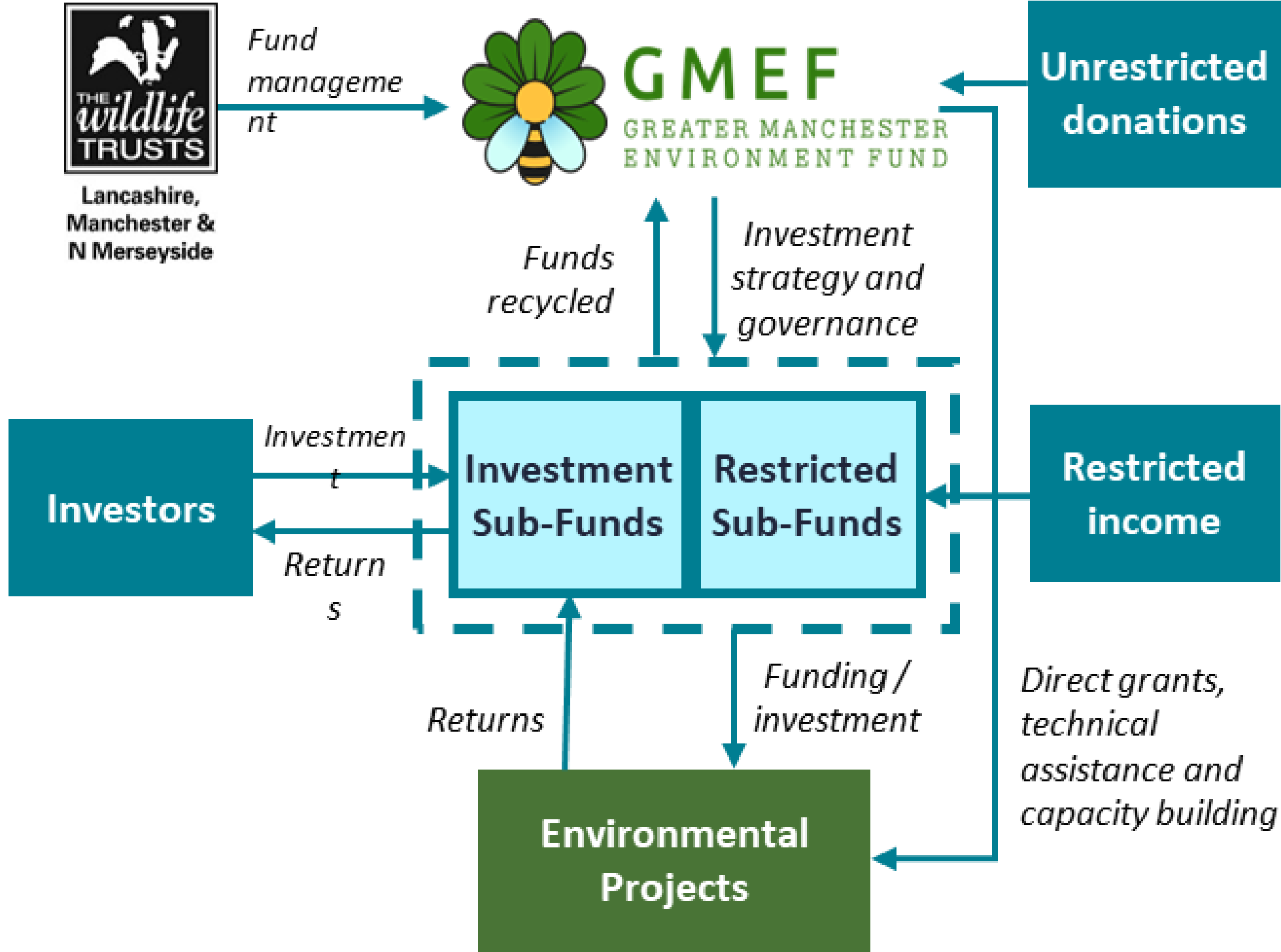


Greater Manchester Environment Fund

- The Greater Manchester Environment Fund (GMEF) is the biggest city region-based investment opportunity for nature in the UK. It is the first of its kind.
- Acting as a central funding source for projects, GMEF ensures that funds and investment has a transformational impact, demonstrates value for money, and brings benefits to all who invest.
- Within the first 18 months of establishment, GMEF has transformed lives and landscapes across the city region



GMEF Structural Overview



Funding Opportunities Horizon

	<i>Short Term (<1 year)</i>	<i>Medium Term (1-3 years)*</i>	<i>Long Term (3-5 years)*</i>
Non-repayable funding	Pump-priming public and philanthropic grants	To provide much-needed development capacity and to pilot approaches	
	Corporate funding programmes	Deliver corporate programmes – £200k per annum committed from Suez	
Repayable investment	Habitat Bank Facility	Sustainable Drainage Scheme (“SuDS”) fund	Private investment mechanisms for SuDS are in development through the EU-funded IGNITION programme
	Carbon Mitigation Facility		
		Enforcement undertakings	Fines for pollution issued by the EA
			Corporate sponsorship and individual giving
			Long-term corporate partnerships and individual giving based on GMEF showcasing success
			Plastic bag / waste levies; business levies
			Levies through retail partnerships and / or Business Improvement District initiatives
		Environmental Impact Bonds	Results-based payment models are being explored to finance NBS
			Built environment carbon fund
			GM is considering a mandatory carbon offsetting approach to delivering net zero carbon development
			Low-carbon / circular economy
			Incorporate investment funds to achieve wider low carbon ambitions

FUNDS SECURED

£1.8m

Green Recovery Challenge
Fund
For Nature Recovery projects
across the GM region

£220K

Suez R4GM Community
Fund
For initiatives that prevent
waste from going to landfill

£100k

Natural Env Inv Readiness
Fund
Pilot to develop natural
capital investment
models

£2.6m

GM Green Spaces Fund
For Greening GM &
Tackling inequalities in
access to green spaces

Greater Manchester Green Spaces Fund

- Improve GM's green and blue spaces,
- Benefit people & nature
- Tackle the climate and biodiversity emergencies.

- Target communities where there is poor access to green spaces
- Where there is environmental risk

- Opportunities for training & skills through volunteering
- Tackle inequalities – both health and wellbeing

- Support community groups to take actions in their local areas.
- Community led action

Some useful links and resources



[GM Environment Fund Investment Strategy](https://gmenvfund.org)
<https://gmenvfund.org>



[GM Natural Capital Investment Plan](https://www.greatermanchester-ca.gov.uk)
<https://www.greatermanchester-ca.gov.uk>



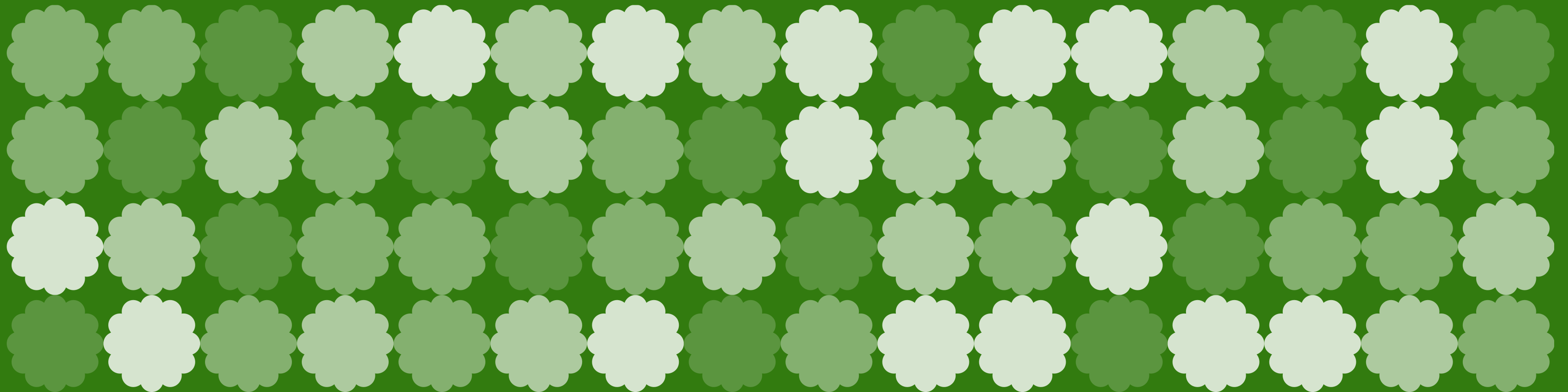
[GFI Investment Readiness Toolkit](https://www.greenfinanceinstitute.co.uk)
<https://www.greenfinanceinstitute.co.uk>



[Range of resources and case studies](https://ecosystemsknowledge.net)
<https://ecosystemsknowledge.net>



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THANK YOU

