

The Local Net Zero Accelerator (LNZA)

Net Zero Investment Training Programme

Module 6: Whole System Financing for Net Zero

Funded by



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Fit4Finance

The Local Net Zero Accelerator



Department for
Energy Security
& Net Zero

Government has provided £19 million to unleash the potential of local government to attract new investment for green growth by piloting new approaches in three areas.

1. Two Local Net Zero Accelerators: Greater Manchester Combined Authority and West Midlands Combined Authority will develop aggregated bundles of projects to secure long-term sustainable investment.
2. A City Leap Replicator: York & North Yorkshire Combined Authority will replicate a similar model to Bristol City Leap, which has established an innovative public-private partnership to secure investment into decarbonising Bristol's council owned estate.
3. Local Net Zero Finance Support Service: to provide access to relevant financial skills, knowledge, and experience.

GMCA GREATER
MANCHESTER
COMBINED
AUTHORITY


West Midlands
Combined Authority


YORK
& NORTH
YORKSHIRE
COMBINED AUTHORITY


Greater
South East
Net Zero Hub

The Net Zero Investment Training Programme

Objectives:

- Provide specialised investment training tailored for local authority professionals that hold positions related to the development and/or financing of net-zero projects
- Up-skill local authority professionals so that they are better placed to both develop and finance Net Zero projects
- Provide training to local authority staff so that they are better placed to support their respective authorities to deliver on climate ambitions/targets

Audience:

- Local Authority Section 151 Officers (Finance Directors)
- Climate, Environment or Sustainability Officers/Directors
- Any other local authority professionals involved in the development or financing of Net Zero projects

The Net Zero Investment Training Programme: Structure

The Net Zero Investment Training Programme is a specialised programme consisting of 6 modules, each requiring a total of 20 hours split between guided and independent learning to complete. The 6 modules are:

1. Understanding the Basics of Net Zero Finance
2. Options Analysis and Appraisal
3. Develop an Effective Business Case
4. Financial Modelling for Net Zero Projects
5. Exploring Innovative Financing for Net Zero
6. Whole-System Financing for Net Zero

Module 6: Whole System Financing for Net Zero

This module comprises 20 hours of Total Qualification Time (TQT), made up of:

- 10 hours of Guided Learning Hours
- 10 hours of Independent Learning Hours

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Overview

- The purpose of this learning module is to introduce participants to the core principles of whole-system financing within the context of net-zero delivery. It is designed for local authority staff who play a critical role in shaping, developing, or overseeing net-zero projects.
- The objective is to equip personnel with practical, system-level financing knowledge that complements their existing expertise in planning, sustainability, energy, transport, or programme delivery.
- Participants will gain clarity on how individual projects fit into wider net-zero strategies, how to identify and leverage synergies across initiatives, and how to secure long-term, sustainable capital for local net-zero pipelines.

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- Governance and decision making
- Tools and methods
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Section 2: Identifying and leveraging synergies across net zero initiatives

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- Types of synergies
- Cross sector integration opportunities
- Portfolio-level approaches

- Governance and coordination
- Financial implications
- Case studies

Section 3: Securing long term, sustainable financing

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- Public sector financing tools
- Private sector financing tools
- Risk-management for long-term financing
- Creating investable long-term pipelines
- Embedding long-term financing in governance
- Innovative long-term financing models
- Case studies

Glossary

- **DNO:** Distribution Network Operator
- **EPC:** Energy Performance Certificate
- **GMCA / GM:** Greater Manchester Combined Authority
- **KPI:** Key Performance Indicator
- **LAEP:** Local Area Energy Plan
- **MACC:** Marginal Abatement Cost Curve
- **PPP:** Public–Private Partnership
- **PPA:** Power Purchase Agreement
- **RTPI:** Royal Town Planning Institute
- **TQT:** Total Qualification Time
- **YNYCA / YNY:** York & North Yorkshire Combined Authority

Section 1: Linking individual projects to broader net zero strategies

Summary

By the end of this section, participants will be able to understand the foundational principles of whole-system financing and explain why aligning individual net-zero projects with broader strategic frameworks is critical for effective decarbonisation. Participants will also be able to articulate the importance of understanding cross-sector interactions, the risks of isolated project development, and the benefits of ensuring every project contributes meaningfully to national and local net-zero trajectories.

Learning Outcomes

- Explain whole-system thinking in net-zero finance
- Assess why individual projects must align with wider strategies
- Interpret national and local net-zero requirements; and integrate climate and capital strategies within governance systems
- Use tools and analytical frameworks to strengthen project alignment

Section 1 requires 6 learning hours: 3 hours of Guided Learning and 3 hours of Independent Learning

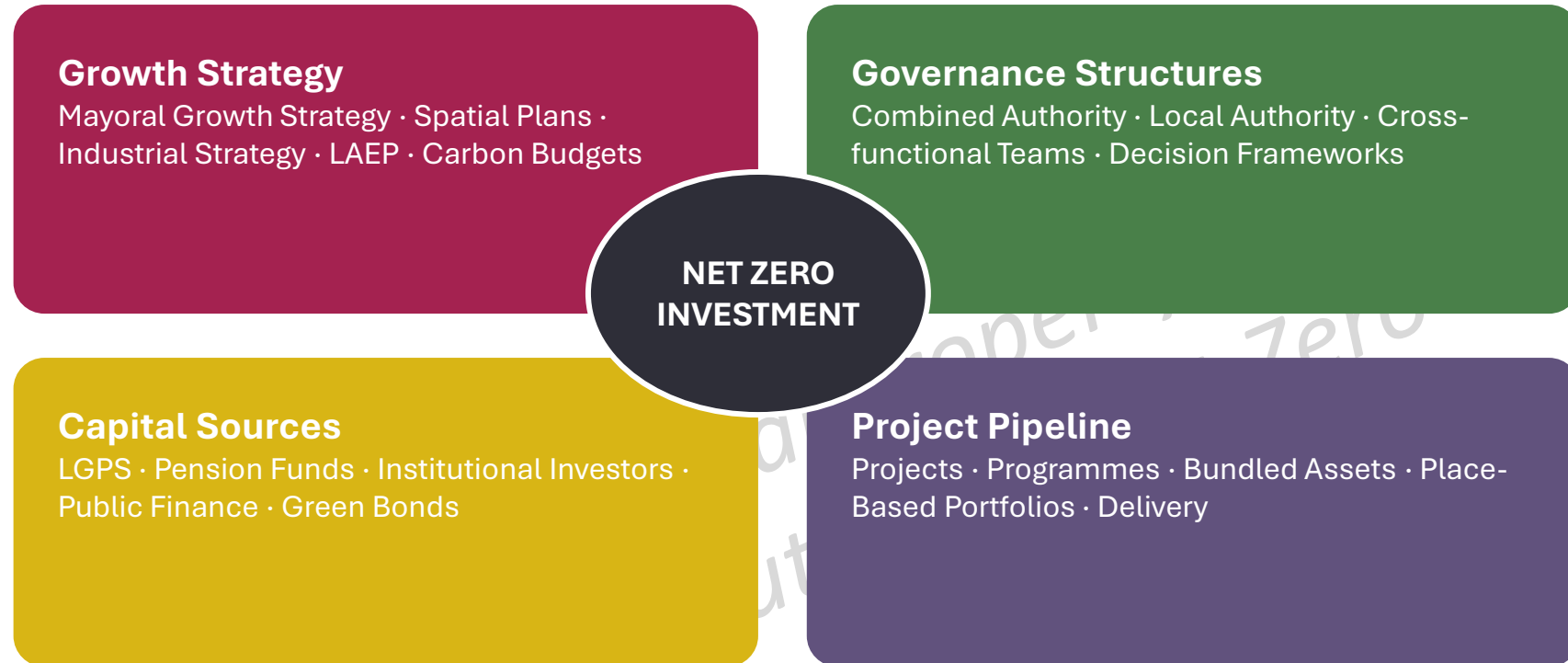
Foundations

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What is whole-system thinking in net zero finance?

- Viewing net zero not as isolated projects but as interconnected systems
- Considering cross-sector dependencies between heat, power, transport, and buildings
- Aligning financial decisions with long-term emissions pathways
- Optimising outcomes across the entire energy system, not individual assets

Net zero finance as a place-based system



- Net zero finance sits within a wider place-based system, not as a standalone technical function
- These elements are interdependent: strategy, governance, capital, and pipeline must work together
- Strong alignment across the place-based system improves investability and delivery confidence

Why place-based alignment matters for financing

- Investors assess places, not just projects: local strategy, governance, and pipeline credibility all shape investment decisions
- Alignment with growth strategies and spatial plans reduces policy risk and lowers the cost of capital
- Scale and coordination at Combined Authority or regional level enable institutional investment that single projects cannot attract
- Local capital, including LGPS and pension funds, depends on credible, well-governed local pipelines to deploy at scale

Why projects must align with wider strategies

Mayoral Growth Strategies and Local Industrial Strategies set the economic context within which net zero investment must be positioned and justified; aligning with these strategies:

- Maximizes carbon reduction impact per pound invested
- Reduces risk of stranded assets and technology lock-in
- Improves access to private and institutional capital
- Enables sequencing and phasing for optimal delivery

Risks of isolated project development

- Stranded assets and technology lock-in
- Duplication and inefficient resource allocation
- Missed opportunities for co-benefits and synergies
- Difficulty securing long-term institutional investment

Strategic alignment improves investability

Embedding net zero in place-based economic strategies and spatial frameworks strengthens the investment narrative and ties returns to wider economic outcomes and effectively:

- Demonstrates clear pathway to policy and carbon targets
- Reduces policy and regulatory risk for investors
- Enables portfolio-level financing and aggregation
- Strengthens business case with system-level co-benefits

National, local and place-based alignment

Mayoral Growth Strategies and Spatial Development Plans provide an intermediate layer that translates national ambition into investable, place-specific programmes

- National: Carbon budgets, sectoral pathways, 2050 net zero target
- Local: Area-specific decarbonisation plans and delivery mechanisms
- Local strategies translate national targets into actionable plans
- Both levels must work seamlessly together for delivery

Statutory duties and policy drivers

- Climate Change Act 2008 and net zero commitment
- Section 151 fiduciary duties and prudential code
- Local authority climate emergency declarations
- Wellbeing of Future Generations considerations

LAEP as strategic anchor

- Leading method for translating national targets to local action
- Fully costed, spatial plans detailing what, where, when, and by whom
- Provides outline masterplan-level detail for investment
- Must be updated every 3-5 years or with major changes

Integrating climate and capital strategies

- Climate action plans must inform capital programme decisions
- Multi-year financial planning aligned with carbon budgets
- Treasury management strategies incorporating green finance
- Budget working groups embedding net zero in allocations

Mapping projects to strategic outcomes

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Identifying strategic outcomes

- **Carbon reduction:** Contribution to emissions pathways and budgets
- **Resilience:** Climate adaptation and energy security benefits
- **Equity:** Fuel poverty, health, and just transition impacts
- **Economic:** Local jobs, skills, and growth opportunities

Translating outcomes to priorities

- Weighting outcomes based on local strategic priorities
- Developing scoring frameworks for project assessment
- Identifying no-regrets and early-action opportunities
- Sequencing investments for maximum system impact

Project outputs to system impacts

- Individual project outputs aggregate to system-level change
- Consider rebound effects and system interactions
- Model cumulative impacts across project portfolios
- Account for enabling infrastructure and dependencies

Cross-sector dependencies

- Electrification increases electricity demand and grid requirements
- Renewable generation requires flexibility and storage solutions
- Transport decarbonisation links to spatial and land use planning
- Building retrofit must coordinate with heating system transitions

Mapping to emissions pathways

- Quantify project emission reductions against carbon budgets
- Consider timing and trajectory, not just endpoint reductions
- Use science-based targets aligned with Paris Agreement
- Track cumulative progress toward interim milestones

Identifying pipeline gaps

- Compare planned project reductions to required pathway
- Identify under-addressed sectors or technology gaps
- Assess temporal gaps in delivery phasing
- Highlight areas requiring additional project development

Prioritising projects by strategic value

- Use multi-criteria frameworks weighting all outcomes
- Prioritise no-regrets and least-cost interventions first
- Consider enabling projects that unlock future investments
- Balance quick wins with transformational changes

Governance and decision making

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Embedding net zero in governance

- Governance operating at Combined Authority or regional scale directly affects pipeline scale, delivery capacity, and investor confidence in place-based programmes
- Climate responsibilities clearly assigned in leadership team
- Net zero KPIs included in corporate performance frameworks
- Regular reporting to Cabinet and scrutiny committees
- Integration with risk management and audit processes

Aligning cross-functional teams

Coordination extending across local authorities, for example at Combined Authority level, enables place-based alignment and the scale needed to attract institutional investment, approaches include:

- Breaking down silos between finance, planning, and sustainability
- Establishing joint working groups and governance structures
- Sharing responsibility for business case development
- Using common language and metrics across functions

Decision-making frameworks

Decision-making frameworks and criteria should explicitly assess alignment with Mayoral growth strategies, spatial plans, and wider economic objectives to ensure net zero investment reinforces place-based priorities; these frameworks can incorporate:

- Stage-gate processes with net zero criteria at each gate
- Gateway reviews including strategic alignment assessment
- Section 151 sign-off requires carbon impact statement
- Investment appraisal incorporating carbon values

Aligning cross-functional teams

- Break down silos between finance, planning, and sustainability
- Establish joint working groups and governance structures
- Shared responsibility for business case development
- Common language and metrics across functions

Decision-making frameworks

- Stage-gate processes with net zero criteria at each gate
- Gateway reviews including strategic alignment assessment
- Section 151 sign-off requires carbon impact statement
- Investment appraisal incorporating carbon values

Capital programme integration

Aligning capital programmes with place-based investment priorities, such as growth zones and regeneration areas, concentrates impact and strengthens the case for co-investment from public and private sources:

- Incorporate carbon impact assessment for all capital projects
- Ring-fence allocation for net zero enabling works
- Include whole-life carbon accounting in option appraisal
- Ensure flexibility for emerging opportunities aligned with strategy

Business cases demonstrate fit

- Explicit strategic case linking project to LAEP and carbon budgets
- Quantified contribution to strategic outcomes
- System dependencies and enabling requirements identified
- Long-term value including carbon, resilience, and equity

Tools and methods

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Carbon budgeting

- Five-year caps on total emissions aligned with climate science
- Tyndall tool translates Paris Agreement to local budgets
- Annual reduction rates more important than endpoint dates
- Tracks cumulative emissions, not just current year

Marginal abatement cost curves

- Visual tool comparing cost per tonne CO₂ reduced across options
- Orders interventions from lowest to highest cost
- Identifies negative-cost opportunities with financial payback
- Helps prioritize portfolio of abatement measures

Whole-system modelling tools

- LAEP methodology for spatial energy system planning
- Models interactions across heat, power, transport sectors
- Generates building-level intervention plans with costs
- Scenario testing for different technology pathways

Scenario planning

- Tests multiple technology and policy pathways to net zero
- Explores uncertainty in technology costs, adoption, and policy
- Identifies robust investments across scenarios
- Informs adaptive management and contingency planning

Portfolio-level assessment

- Aggregate risk across project portfolio, not individual projects
- Diversification across technologies and sectors reduces risk
- Portfolio view identifies concentration and correlation risks
- Enables optimization of overall carbon, cost, and risk profile

Linking net zero investment to local growth and capital systems

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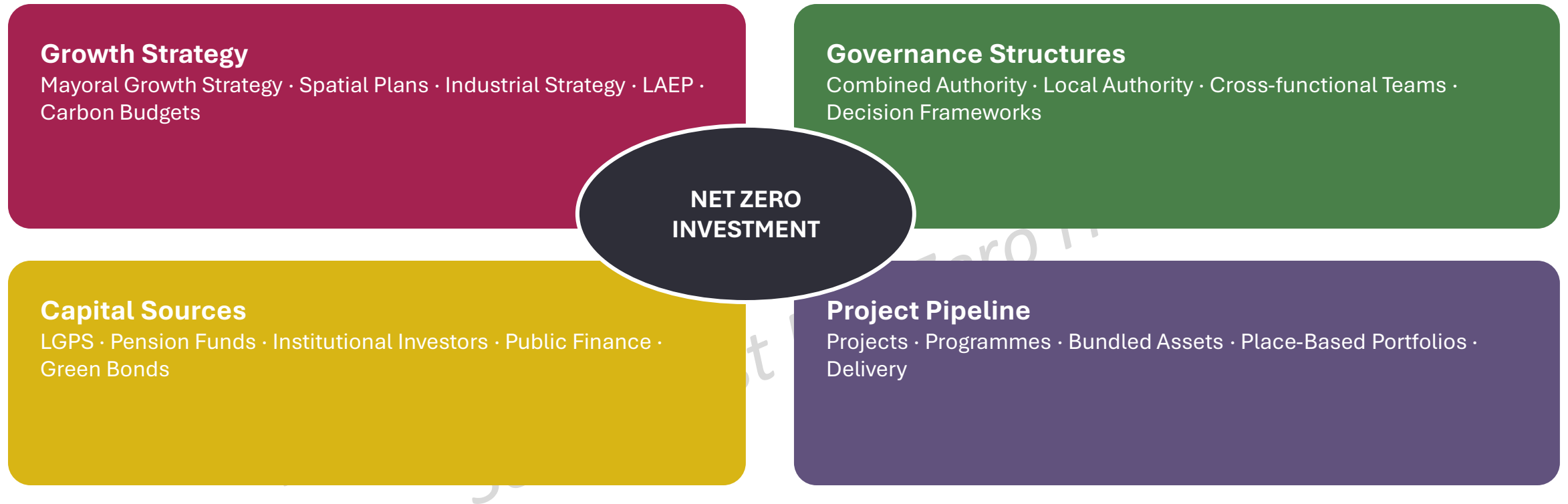
Linking net zero investment to local growth systems

- Net zero investment does not sit in isolation - it is embedded within local growth priorities, spatial planning frameworks, and economic development strategies
- Mayoral Growth Strategies and Spatial Development Plans identify priority locations, growth zones, and regeneration areas where net zero investment can deliver compounded economic and environmental benefits
- Reframing net zero as an enabler of economic growth, rather than a separate environmental obligation, makes the case for investment more compelling to decision-makers, funders, and private partners
- Alignment with growth strategies strengthens funding access, improves delivery sequencing, and increases investor confidence by demonstrating that net zero programmes serve wider place-based objectives

Linking net zero investment to local capital systems

- **Long-term capital, particularly from Local Government Pension Schemes (LGPS), is well-suited to net zero infrastructure:** patient, locally accountable, and seeking stable returns over multi-decade horizons
- **A significant gap exists between the scale of individual projects and the minimum deployment thresholds of institutional investors:** Most single local authority projects are too small to attract direct fund investment
- **Bridging this gap requires scale, strong governance, and credible multi-year pipelines:** Combined Authority-level coordination can provide the structure and volume that institutional capital requires
- **Place-based programmes act as the bridge between individual projects and investable portfolios:** By packaging local assets into structures that meet investor requirements while remaining rooted in local priorities

The place-based net zero investment system



These four elements are interdependent. Alignment across the system is required for investability and delivery at scale.

Case studies

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Heat networks and energy strategy

Coverage of the LAEP-based zoning approach across six UK pilot cities, financing structures combining public and private capital

- Strategic identification of lowest-cost heating areas through integrated planning
 - Based on Local Area Energy Planning (LAEP)
 - Density mapping and demand analysis
 - Coordination of heat sources and infrastructure
- Six pilot zones in Leeds, Plymouth, Bristol, Sheffield, Stockport, London
- Financing structure
 - Public capital for anchor infrastructure
 - Private investment in network expansion
 - Revenue streams from heat supply contracts
 - Green bonds for large-scale deployment
- Critical success factors: Strong local authority coordination, clear zoning policy and regulation, anchor tenants secured early, sound technical feasibility studies

Retrofit integrated with fuel poverty

Plymouth and Nottingham person-centred retrofit approach - pioneering model targeting vulnerable households

- Targets most vulnerable households, not just easiest properties
- Integrates carbon reduction with health and equity outcomes
- Uses anchor networks and community finance mechanisms
- Focus points:
 - Carbon reduction: Emissions cut through energy efficiency upgrades
 - Health equity: Warmer homes that reduce respiratory illness
 - Fuel poverty: Lower energy bills for vulnerable households
- Community financing mechanisms
 - Community municipal investment bonds
 - Local energy efficiency revolving funds
 - Green mortgages and on-bill financing
 - Grants targeting most vulnerable households
- Implementation challenges: significant upfront capital requirements, complex household engagement needed, supply chain capacity constraints

Exercises

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Exercise

Question 1:

What is an essential governance requirement for embedding net zero?

- a) Assigning climate responsibilities within leadership
- b) Removing carbon reporting from audit processes
- c) Replacing standard KPIs with informal metrics

Question 2:

Which tool converts global climate goals into local emissions budgets?

- a) LAEP modelling
- b) Tyndall tool
- c) Transport zoning schemes

Question 3:

In the strategic mapping exercise authorities must:

- a) Analyse emissions reductions at a portfolio level
- b) Ignore carbon budget trajectories
- c) Identify system dependencies and enabling requirements

Exercise - Answers

Question 1:

What is an essential governance requirement for embedding net zero?

- a) **Assigning climate responsibilities within leadership**
- b) Removing carbon reporting from audit processes
- c) Replacing standard KPIs with informal metrics

Question 2:

Which tool converts global climate goals into local emissions budgets?

- a) LAEP modelling
- b) **Tyndall tool**
- c) Transport zoning schemes

Question 3:

In the strategic mapping exercise authorities must:

- a) Analyse emissions reductions at a portfolio level
- b) Ignore carbon budget trajectories
- c) **Identify system dependencies and enabling requirements**

Section summary

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Summary

Whole-system thinking turns isolated activities into a coordinated pathway to Net Zero

- Whole-system thinking recognises that heat, power, transport, buildings, and land use are interconnected, not standalone sectors
- Aligning financial decisions with long-term emissions pathways improves the impact and efficiency of every pound invested
- Ignoring system interactions leads to stranded assets, duplication, and missed opportunities for co-benefits
- Local Area Energy Plans provide the masterplan-level clarity needed to guide strategic, system-aligned investment

Strategic alignment strengthens investability, credibility, and delivery confidence

- Projects aligned with national and local net-zero strategies face lower policy and regulatory risk for investors
- Clear links to LAEPs, carbon budgets, and statutory commitments strengthen the business case and unlock capital
- Integrating climate action plans with capital and treasury strategies ensures that resources flow to priority interventions
- Sequencing and phasing based on system needs help move from short-term projects to long-term programmes of investment

Summary

Governance and tools enable consistent, evidence-based, net-zero-aligned decision-making

- Embedding net zero into leadership responsibilities, KPIs, and reporting systems anchors climate objectives across the organisation
- Cross-functional governance breaks silos between finance, planning, sustainability, and delivery teams
- Decision-making frameworks - stage gates, alignment reviews, carbon impact statements - ensure strategic fit at every step
- Tools such as carbon budgeting, MACCs, whole-system modelling, scenario planning, and portfolio assessment provide the analytical foundation for good investment choices

Section 2: Identifying and leveraging synergies across net zero initiatives

Summary

By the end of this section, participants will be able to identify and leverage synergies across net zero initiatives to maximise value for money, strengthen the case for financing, and move from isolated project thinking to portfolio-level delivery

Learning Outcomes

- Recognise different types of net zero synergies and how they apply across sectors
- Assess how bundling and integrating projects unlocks additional financing and reduces risk
- Apply portfolio-level thinking to design more investable, coordinated programmes

Section 2 requires 6 learning hours: 3 hours of Guided Learning and 3 hours of Independent Learning

Foundations

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What synergies mean in a net-zero context

Synergies occur when combining net zero initiatives produces greater value than delivering them independently

- Shared infrastructure, revenue, or outcomes across two or more projects
- Benefits that compound from reduced cost, reduced risk, and stronger impact
- A shift from project-by-project delivery to system-level thinking
- The foundation of investable, scalable Net Zero programmes

Why siloed projects reduce value for money

Delivering Net Zero projects in isolation leaves significant value on the table

- Duplicated costs across procurement, delivery, and financing
- Missed opportunities to share assets, data, and revenue streams
- Weaker business cases that are harder to finance
- Fragmented impact that falls short of strategic targets

How synergies unlock additional financing

Integrated projects are more attractive to investors and funders than standalone ones

- Bundled projects offer greater scale and revenue certainty
- Shared risk profiles reduce the cost of private finance
- Co-benefits strengthen the case for grant and blended funding
- Portfolio approaches meet institutional investor thresholds

Identifying interdependencies across sectors

Net Zero initiatives across sectors are more connected than they first appear

- Energy, transport, buildings, and nature share infrastructure and demand
- Actions in one sector can enable or constrain delivery in another
- Mapping dependencies prevents duplication and fills pipeline gaps
- Early identification creates opportunities for joint planning and funding

Understanding co-benefits and shared outcomes

Co-benefits are additional positive outcomes generated alongside carbon reduction

- **Social:** reduced fuel poverty, improved health, local employment
- **Environmental:** biodiversity gain, improved air quality, flood resilience
- **Financial:** revenue diversification, reduced whole-life costs
- ✓ Co-benefits strengthen political, community, and investor support

Types of Synergies

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Technical synergies

Technical synergies arise when projects share physical assets or systems to reduce cost and improve performance

- Shared grid connections, pipelines, or substations across multiple technologies
- Combined heat and power assets serving several buildings or sites
- Shared monitoring and control systems reducing operational overhead
- Reusing existing infrastructure avoids duplication of capital spend

Financial synergies

Combining projects financially creates scale, improves returns, and broadens access to capital

- Bundling small projects meets minimum thresholds for institutional investors
- Aggregated revenue streams improve income predictability and bankability
- Shared financing structures reduce transaction costs across a portfolio
- Cross-subsidy between stronger and weaker assets improves overall viability

Operational synergies

Operational synergies reduce the cost and complexity of bringing Net Zero projects to market

- Joint procurement frameworks reduce tendering costs and timescales
- Shared project management resource across related initiatives
- Standardised contracts and documentation speed up delivery
- Combined workforce planning supports local supply chain development

Social synergies

Community benefit can be amplified and build the public legitimacy necessary to sustain long-term programmes

- Coordinated engagement reduces consultation fatigue across projects
- Combining interventions addresses fuel poverty, health, and employment together
- Shared community benefit funds pool contributions for greater local impact
- Joined-up delivery builds trust and supports future programme phases

Environmental synergies

Ecological and climate resilience outcomes can be maximized beyond carbon alone

- Nature-based solutions integrated with flood or transport schemes
- Green infrastructure delivering biodiversity net gain across multiple sites
- Air quality improvements co-delivered with transport decarbonization
- Whole-system environmental planning strengthens planning and funding cases

Cross sector integration opportunities

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Building retrofit + heat networks

- Retrofit reduces heat demand, lowering network sizing costs and improving viability
- Heat network planning informs which buildings to prioritise for retrofit first
- Shared resident engagement reduces costs and improves programme uptake
- Combined delivery strengthens funding cases for Warm Homes and heat network grants

EV charging + grid reinforcement

- Shared grid reinforcement reduces connection costs across both programmes
- EV charging assets can provide grid balancing services, generating additional revenue
- Co-located solar or storage reduces reliance on grid imports at peak times
- Joint planning with distribution network operators (DNOs) accelerates consenting and reduces delivery risk

Solar + battery storage

- Storage captures excess generation for use during peak demand or high-price periods
- Combined assets improve revenue certainty, strengthening the financing case
- Shared grid connection reduces capital cost compared to separate installations
- Portfolio of sites enables aggregated trading, improving returns across the programme

Nature-based solutions + flood management

- Green infrastructure serves a dual purpose: carbon sequestration and water attenuation
- Combined schemes attract both climate and flood risk capital in a single business case
- Biodiversity net gain requirements can be met through flood scheme land use
- Coordinated land management reduces delivery cost and planning complexity

Transport decarbonisation + public realm improvements

- EV infrastructure, active travel, and streetscape improvements share civil works costs
- Combined schemes generate air quality, health, and amenity co-benefits in one programme
- Pooled funding from transport, environment, and regeneration budgets improves viability
- Integrated delivery builds a stronger place-based narrative for investors and funders

Portfolio-level approaches

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Bundling small projects to attract investors

Effective bundling requires coordination across local authorities, not just departments, to aggregate enough projects to reach institutional investment thresholds and credibly represent a place-level pipeline:

- Small projects rarely meet minimum investment thresholds on their own
- Bundling creates a single transaction with greater revenue scale and diversified risk
- Standardised documentation across the bundle reduces investor due diligence costs
- A lead project with strong returns can anchor weaker but strategically important assets

Aggregation models for housing retrofit

Aggregation at scale is most effective when enabled through regional or Combined Authority coordination, aligned with housing, growth, and regeneration strategies to ensure investment flows to priority areas:

- Grouping properties by type, tenure, or geography reduces survey and design costs
- Aggregated programmes support long-term supply chain contracts, improving cost certainty
- Combined heat demand data strengthens the case for complementary heat network investment
- Shared financing structures spread upfront capital costs across a larger asset base

Multi-technology investment portfolios

- Higher-returning assets can cross-subsidise longer-payback investments
- Revenue diversity across technologies reduces exposure to single-market volatility
- Mixed portfolios better match the risk-return profiles of different investor types
- Technology diversity supports a more resilient long-term pipeline

Area-based delivery models

Alignment with spatial planning and local growth priorities strengthens the investment case; place-based narratives that link net zero delivery to economic regeneration resonate strongly with both institutional investors and grant funders:

- Co-locating interventions reduces mobilisation, logistics, and community engagement costs
- Place-based narratives resonate with both institutional investors and grant funders
- Concentrated delivery builds local supply chain capacity and generates employment co-benefits
- Area-based models create replicable templates that can be rolled out across other locations

Integrating public estate decarbonisation

- Council buildings offer secure revenue and low counterparty risk, improving investor confidence
- Public estate projects can be packaged alongside community or residential assets to add scale
- Decarbonisation of anchor institutions signals commitment and de-risks wider area programmes
- Energy savings reinvested through revolving funds extend the reach of the portfolio over time
 - ✓ The public estate provides an immediate, controllable asset base from which to anchor broader portfolio investment

Governance and coordination

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Cross-departmental working groups

Delivering synergies requires finance, planning, sustainability, and procurement teams to work together from the outset

- Siloed departmental working is one of the most common barriers to integrated delivery
- Cross-departmental groups align priorities, budgets, and decision-making timelines early
- Shared governance reduces duplication and prevents conflicting commitments across teams
- Senior sponsorship ensures working groups have the authority to resolve blockers quickly

Regional collaboration models

Working across local authority boundaries unlocks scale, shared expertise, and a more compelling proposition for investors. In addition, the strongest regional propositions align growth strategies, infrastructure planning, and net zero pipelines into one place-based offer, giving investors confidence in demand, governance, and delivery:

- Combined authorities and regional bodies provide a natural structure for joint programming
- Shared pipelines across authorities meet investor thresholds that no single authority could reach
- Regional collaboration reduces duplication in procurement, legal, and project development costs
- Peer learning across authorities accelerates delivery and builds collective capability

Partnerships with DNOs and energy companies

Distribution network operators and energy companies are essential partners for technically and financially viable Net Zero delivery

- Early DNO engagement prevents costly late-stage grid reinforcement surprises
- Joint planning with energy companies identifies shared infrastructure investment opportunities
- Long-term offtake or connection agreements improve revenue certainty for investors
- Partnership structures can unlock private co-investment alongside public funding

Integrating community groups and anchor institutions

Building local legitimacy strengthens delivery and broadens the benefit of Net Zero programmes

- Anchor institutions such as hospitals and universities provide reliable heat and energy demand
- Community groups support resident engagement, improving uptake and reducing delivery risk
- Local ownership models generate community revenue and build long-term programme support
- Inclusive governance structures demonstrate social value, strengthening funding applications

Financial implications

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How synergies reduce risk

- Revenue diversification across assets reduces exposure to single-project failure
- Shared infrastructure spreads technical and operational risk across the portfolio
- Stronger counterparty relationships and longer contracts reduce delivery and demand risk
- Lower overall risk profile reduces the cost of private finance across the programme

How synergies improve revenue certainty

- Bundled offtake agreements across multiple sites smooth income volatility
- Cross-sector integration creates multiple revenue streams from a single asset or intervention
- Anchor institution demand provides a reliable baseload that underpins financing structures
- Longer combined contract terms improve bankability and reduce refinancing risk

How synergies support blended finance

- Co-benefits across carbon, social, and environmental outcomes justify grant and concessional funding
- Stronger business cases attract private capital alongside public investment
- Portfolio scale helps reach the minimum thresholds required for green bonds and infrastructure funds
- Blended structures allow higher-risk elements to proceed alongside more bankable assets

How synergies strengthen business cases

- Demonstrating interdependencies show why projects must be assessed and funded together
- Quantified co-benefits broaden the range of appraisal criteria and funding sources
- Portfolio-level financial modelling presents a more compelling risk-return profile
- Strategic alignment across sectors signals programme credibility to investors

Case studies

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Example: Area-based retrofit and heat zoning

A combined authority sought to reduce emissions from an older residential area while addressing fuel poverty and preparing for heat network delivery

- **Challenge:** Retrofit and heat zoning were being planned separately, creating conflicting investment signals for residents and developers
- **Synergy identified:** Retrofit reduces heat demand, improving heat network viability; heat zoning clarifies which properties to prioritise for upgrade first
- **Approach:** A single area-based programme coordinated retrofit sequencing with heat zone designation, sharing resident engagement and survey costs across both workstreams
- ✓ **Outcome:** Combined programme reduced delivery costs by avoiding duplication and produced a stronger, integrated funding case for Warm Homes and heat network capital grants

Example: Integrated EV and solar infrastructure

A metropolitan council wanted to expand EV charging across its public car parks while also progressing rooftop solar on council-owned buildings

- **Challenge:** Both programmes required grid reinforcement that would have doubled connection costs and delayed both schemes
- **Synergy identified:** Shared grid connection and co-located battery storage could serve both programmes from a single infrastructure investment
- **Approach:** A joint procurement packaged EV charging, rooftop solar, and battery storage across six sites, with a single DNO engagement process and shared financing structure
- ✓ **Outcome:** Bundled programme met institutional investor thresholds unachievable by either scheme alone, and reduced grid connection costs by approximately 30%

Example: Multi-asset municipal energy portfolios

A local authority with a diverse estate sought to attract long-term private investment across a range of net zero assets that were individually too small to finance

- **Challenge:** Solar, LED lighting, heat pump, and EV charging projects each fell below minimum investor thresholds and carried different risk profiles
 - **Synergy identified:** Combining higher-returning solar and LED assets with longer-payback heat pump investments created a balanced portfolio with a blended return attractive to infrastructure funds
 - **Approach:** Assets were packaged into a single SPV with standardised contracts, enabling a green bond issuance to finance the full programme
- ✓ **Outcome:** Portfolio attracted £18m of private investment, with solar and LED revenues cross-subsidising heat pump delivery across the estate

Exercises

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Exercise: Identifying synergies in a project pipeline

A local authority has the following projects in its pipeline, each being developed independently by separate teams

- Rooftop solar PV across the council estate
- LED lighting upgrades to council offices and leisure centres
- Heat pump installation in sheltered housing
- EV charging rollout across council car parks
- Grid reinforcement required for a new housing development

Review the pipeline above and identify:

- Which projects share infrastructure, demand, or financing needs
- Where siloed delivery is creating duplicated cost or missed opportunity
- Which two or three projects could be bundled into a more investable proposition

Answer

- **Technical synergy:** Solar, EV charging, and grid reinforcement all require grid connection upgrades + shared DNO engagement process and combined connection agreement reduces cost and timescale across all three
- **Financial synergy:** Solar and LED upgrades generate early, predictable returns and can cross-subsidise the longer-payback heat pump programme within a single portfolio financing structure
- **Operational synergy:** Solar, LED, and heat pump works across the council estate can share a single surveying, procurement, and project management function, reducing overhead costs
- **Suggested bundle:** Solar + EV charging + grid reinforcement as a technical infrastructure package, LED + heat pumps as an estate decarbonisation package with blended financing

Exercise: Designing a cross-sector bundle

A combined authority wants to attract private investment into a low-income neighbourhood with high fuel poverty, poor active travel infrastructure, and limited EV charging access

Three projects are under consideration:

- Whole-house retrofit for 300 council-owned homes
- A new active travel corridor linking the neighbourhood to the town centre
- 6 EV charging hubs at key community locations

Design a cross-sector bundle by identifying:

- The synergies that justify treating these as a single programme
- The shared outcomes that make a joint funding case possible
- The governance structure needed to coordinate delivery across teams

Answer

- **Synergies:** Shared resident engagement across retrofit and EV charging reduces consultation cost; active travel corridor civil works can integrate EV charging infrastructure, eliminating separate groundworks; combined programme addresses fuel poverty, transport access, and air quality in a single place-based narrative
- **Shared outcomes:** Reduce household energy costs for 300 homes by 2030; improve active and low-carbon travel access for 5,000 residents; cut transport and building emissions in the neighbourhood by 35% by 2030
- **Governance:** A cross-departmental delivery group spanning housing, transport, and sustainability teams, with a single senior responsible owner and a joint community engagement plan
- **Key learning:** The bundle is stronger than its parts. A place-based programme with multiple co-benefits attracts a wider range of funders and meets investor scale thresholds that no single project could achieve alone

Section summary

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Section summary

1. Synergies create value that isolated projects cannot

- Combining Net Zero initiatives reduces cost, risk, and delivery complexity
- Technical, financial, operational, social, and environmental synergies each unlock distinct benefits
- Siloed working is one of the most significant sources of lost value in Net Zero programmes

2. Cross-sector integration turns good projects into investable programmes

- Pairing complementary technologies and interventions strengthens the financing case for both
- Shared infrastructure, procurement, and engagement reduce costs across the portfolio
- Place-based and area-based approaches create replicable delivery models at scale

3. Portfolio thinking is the bridge between projects and long-term investment

- Bundling and aggregation meet investor thresholds that individual projects cannot reach
- Diversified revenue and risk profiles make programmes more attractive to a wider range of funders
- Governance and coordination across departments and partners is what makes portfolios work in practice

Section 3: Securing long-term, sustainable financing

Summary

By the end of this session, participants will be able to frame long term financing as a core enabler of net zero delivery, matching finance structures to asset lifecycles, improving investor confidence through long-term certainty, and building credible, investable programmes with clear risk allocation and transparent reporting.

Learning Outcomes

- Explain what *long-term financing* means for net zero assets
- Select and combine financing tools to create bankable structure
- Build an investable long-term pipeline and maintain credibility over time

Section 3 requires 8 learning hours: 4 hours of Guided Learning and 4 hours of Independent Learning

Foundations

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What long-term financing means in a net zero context

- Funding structures that match multi-year delivery, operations, and replacement cycles of low-carbon assets (generation, grids, buildings, heat, transport).
- Emphasis on durable cashflows, stable risk allocation, and predictable policy support that can unlock scale.
- Often combines capital expenditure (build) with long-term operating and performance commitments (operate, maintain, optimise).
- Success is measured by system transformation over decades, not just short-term project completion.

Why long-term certainty matters for investors

- Lower perceived risk can reduce required returns, improving affordability for net zero infrastructure.
- Stable rules and predictable revenue frameworks support investment committee approvals and long-dated capital allocation.
- Helps investors price risks (policy, demand, technology) rather than adding large “uncertainty premiums”.
- Enables portfolio strategies aligned with long-term liabilities (pensions, insurers).

The challenge of multi-decade investment horizons

- Forecasting revenue, demand, and operating costs becomes harder as uncertainty accumulates over 15–40 years.
- Political and regulatory cycles are shorter than asset lives, raising “policy rollover” risk.
- Technology costs and standards evolve, risking early obsolescence or stranded assets.
- Refinancing risk increases if debt maturities are shorter than the asset’s economic life.

Understanding lifecycle financing needs

- Costs span planning, development, construction, commissioning, operations, maintenance, upgrades, and decommissioning.
- Net zero assets often shift costs from fuel spend to upfront capex plus ongoing service and maintenance spend.
- Financing plans should include performance monitoring, retrofit cycles, and component replacement (for example batteries, heat pumps).
- Whole-life costing reduces the risk of underfunding operations and maintenance, which can undermine emissions outcomes.

Aligning financing with asset lifetimes

- Match debt tenor and repayment profile to the economic life of the asset to avoid cashflow stress.
- Use mechanisms like amortising loans, availability payments, or long-term service contracts to align payments with benefits.
- Design reserves for major maintenance and end-of-life replacement to protect performance and credit quality.
- Avoid “short money for long assets” where refinancing risk can derail delivery.

Public sector financing tools

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Long-term borrowing options

- Sovereign or municipal bonds, long-tenor loans, and development bank lending can spread costs across beneficiaries over time.
- Concessional finance can lower weighted cost of capital for early-stage or higher-risk net zero projects.
- Green, sustainability, or climate-labelled issuance can widen the investor base if governance and reporting are robust.
- Debt strategy should consider interest-rate risk and refinancing needs over the project life.

Revolving funds

- A pool of capital that is re-used as projects repay savings or loan principal, enabling repeat investment.
- Works well for public-sector energy efficiency and heat decarbonisation where savings can be measured and recycled.
- Can standardise appraisal, create a consistent pipeline, and build internal capacity over time.
- Governance is key: clear eligibility, repayment rules, and measurement of savings and carbon impacts.

Public-private partnerships

- Long-term contracts where a private party delivers a public asset or service, bears significant risk, and is paid based on performance.
- Can mobilise private capital and expertise while locking in service levels and lifecycle maintenance obligations.
- Requires strong contract management to ensure performance, value for money, and transparent risk allocation.
- Useful where outcomes can be specified (availability, service quality, emissions performance) and monitored.

Concession models

- A form of PPP where a private operator invests and operates, typically earning revenue from users (sometimes with public support).
- Can accelerate rollout where scale and operational efficiency matter (for example charging networks, mobility services).
- Needs careful design of tariffs, access, quality standards, and handback conditions at contract end.
- Public sector focuses on enabling sites, permits, interoperability, consumer protections, and performance oversight.

Service-based financing (e.g., heat as a service)

- Customers pay for an energy service (heat delivered) rather than owning equipment, shifting capex to a service provider.
- Provider finances, builds, and operates assets, and revenue is linked to delivered heat and performance.
- Can reduce upfront barriers for building owners and align incentives around efficiency and reliability.
- Contract design matters: pricing indexation, performance guarantees, fuel switching, and termination/asset ownership terms.

Private sector financing tools

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Institutional investment

Local Government Pension Schemes (LGPS) represent a major source of patient, long-term capital; linking LGPS investment mandates to place-based net zero pipelines creates a powerful alignment between local financial assets and local infrastructure priorities:

- Long-horizon capital from pension funds, insurers, and sovereign funds can match the duration of infrastructure assets.
- Typically seeks stable, predictable cashflows with clear risk allocation and credible governance.
- Often accessed via listed bonds, private debt, co-investment, or infrastructure fund vehicles.
- Policy stability and pipeline scale are common prerequisites for material allocation.

Infrastructure funds

Regional or place-based pipelines are essential to meeting the scale and diversification requirements of infrastructure funds; a credible Combined Authority-level pipeline signals the volume and variety of assets needed to sustain fund deployment

- Pooled vehicles that mobilise public and private capital for defined infrastructure purposes, offering diversification and scale.
- Can provide equity, quasi-equity, or debt, often with specialist asset management and due diligence capacity.
- Helpful for aggregating smaller net zero projects into investable portfolios.
- May blend capital types (public, concessional, private) to de-risk early deployments.

Corporate PPAs

- Long-term contracts where a corporate buyer agrees to purchase electricity from a generator, supporting bankable revenues.
- Can be physical or financial (virtual) structures depending on market rules and corporate needs.
- Helps corporates hedge electricity prices and progress renewable procurement commitments.
- Key terms include tenor, price structure, volume, curtailment, credit support, and settlement mechanics.

Asset-backed financing

Asset-backed financing viability improves significantly where assets are aggregated at place or regional level with stable, system-linked revenues; a Combined Authority assembling a portfolio across heat networks, transport, and buildings creates more robust cashflow structures than any single asset can provide:

- Financing backed by contractual cashflows from underlying assets, sometimes via securitisation structures.
- Can recycle capital by monetising future revenues while retaining public ownership of the asset.
- Requires strong data, predictable cashflows, and clear legal rights to assign revenues to an SPV.
- Useful for portfolios of mature assets with stable revenues (for example transport or utility cashflows).

Long-term offtake agreements

- Contracts where a buyer commits to purchase future output, creating revenue certainty that supports project finance.
- Common for power, heat, hydrogen, biomethane, and industrial decarbonisation products.
- Can include price floors, indexation, take-or-pay clauses, and volume commitments to manage volatility.
- Buyer credit quality and contract enforceability are central to bankability.

Risk management for long-term financing tools

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Revenue risk

- Risk that project income is lower or more volatile than expected (tariffs, utilisation, price exposure).
- Mitigated through contracted revenues (PPAs, offtake), availability payments, or regulated asset bases where applicable.
- Sensitivity testing and conservative coverage ratios help protect lenders and investors.
- Clear indexing and change-in-law clauses can reduce unexpected revenue erosion.

Technology risk

- Risk that a technology underperforms, becomes obsolete, or has higher maintenance costs than planned.
- Managed through warranties, performance guarantees, insurance, robust O&M contracts, and proven standards.
- Phased deployment and modular design can reduce lock-in and allow upgrades.
- Technology due diligence should cover supply chains, spares, and long-term servicing capacity.

Policy risk

- Risk that regulations, subsidies, carbon pricing, permitting, or market rules change and weaken project economics.
- Mitigations include stable regulatory frameworks, long-term procurement, grandfathering provisions, and change-in-law protections.
- Strong governance and cross-party policy signalling can reduce perceived volatility.
- Transparency and credible reporting reduce backlash risk and improve legitimacy.

Demand risk

- Risk that users do not adopt the service at forecast levels (for example EV charging utilisation, heat network connections).
- Managed via anchor customers, phased rollout, minimum-revenue mechanisms, or demand aggregation.
- Customer propositions matter: pricing fairness, reliability, ease of access, and switching costs.
- Data-driven siting and behavioural insights improve uptake and utilisation.

Credit risk

- Risk that counterparties (offtakers, tenants, municipalities, suppliers) fail to pay or perform.
- Mitigated through credit support (letters of credit, guarantees), diversification, and step-in rights.
- Strong procurement and contract management reduce default and disputes.
- Monitoring financial health over time is critical in multi-decade contracts.

Risk-sharing mechanisms

- Public guarantees, first-loss tranches, or blended finance can crowd in private capital where risks are high or uncertain.
- Contractual allocation assigns risks to parties best able to manage them (construction to EPC, operations to O&M, policy to government where appropriate).
- Insurance and hedging address specific exposures (technology performance, weather, interest rates).
- Portfolio approaches diversify project-specific risks across many assets.

Creating investable long-term pipelines

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Pipeline visibility and transparency

- Publish multi-year project pipelines with timelines, procurement routes, and decision gates to help market preparation.
- Provide clear data rooms and consistent disclosure so investors can price risks efficiently.
- Transparency supports competition and better value for money.
- Regular updates reduce “stop-start” dynamics that inflate costs and weaken supply chains.

Standardisation of project documentation

- Use standard term sheets, contracts, reporting templates, and due diligence checklists to cut transaction costs.
- Improves comparability across projects, accelerating investor review and credit processes.
- Supports aggregation of smaller projects into portfolios with consistent risk profiles.
- Helps public bodies build repeatable internal processes and governance.

Replicable delivery models

- Build repeatable “productised” approaches (for example standard retrofit packages, standard charging concession structures).
- Replication shortens learning curves, reduces procurement time, and improves supplier confidence.
- Enables benchmarking of cost, performance, and carbon outcomes across programmes.
- Supports scalable financing where investors prefer repeatable structures over one-off bespoke deals.

Long-term procurement frameworks

- Multi-year frameworks create predictable demand for suppliers and enable continuous improvement.
- Can embed performance guarantees and measurement and verification requirements.
- Encourages investment in local supply chains, skills, and capacity.
- Supports aggregation, enabling institutional-scale investment opportunities.

Regional or multi-authority pipelines

- Pooling projects across authorities increases scale, diversifies risk, and attracts larger investors.
- Shared standards and governance reduce duplication and speed up delivery.
- Can support joint procurement and stronger negotiating power on price and service levels.
- Helps create investable portfolios of small and medium projects.

Embedding long term financing in governance

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Integrating net zero into MTFS

- Translate net zero targets into multi-year capital and operating plans with clear fiscal constraints and prioritisation.
- Use climate tagging and strategic budget alignment to ensure spending supports decarbonisation pathways.
- Align debt strategy with long-term investment needs and affordability metrics.
- Institutionalise review cycles so net zero is updated alongside fiscal forecasts.

Long-term asset management planning

- Maintain asset registers, condition assessments, and lifecycle maintenance plans to avoid deferred costs.
- Link decarbonisation investments to planned renewals (for example replacing boilers at end of life with heat pumps).
- Plan for resilience and climate risks alongside emissions reduction to protect service continuity.
- Use whole-life costing to prioritise interventions with the best value over time.

Aligning treasury management with net zero

- Align borrowing, liquidity, and investment policies with net zero delivery schedules and risk appetite.
- Consider interest-rate hedging, debt maturity profiles, and refinancing plans for long-lived assets.
- Integrate climate considerations into investment of reserves and counterparty risk processes.
- Improve transparency to support credibility with rating agencies and investors.

Long-term monitoring and reporting frameworks

- Track both financial performance (capex, opex, savings) and climate outcomes (emissions, energy, service levels).
- Use consistent disclosure to maintain investor confidence and enable course correction.
- Embed auditability and data governance to reduce greenwashing risk.
- Report climate-related risks and opportunities over short, medium, and long term where relevant.

Innovative long term financing models

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Climate investment funds

- Public or blended vehicles that deploy concessional capital to crowd in private investment for net zero transitions.
- Often focus on de-risking early markets, enabling scale, and supporting policy and capacity building.
- Can invest via grants, concessional loans, guarantees, and equity to improve project bankability.
- Best used where catalytic capital unlocks larger commercial flows.

Green bonds

- Debt instruments where proceeds are earmarked for eligible green projects, supported by disclosure and reporting.
- Can fund net zero capex at scale, while providing investors a labelled instrument with transparency expectations.
- Requires clear use-of-proceeds governance, project evaluation, and reporting on allocation and impacts.
- Credibility improves with external review and robust reporting processes.

Municipal climate banks

- Publicly capitalised entities that leverage limited public funds to mobilise larger pools of private finance for clean projects.
- Can offer credit enhancements, aggregation, and standardised products that reduce transaction costs.
- Often target distributed assets (solar, efficiency, heat) where small project sizes limit mainstream lending.
- Acts as a market builder, not just a lender, by proving models and enabling replication.

Endowment-style climate funds

- A “permanent capital” pool invested for long-term returns, with a spending rule that funds climate priorities annually.
- Supports stable multi-year grant making, project development capacity, and pipeline continuity.
- Investment strategy can target diversified assets while applying climate mandates or responsible investment criteria.
- Governance must balance intergenerational equity, risk tolerance, and impact integrity.

Long-term community investment models

- Community ownership and local finance can build acceptance and keep value local (dividends, reinvestment, local benefits).
- Structures include energy cooperatives, community shares, and local investment vehicles tied to specific assets.
- Often requires enabling policy, technical support, and patient capital for early development stages.
- Can complement public programmes by aggregating demand and building social licence for net zero projects.

Case studies

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Example: long-term financing for heat networks

A local authority wanted to shift dense urban buildings off gas by developing a low-carbon heat network using centralised plant and distribution infrastructure.

- **Challenge:** Heat networks are capital-intensive, have long payback periods, and typically need “guaranteed demand underpinned by long-term contracts”, which can deter traditional investors.
- **Synergy identified:** Early-stage development support (heat mapping → commercialisation) plus later-stage capital support can move projects from “concept” to investable, while long-term heat supply contracts create the revenue certainty lenders need.
- **Approach:** The project pipeline was progressed using early-stage grant/guidance support (HNDU) and then capital support to close “funding gaps” and reach construction (HNIP using grants/loans).
- **Outcome:** Public capital support was positioned explicitly to unlock larger pools of additional investment and help build a more self-sustaining market for heat networks (rather than one reliant on ongoing subsidy).

Example: 20-year retrofit investment programme

A national programme was framed to decarbonise existing homes at scale while improving comfort and reducing long-term costs.

- **Challenge:** Retrofit delivery was constrained by stop-start funding and the lack of a consistent, long-term policy and market signal, undermining supply chain investment and investor confidence.
- **Synergy identified:** A long-term policy framework can “trigger wider confidence”, enabling private investment to combine with public action into a multi-decade programme, explicitly described as a “20-year programme of circa £525 billion”.
- **Approach:** Delivery models were designed around performance-based contracting and long-term accountability using maintenance cost and system performance guarantees to force whole-life design choices, and enabling repayment from avoided costs/savings.
- **Outcome:** A credible long-horizon programme strengthens the investment case by making demand predictable, enabling standardisation/scale, and supporting workforce and market transformation needed for deep retrofit.

Example: long-term EV infrastructure concession

A city aimed to expand on-street charging rapidly without relying on large upfront municipal capex, while ensuring chargers were installed, operated, and maintained over time.

- **Challenge:** Early utilisation can be uncertain, and local authorities may lack the balance sheet headroom or operational capacity to build and run networks at speed.
- **Synergy identified:** A long-term concession aligns incentives: the operator invests and grows utilisation over time, while the authority sets locations/standards and secures network coverage and service quality.
- **Approach:** Newport City Council used a 15-year concession agreement with an investor-operator (Zest), with the rollout supported by matched funding (Welsh government and OZEV's ORCS alongside Zest investment).
- **Outcome:** The agreement enabled deployment at defined scale (reported as 144 charge points across 77 locations) under a model designed for sustained delivery and long-term operation.

Exercises

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Exercise: Mapping long-term financing needs

A city council has committed to a 2035 net zero pathway and wants to understand what “long-term financing” actually looks like across a place-based programme.

Three interventions are planned:

- Whole-building retrofit for 400 public housing units (fabric + heat pumps)
- A low-carbon heat network for a civic district (library, hospital wing, university buildings)
- A public EV charging rollout (80 on-street chargers + 6 rapid hubs)

Map the long-term financing needs by identifying:

- The lifecycle cost stages (development → capex → opex → renewals) that must be funded
- The timing of cash needs (years 0–2, 3–7, 8–20+) and where refinancing risk might appear
- The likely funding sources for each stage (public budgets, borrowing, private capital, contracts)
- The key risks that could disrupt cashflows and what monitoring data would be needed

Answer

- **Synergies:** Shared surveys, asset condition assessments, and customer engagement reduce upfront development costs across retrofit and heat network connection planning; coordinated civils scheduling lowers duplication (retrofit works, heat network connections, and charger installation). Lifecycle planning is stronger when costs are treated as “whole-life” (planning through disposal), not just upfront capex.
- **Shared outcomes:** A single multi-year investment narrative supports consistent delivery: reduced building energy demand (retrofit), low-carbon heat supply (heat network), and transport electrification access (EV charging), enabling portfolio-level emissions reductions and improved service reliability over time. Long-term outcomes can be tracked using short/medium/long-term horizons to keep reporting consistent for decision-makers and funders.
- **Governance:** A “lifecycle finance map” is owned by a cross-department group (housing, energy, transport, finance/treasury) that updates assumptions annually (demand, tariffs, opex, renewals). The group standardises risk registers and assigns risks to the party best able to manage them, consistent with PPP risk allocation logic.
- **Key learning:** The mapping exercise usually reveals that the biggest delivery failures come from underfunded opex and renewals (maintenance, replacements, performance monitoring), not from lack of capex—so a credible long-term plan explicitly funds operations, major maintenance cycles, and long-term monitoring, not just construction.

Exercise: Designing a long-term financing structure

A regional authority wants to deliver a 15-year net zero infrastructure programme that bundles:

- Deep retrofit for 600 homes (delivered in phases)
- A heat network build-out (phase 1: civic district; phase 2: nearby mixed-use)
- A 15-year EV charging concession (operator invests, authority provides sites/standards)

Design a long-term financing structure by setting out:

- A financing “stack” (what is funded by public borrowing, contracts, private capital, and any revolving mechanism)
- How revenues will be secured over time (tariffs, service payments, offtake/availability)
- How key risks are allocated and de-risked (construction, demand, policy, technology, credit)
- What reporting and governance commitments will sustain investor confidence

Answer

- **Synergies:** A single programme allows
 - (1) standardised documentation and reporting across assets, and
 - (2) aggregation of smaller components (retrofit tranches, charger sites) into investable scale. Risk allocation can be made consistent across contracts so financiers see a repeatable model rather than bespoke one-offs.
- **Shared outcomes:** The bundle supports a unified “use of proceeds / outcomes” story: retrofit lowers heat demand (improving heat network economics), heat network decarbonises anchored buildings (stable base load), and EV charging supports transport transition, creating a stronger, long-term emissions and resilience case that can be monitored across time horizons.
- **Governance:** Establish a single Senior Responsible Owner with a programme finance board that includes treasury and service departments, plus a contract management function for long-term performance enforcement (availability/service KPIs). Reporting follows recognised transparency disciplines for long-term finance (allocation + impact reporting where labelled finance is used).
- **Key learning:** The most bankable long-term structure is usually a blended architecture, not one instrument:
 - Public borrowing / labelled bond for stable, public-benefit capex (retrofit enabling works, heat network backbone), paired with clear reporting;
 - Service-based or PPP-style contracts that lock in performance and lifecycle maintenance;
 - Concession for EV charging to transfer capex/opex and utilisation ramp risk to an operator, while government sets service standards;
 - Revolving mechanism (where savings/revenues allow) to recycle repayments into the next retrofit tranche.

Section summary

Intellectual Property of the Greater
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Section summary

1. Long-term financing must match net zero asset lifecycles

- Align borrowing/contract length to the economic life of assets (heat networks, retrofits, charging).
- Plan funding beyond capex - operations, maintenance, upgrades, and replacement cycles.
- Design structures to reduce refinancing shocks over multi-decade horizons.

2. Long-term certainty is what unlocks lower-cost capital

- Investors price lower risk when rules and support mechanisms are stable over time.
- Net zero requires sustained investment at scale, so stop-start programmes undermine delivery and financing.
- Define short/medium/long-term planning horizons consistently for decision-makers and funders.

3. Bankability comes from risk allocation and the right tool mix

- Long-term borrowing, revolving funds, PPPs/concessions, and service models can shift capex/opex burdens and lock in performance.
- Institutional capital, infrastructure funds, PPAs/offtake, and asset-backed structures rely on predictable revenues and enforceable contracts.
- Guarantees/blended structures can crowd in private finance where demand, technology, or policy risks are too high early on.

4. Scale requires investable pipelines and trusted reporting

- Visibility, standard documentation, and replicable delivery models reduce transaction costs and speed procurement.
- Use recognised transparency norms for labelled finance (use of proceeds, governance, allocation/impact reporting).
- Monitor climate risks/opportunities and performance over defined horizons to sustain investor confidence.

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Types of synergies

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