Transforming Renovation in the Atlantic Seaboard South

A Replicable Model for Public Building Decarbonisation

Project summary

Tipperary Energy Agency | Technological University of the Shannon | Vivid Edge

Co-funded by the European Union's LIFE Programme – Grant Agreement No 101120956

A regional facilitation service for the renovation of public buildings in a region in Ireland.

Atlantic Seaboard South Region TRESS building locations

What is TRESS?

TRESS: Transforming Renovation in the Atlantic Seaboard South is a project co funded under the European Union's LIFE programme (LIFE-2022-CET-RENOPUB) to accelerate and consolidate the energy efficiency renovation of public buildings in the Atlantic Seaboard South Region of Ireland. Led by Tipperary Energy Agency, in partnership with the Technological University of the Shannon and Vivid Edge, TRESS works with local authorities and public bodies across the Atlantic Seaboard Climate Action Regional Office (CARO) region and beyond to build a replicable, regional facilitation model for public sector decarbonisation.

Project results

20 public building renovations	**€69M** capital investment secured for renovations	**4 GWh/yr** primary energy savings projected
9 GWh/yr Renewable Energy Generated	**2,567** Co2 saved per year (tCO_2/yr)	**76** People trained

Key takeaways

TRESS demonstrates that public building decarbonisation can be accelerated when a local authority or public body has access to a regional facilitation service which includes technical, financial and procurement expertise in public building renovation.

The TRESS best practice approach places the focus, on enhancing the renovation process, particularly the initial stage (Stage 0). The TRESS methodology is underpinned by rigorous project planning, deep stakeholder engagement, Investment Grade Audits, market tested costings, finance and procurement guidance and an independent energy advisory function that keeps carbon and energy outcomes central throughout the renovation project from stage 0 to project close.

Capacity building is not optional. Most participating bodies could not have assessed renovation tender submissions without TRESS's technical support; sustained capacity building is essential to scale this model nationally.

Finance follows project readiness. Scope, data, costs, approvals, affordability and procurement must be sufficiently mature before meaningful engagement with funders or service providers.

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Benefits of the TRESS approach

Technical, financial and procurement expertise delivered as a single regional facilitation service.

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Introduction

Public bodies in Ireland have ambitious legally binding targets for decarbonising their building stock with an aim for a 51% reduction in CO_2 emissions by 2030, a Building Energy Rating of B or better, and a climate neutral economy by 2050. Local authorities are also required to source 80% of heat from renewable sources and to install no new fossil fuel heating systems from 2023 onwards. Both national and EU law, including the Energy Efficiency Directive and the Energy Performance of Buildings Directive, reinforce this ambition.

Despite this, progress has been slow. Public bodies in Ireland have historically lacked the agency to implement building renovations at scale: critical barriers include limited internal capacity, funding shortfalls, and very few completed renovations from which to learn and benchmark. Private financing, potentially a significant accelerator of renovation, such as Energy Performance Contracts (EnPCs) has had limited use in the public sector having been deployed in only a small number of projects nationally and project aggregation across local authorities or public bodies had not taken place.

TRESS was established to close this gap. The project accelerates and consolidates the renovation of public buildings across one region in Ireland with the participation of Tipperary, Clare, Limerick City and County and Kerry local authorities and public bodies including Waterways Ireland, Technological University of the Shannon (Estates), the Environmental Protection Agency and Údarás na Gaeltachta. All participants are within the Atlantic Seaboard South region of Ireland. European policy increasingly identifies electrification, combined with renewable generation, as the most effective route to decarbonising buildings. TRESS experience shows that electrification should be approached as a whole building transformation programme spanning energy efficiency, heat pumps, solar photovoltaics, controls and energy management, with careful early planning around electrical infrastructure, maximum import capacity and grid connection requirements.

TRESS is the first facilitation service developed for the renovation of public buildings across multiple local authorities and public bodies in Ireland, creating a replicable approach that can subsequently be used in other regions and across the wider public sector and national estates.

Accelerating public building decarbonisation in Ireland is not primarily a question of ambition or funding availability. It is a question of robust delivery frameworks, technical, financial and procurement readiness and delivery capacity.

Facilitation should be treated as important public infrastructure and a permanent public capability rather than a temporary project activity. TRESS recommends the establishment of permanent regional renovation facilitation units, ideally located within local and regional energy agencies in line with European best practice, providing Stage 0 preparation, portfolio analysis, Investment Grade Audits, procurement and financing support, Measurement and Verification expertise and capacity building.

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TRESS project partners and participants

TRESS is co funded under the European Union's LIFE programme (grant agreement No 101120956 / LIFE-2022-CET-RENOPUB) and ran from 1 September 2023 to 31 August 2026. The project is delivered by Tipperary Energy Agency, Technological University of the Shannon and Vivid Edge, a consortium of energy, finance, capacity building and technical specialists working in partnership with participating local authorities and public bodies across the Atlantic Seaboard South region and Tipperary.

The project established a Governing Board, comprised of the TRESS partners, representatives from each participating organisation and national stakeholders including the Sustainable Energy Authority of Ireland and the Department of Climate, Energy and Environment and also included a representative of the Horizon 2020 DeliveREE project DeliveREE Hub - Codema. This governance structure allowed for in-depth exchanges on policy and practice between national stakeholders and local authorities and regional public bodies.

The Governing Board reviewed a wide range of potential buildings for renovation. It assessed and approved a TRESS building prioritisation framework, which identified and ranked the key buildings, in the region, to proceed to renovation. The Board also approved a range of best practice guides and tools including TRESS Stage 0 Best Practice Playbook, the TRESS public sector renovation finance and risk matrix, and a sustainability plan for TRESS.

At an operational level project delivery teams, led by Tipperary Energy Agency, were established with each participating organisation and included climate and energy staff, financing staff, facilities managers and building operators. These teams reported into the Governing Board at each meeting. The project delivery team structure facilitated deep stakeholder engagement and created a structure to measure progress, address challenges, manage information flows and enhance decision making.

TRESS partners

- Lead partner: Tipperary Energy Agency (TEA)
- Technological University of the Shannon (TUS)
- Vivid Edge (VE)

TRESS participants

- Tipperary County Council
- Clare County Council
- Kerry County Council Tipperary County Council
- Limerick City and County Council
- Waterways Ireland
- Environmental Protection Agency (EPA)
- Údarás na Gaeltachta
- Technological University of the Shannon-Estates (TUS)

Participating buildings

Twenty buildings across four local authorities and seven public bodies progressed through the TRESS project, spanning leisure centres, civic offices, museums, third level campuses and regional offices. Local authorities in Ireland do not have responsibility for healthcare facilities or schools and these were excluded from the project.

#	Client	Building
1	Kerry County Council	Tralee Leisure Centre
2	Kerry County Council	Áras Contae Civic Offices, Tralee
3	Kerry County Council	Killarney Leisure Centre
4	Tipperary County Council	Clonmel Civic Offices
5	Tipperary County Council	Nenagh Civic Offices
6	Tipperary County Council	The Source Arts Centre, Thurles
7	Tipperary County Council	Clonmel Swimming Pool
8	Tipperary County Council	Clonmel Museum
9	Tipperary County Council	Sean Treacy Swimming Pool
10	Clare County Council	Ennis Leisure Centre
11	Clare County Council	Áras Contae an Chláir-Civic Office
12	Waterways Ireland	Scariff Regional Office
13	TUS	TUS Sports Hub, Moylish
14	TUS	TUS Thurles Campus
15	TUS	Limerick School of Art & Design
16	EPA	Cork Regional Office, Inniscarra
17	Limerick City and County Council	Merchant's Quay Civic Offices
18	Limerick City and County Council	Dooradoyle Civic Offices
19	Limerick City and County Council	Lissanalta House
20	Údarás na Gaeltachta	Oifig Réigiúnach Chiarraí-Enterprise Hub

Three Building Typologies: Leisure Centre, Civic Office, Arts Building

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Collaboration with DeliveREE

TRESS collaborated closely with the DeliveREE project team, recognising that DeliveREE was addressing a closely related delivery challenge; aggregation and Energy Performance Contracting for local authority decarbonisation. Workshops were held between the two teams, and the DeliveREE project lead joined the Governing Board giving participating local authorities and public bodies a deeper understanding of aggregation and how to assess EnPC from a procurement perspective. The benefits of collaborating across projects such as this are immense and form the basis of a longer-term collaboration and facilitation service for public bodies and local authorities. The TRESS project also benefited from a range of lessons learned from others across Europe in the early stages of the project.

The delivery challenge

Public buildings represent a significant share of Ireland's built environment and are directly within the influence of public authorities, making them a logical starting point for accelerating decarbonisation. In practice, however, projects have typically been developed on a building-by-building basis, focused on individual technologies rather than whole building performance. Internal expertise on renovation is often limited to facilities staff, and decision making can be fragmented within and across multiple individual organisations in a region.

Renovation project planning (Stage 0), using standard energy audits are often not developed to sufficient detail which results in projects being stalled between concept and procurement. Without robust, market tested costings and detailed option appraisals for whole building renovation, public bodies have struggled to build the business case needed to secure financing and reduce procurement risk. This finding was supported by multiple TRESS stakeholder interviews spanning energy and climate teams and finance and procurement officers in the participating organisations and national stakeholders A second finding, that there is limited in-house technical delivery and procurement capacity in most public bodies and local authorities, were the most significant obstacles to scaling renovation delivery.

Common barriers identified by TRESS

- Limited in-house renovation expertise in technical and procurement teams
- Stage 0 audits not developed to investment grade for scope or cost
- Poor building data: missing drawings, metering and shared registration numbers
- Electrification is not approached as a whole building transformation programme
- Lack of governance structures for regional renovation strategies and project aggregation
- No capacity building supports available regionally for public building renovation
- Inadequate or restrictively structured grant co funding limits scope and financing options
- Lack of standardised procurement templates
- No project aggregation across local authorities due to a lack of regional facilitation services

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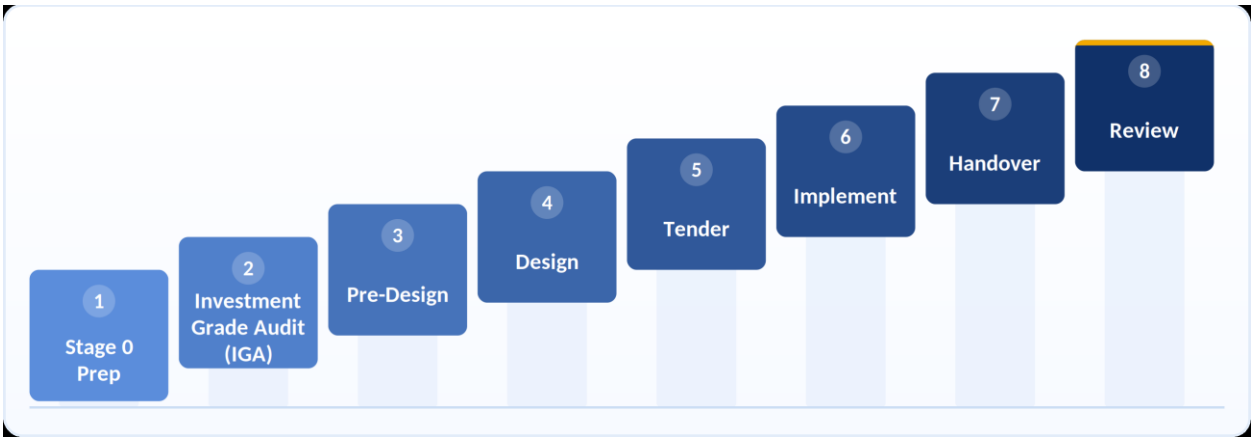
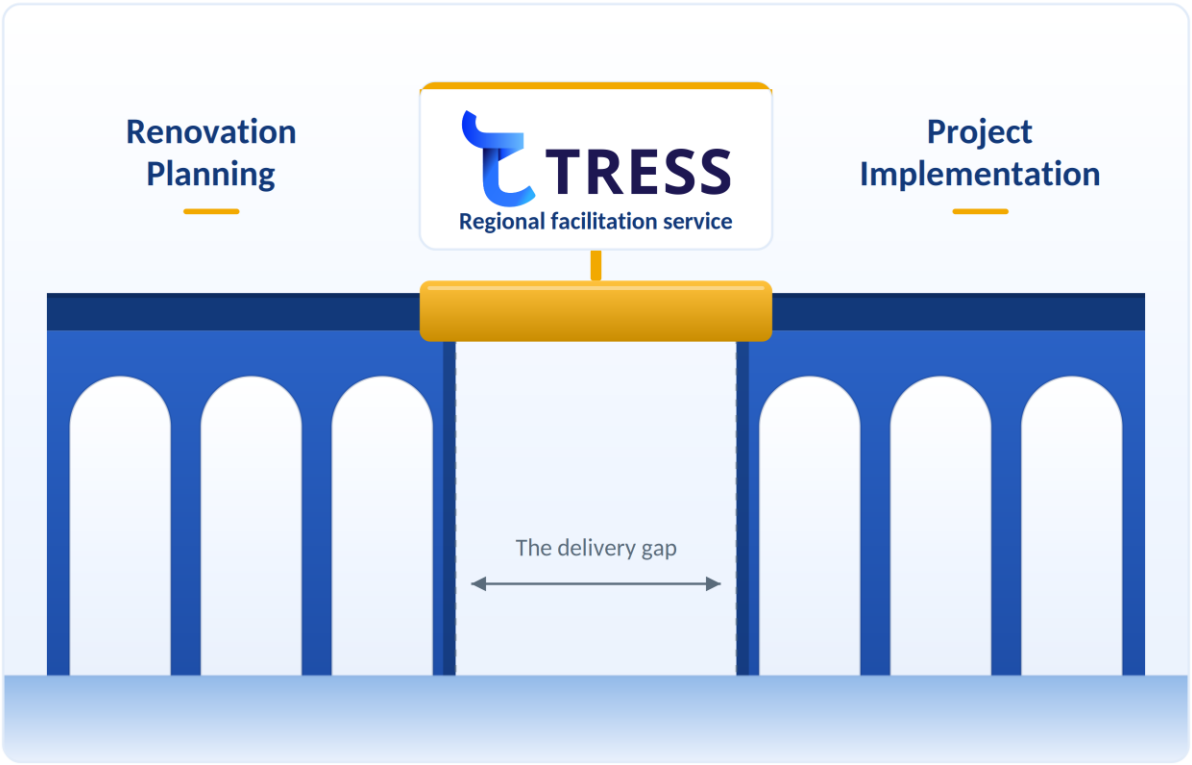
Renovation Project Stages





A holistic, regional facilitation service for renovation, delivers and multiplies impact.

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The TRESS approach

At the core of the TRESS model is a rigorous approach to planning and delivering a renovation project successfully. This includes planning, auditing, finance and procurement, project delivery and post-delivery measurement and verification and optimisation.

Defining Stage 0

Stage 0 is the preparatory stage that sets a public building renovation up for success before an Investment Grade Audit (IGA) can begin. It brings together five things: managing delivery risk from the outset; aligning stakeholders, including securing senior management accountability and engaging facilities staff early; establishing accurate data and inputs by gathering and digitising building documentation (drawings, asset registers, energy and water bills, meter records, Building Management System access, O&M manuals and capital plans); evaluating and, where needed, installing energy metering to establish a reliable baseline, typically from 12 to 36 months of data; and building in strong processes, planning and a project team with the right expertise and collaborative mindset. Only once this preparation is complete, and the building is "IGA ready", does the project move into the Investment Grade Audit. The "IGA ready" gate is a critical step at Stage 0. If the data is not accurate, savings cannot be projected accurately; if drawings and asset registers are missing, the audit is delayed or blocked. Stage 0 exists to close those gaps first. It also identifies equipment at end of useful life and existing infrastructure or refurbishment plans, so energy renovations can be aligned with wider capital works where appropriate.

What is an Investment Grade Audit?

An IGA develops renovation measures to functional design level so that they are genuinely implementable, and prices construction costs using real world contractor input rather than indicative rates. This combination of robust technical analysis and live market engagement produces what the TRESS team describe as an “Audit for Action” – a deliverable that building owners and the market can both trust.

Functional design, not indicative scope

Renovation measures are developed to a level of detail that is genuinely implementable on site, not a high-level estimate.

Real world contractor pricing

Construction costs are based on contractor input and current market rates, producing hard budget numbers rather than indicative figures. This is critical in the current context of high inflation in construction cost.

Market and stakeholder engagement

Stakeholder engagement in each local authority and public body is critical to creating an effective renovation plan, data access and decision making structures. Contractors and suppliers are engaged directly during the audit to obtain costings and construction planning input.

Robust analysis and reporting

Findings are reported across energy, carbon and financial perspectives for audiences ranging from facilities teams to senior decision makers. High quality data enables the development of a robust business case for funding and procurement purposes and supports the delivery of energy and carbon objectives with clear option analysis across technologies.

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Financial planning at stage 0

Financial planning should begin at Stage 0 and develop alongside the technical scope and procurement strategy. Waiting until the Investment Grade Audit is complete to consider funding can result in a technically credible project that is unaffordable, incompatible with available grants or unsuitable for the proposed commercial model. Early financial planning should establish the full project cost, the public body's available CAPEX or OPEX, the expected grant contribution, any remaining funding gap, and the organisation's legal and financial capacity to enter borrowing or long-term service arrangements.

A key part of financial planning is understanding the project risks, who will bear them and how that allocation changes under different delivery and financing models. Risks arise throughout the project lifecycle, from data quality, planning and design through procurement, construction, performance, compliance, operation and long term regulatory or market change. These risks may sit with the public body, equipment manufacturer, installer, ESCO or other delivery partner. They should be identified early and, where appropriate, allocated to the party best able to manage them. Importantly, transferring risk usually has a price: it may affect financing costs, service charges, guarantees, contingencies and contractual terms. The assessment should therefore distinguish clearly between risks retained by the public body, risks transferred contractually and risks that remain shared or cannot realistically be transferred.

TRESS developed an integrated Finance Matrix, risk management templates and decision support visuals to help public bodies compare internal funding, grants, conventional borrowing, EnPC, Energy as a Service (EaaS), blended funding and portfolio approaches. The risk management templates help users understand how key risks, including design and delivery, performance and savings, operation and maintenance, asset ownership and long term contractual obligations, may be retained, shared or transferred under different delivery and financing structures. The tools distinguish sources of funding and finance from the commercial model used to deliver the project and reinforce that actual risk allocation depends on the specific contract and project structure It also requires consideration of lifecycle costs, affordability, ownership, repayment or service obligations, risk allocation, data quality, measurement and verification and compatibility with the proposed procurement route. The objective is not to identify one universally preferred route, but to establish a credible shortlist and identify the evidence and approvals required before the project progresses.

Procurement

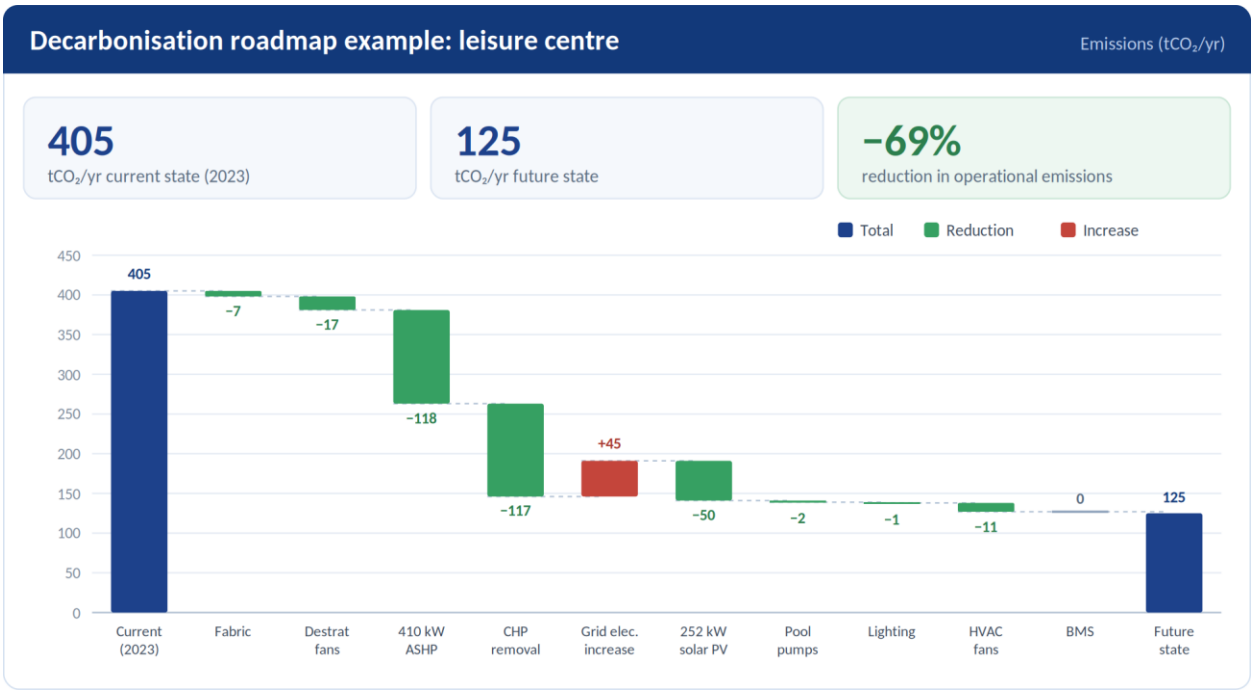
A procurement strategy should also be considered at Stage 0. The appropriate route depends on the statutory and legal basis of the organisation, maturity and complexity of the project, the degree to which the required outcome can be defined, the capacity of the local or regional market and the commercial model being considered. A grant, EnPC or EaaS arrangement is not itself a procurement procedure, each must be implemented through a chosen procurement route.

TRESS developed a Procurement Matrix and Decision Guide to support public bodies in selecting an appropriate procurement strategy for energy renovation projects**.** The tools compare the principal procurement routes available to a public body against project maturity and complexity, the need for market dialogue or negotiation, innovation potential, internal capability and compatibility with different commercial models. It also distinguishes clearly between the procurement procedure, the commercial or delivery model, the funding source and the organisations preferred procurement processes. The TRESS approach is to define the required outcomes robustly giving good clarity to the procurement team. The DeliveREE project approach of engaging the market in competitive dialogue and avoiding unnecessarily prescribing the technical or commercial solution before alternative approaches have been

tested, was also incorporated into the best practice approach. The key consideration is that the selected route is proportionate, legally compliant and capable of delivering whole life value, energy and carbon performance, appropriate risk allocation and effective contract management.

Energy Efficiency Design (EED) and the role of the Independent Energy Consultant/Adviser from stage 0 to project completion

The Energy Efficiency Design (EED) approach is intended to reduce lifecycle energy consumption and embed energy performance and energy management thinking at every project stage, not only at the point of audit. As TRESS buildings progressed from Stage 0 into procurement and design, the importance of an Energy Efficiency Design (EED) approach, became a defining feature of the model. Design teams often default to familiar approaches based on experience with, new builds, smaller or simpler buildings, rather than testing all options for maximising energy efficiency and carbon reduction. The EED approach should be undertaken by an Independent Energy Consultant/Adviser, ideally the same Energy Agency partner or facilitation structure that supported the public body at Stage 0. The Independent Energy Consultant/Adviser provides robust, independent option appraisal throughout design and construction, and verifies outcomes on completion. An Independent Energy Consultant/Adviser will have in-depth knowledge of the required energy efficiency and carbon reduction priorities of the project and will seek to ensure that the renovation outcomes align with national and local climate action targets. This approach and the independence of the energy consultant/adviser proves especially important where rising construction costs put pressure on budgets and value engineering risks the removal of higher cost decarbonisation measures identified in the IGA.



How TRESS differs from traditional approaches

Traditional approach	TRESS approach
Renovation projects are often developed, one building at a time by a local authority or public body.	TRESS places the focus on the planning phase of renovations i.e. Stage 0, to establish a strong platform for the renovation process, facilitate aggregation and best practice in risk management, procurement and financing.
The single building approach can lead to siloed expertise on renovation within an organisation. This does not build the capacity, of the wider team, in the technical, financial or procurement skills needed for large scale renovation.	TRESS establishes a regional governance framework that facilitates collaboration across local authorities, aggregation of buildings for financing and procurement and knowledge sharing on best practices in public building renovation. This approach can easily transfer to other sectors and large estates.
There is limited market testing which can result in carbon, energy and cost assumptions that are not rigorously assessed.	TRESS stage 0 prioritises the Investment Grade Audit with direct market and contractor engagement, producing functional design level renovation measures with real world costings.
Deep stakeholder engagement is not typically a feature of the traditional approach. A narrow focus on energy efficiency alone, without considering a building's long-term purpose or other capital needs (e.g. defective fabric, planned facility upgrades), risks rework and inefficiency in procurement if major non-energy works follow shortly after renovation.	TRESS stage 0 creates a stakeholder engagement framework that ensures that all key stakeholders are consulted including senior management, engineering and energy staff, facilities teams and building operators. A comprehensive understanding of the site plans is developed and the approach to risk management is created from the inputs of all stakeholders. Electrification is approached as a whole building transformation programme spanning energy efficiency, heat pumps, solar photovoltaics, controls and energy management.
Financing options are mainly driven by grant funding availability and do not consider private financing.	TRESS includes a broad financing strategy which assess public, blended and private financing options.
Renovation plans may not be linked to national, regional and organisational climate action targets and carbon and energy objectives may be downgraded where value engineering takes place.	The inclusion of a dedicated Independent Energy Adviser/Consultant function and structured governance keep carbon and energy objectives, aligned to national and local targets, from audit through to construction and verification.

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Roles and responsibilities in the TRESS model

The TRESS engagement model follows a consistent set of roles, mirroring good practice from comparable Irish and European decarbonisation programmes, so that technical expertise, commercial oversight and client decision making remain clearly separated throughout each project.

TRESS Facilitation team (TEA / Vivid Edge)

Delivers the Investment Grade Audit and develops Net Zero scenarios for the building owner and supports project development through investment readiness, finance, procurement and risk assessment. Where engaged for the full project lifecycle, acts as the Independent Energy Consultant/Adviser through design and construction, providing continuity of expert knowledge and independent advice.

Building owner / client (local authority or public body)

Retains ownership and decision making authority, confirms strategic priorities, provides access and facility knowledge, and is responsible for securing financing once the IGA is complete.

TRESS Governing Board

Provides oversight across participating organisations at senior, operational, finance and procurement levels, supporting alignment between regional delivery and central government.

Capacity building partner (TUS)

Leads the TRESS capacity building programme, training public sector staff in public building renovation, procurement, finance, project aggregation and Energy Performance Contracting, addressing the skills shortage identified across the sector and embedding renovation capability within participating organisations.

Independent Energy Consultant/Adviser

Engaged post procurement to work with design and construction teams to ensure that the project delivers the agreed scope in terms of energy and carbon reductions. The proposals are tested against the IGA's technical and cost baseline by the Independent Energy Consultant/Adviser and any deviations are challenged and rigorously examined before they are approved.

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The TRESS project development pathway

The TRESS approach to engagement with building owners follows a structured sequence from first contact through to verified delivery. The pathway is designed to surface data gaps, ownership questions, and scope risks as early as possible, the project team's clearest lesson from the initial pilot sites was that issues uncovered late in the process are far more costly to resolve than those identified at Stage 0. Procurement and finance strategies are developed early in the process and built into a robust business case with priced and ranked options.

Issues surfaced at Stage 0 are far less costly to resolve than issues uncovered during design or construction.

0	1	2	3	4
Owner engagement	**Prequalification**	**Building selection**	**Stakeholder kick off meeting**	**Level 1 / walk through audit**
First contact, project introduction and confirmation of interest from the building owner.	Survey completed for each building in the owner's portfolio against TRESS selection criteria.	Buildings prioritised by age, condition, energy profile and carbon intensity; senior management sign off on long term use.	On site meeting to confirm audit requirements, data gaps and any supplementary costs (drawings, metering).	Preliminary site visit and data snapshot identifying high level efficiency opportunities.

5	6	7	8	9
Level 2 audit	**Investment Grade Audit**	**Business case & financing**	**Procurement**	**Design, construction & verification**
Significant energy users and Energy Performance Indicators identified; candidate Energy Conservation Measures (ECMs) analysed with indicative savings and payback.	Functional design and real world contractor pricing produce a market tested "Audit for Action".	Net Zero scenarios presented to the owner; financing strategy agreed (grant / EPC / blended).Procurement paths detailed.	Tender for works issued to source suitable contractors for the execution phase. Appointment of Independent Energy Consultant/Adviser	Independent Energy Consultant/Adviser safeguards carbon and energy targets through design, build and post completion verification.

Building selection criteria: Steps 0-2

Prequalification data is used to rule out buildings with a short remaining lifespan, no confirmed future use, or heritage and protected status (outside the project scope), and to favour higher energy users such as leisure centres, offices, university buildings and event centres of a manageable scale for a successful renovation and impact. Buildings in the top quartile of carbon intensity (tCO_2e/m^2) are prioritised, particularly where EU and national policy on fabric upgrades, sustainable heating and cooling, and

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proven renewable technologies is strongest. A life cycle cost assessment is then carried out on the prioritised shortlist. Each building is assessed against the owner's 2030 and 2050 decarbonisation trajectory, before a final selection is agreed between the building owner and the TRESS Governing Board.

Project Development: Steps 3-6

Following building selection, a project team is created for each building. The TRESS team engages with the building owner to confirm project objectives, building use, operational constraints, and known future developments such as refurbishment, repurposing, or expansion. Stage 0 provides the strategic, technical, and financial foundation for future investment decisions in local authority and public body building renovations. The team will establish accurate baseline data, align stakeholders, and identify feasible renovation pathways consistent with national climate targets and an organisations energy and carbon reduction objectives as well aligning with building specific requirements and priorities. As part of the project initiation the TRESS team, identifies key stakeholders (senior management, facility staff, and building operators) and assists in defining project governance, roles, and responsibilities for the. full lifecycle of the project.

The TRESS team reviews electricity and thermal energy consumption data to establish an initial understanding of energy performance, load profiles, tariff structures, and abnormal consumption patterns. This early-stage review enables targeted site investigations, identification of metering requirements and ensures the audit effort is focused on the most material energy and carbon drivers. Once this is completed a detailed site based assessment of each building is conducted including building operator interviews.

Contractors and vendors are engaged to solicit feedback and input on proposed scopes of work and capital costs. For each building, the TRESS team prepare a preliminary clear and practical decarbonisation strategy that identifies feasible pathways to reducing energy consumption and greenhouse gas emissions in line with national and local climate targets. The TRESS team then schedule a preliminary decarbonisation strategy meeting with the building owners project team. This meeting is key to solicit feedback from them and to ensure that the register of opportunities and decarbonisation pathway is aligned with the building owners needs and expectations and to surface any changes in priorities that may have occurred since the project initiation.

Business Case & Financing Development: Step 7

The TRESS team develops a comprehensive Register of Opportunities for each building, detailing recommended energy efficiency and decarbonisation measures. Each measure includes a:

- Description of the proposed intervention.
- Estimated capital cost, informed by market engagement.
- Estimated energy savings, emissions reductions, and financial savings.
- Financial appraisal including discounted cash flow analysis, simple payback period, and Internal Rate of Return (IRR).

The register of opportunities is categorised and ranked as follows and a preferred roadmap to decarbonisation is created based on feedback from the preliminary decarbonisation strategy meeting:

a) No or low-cost measures with a simple payback of less than 1 year;

b) Medium cost measures with a simple payback of less than 5 years; and

c) High-cost measures with a simple payback greater than 5 years.

All findings are presented in a clear and accessible manner, ensuring that the outputs are understandable and usable by both technical and non-technical stakeholders. The Investment Grade Energy Audit reports provides a robust strategic, technical, and financial foundation for investment decisions. Recommendations are explicitly aligned with:

- Organisational objectives and building specific requirements
- Known short and medium term refurbishment or redevelopment plans
- National climate policy and public sector decarbonisation targets
- Where appropriate, the reports will also include a preliminary metering and monitoring strategy, with high level cost estimates, to support pre and post renovation Measurement and Verification (M&V).
- Identify barriers (technical, organisational, funding) and propose mitigation strategies.

Funding options are analysed based on the available sources of funding which for TRESS included:

Model	Description
Government grant	Co funds up to 50% of eligible project costs, was the main public co-funding route used to date by TRESS local authorities.
Capital / operational expenditure (CAPEX / OPEX)	Internal budgets used for larger renovations (CAPEX) or smaller measures such as lighting or insulation upgrades (OPEX); the primary funding source for completed CARO region projects to date.
Bank loan	Repayable finance that spreads capital cost over an agreed term. It requires legal borrowing authority, internal and external approvals, demonstrated affordability and acceptable lending terms. Repayments remain due irrespective of equipment performance. Participating local authorities have experience using loan finance for capital projects and would consider it for TRESS buildings, though some public bodies lack statutory borrowing powers.
Equipment/supplier	Asset specific finance provided by an equipment supplier, OEM or specialist finance provider, typically for smaller, identifiable equipment packages.
Energy as a Service (EaaS)	A third-party builds, owns, and runs energy systems for the public body. Instead of buying equipment, local authorities pay a regular service fee for system availability, often comprising a full-service contract including maintenance and extended warranties.. This setup removes upfront costs and shifts maintenance risks to the provider. Pathfinder restrictions may apply but other grant options such as the Non Domestic Microgeneration Solar grant can be considered.
Energy Performance Contract (EPC)	A commercial delivery model under which an energy services company (ESCO) implements energy measures and contractually commits to defined energy performance or savings outcomes. It requires a reliable baseline, an agreed measurement and verification methodology and clear allocation of retained and transferred risks. The project may be publicly funded or may include third party finance, depending on the structure.

Model	Description
Energy Efficiency Obligation Scheme (EEOS)	Obligated energy suppliers provide financial or practical assistance to public bodies delivering energy efficiency projects; TRESS recommends building EEOS engagement into the Energy Efficiency Designer's procurement scope.
Blended financing	Combines grants, loans and private investment to reduce reliance on any single source and spread financial and performance risk across the project. It can help close a funding gap or match different project measures to appropriate routes, but the timing, procurement, ownership, security, cashflow, accounting and reporting requirements of each component must be aligned

Following issuance of the IGA reports, the TRESS team facilitates a structured building owners project team debrief. The purpose of this meeting is to ensure that findings, recommendations, and proposed decarbonisation pathways are fully understood, validated, and positioned for progression to design, procurement, and capital delivery.

Step 8: Procurement

Following approval of the Investment Grade Audit, preferred decarbonisation pathway and funding option, the building owner develops the procurement strategy for delivery. The strategy should reflect the maturity and complexity of the project, the degree to which the required outcome can be defined, market capacity, funding and grant conditions, the proposed commercial or delivery model and the allocation of project risks. The procurement procedure, commercial model and source of finance are related decisions but are not interchangeable; for example, EnPC or EaaS may form part of the delivery model but must still be procured through an appropriate public procurement procedure.

The TRESS approach is to define clearly the required outcomes and constraints without unnecessarily prescribing the solution, allowing the market to propose the most appropriate technical and commercial response. Tender documentation should protect the energy and carbon outcomes established in the IGA and set out appropriate performance requirements, evaluation criteria, risk allocation, lifecycle responsibilities and, where relevant, measurement and verification requirements. Preliminary market engagement may be used where necessary to test supplier capability and delivery options before the competition is launched.

Step 9: Project Implementation-Independent Energy Consultant/Adviser

The Independent Energy Consultant/Adviser is a dedicated, independent technical adviser engaged to protect the energy and carbon objectives of a public building renovation as it moves from Investment Grade Audit into design, procurement, construction and commissioning. They lead the Energy Efficiency Design approach, tests the design and construction teams' proposals against the technical and cost baseline established in the audit, and carry out Measurement and Verification on completion. Because the Independent Energy Consultant/Adviser holds in-depth knowledge of the project's energy efficiency and carbon reduction priorities, and because the role is independent of the design and build teams, it keeps renovation outcomes aligned with national and local climate targets even where commercial pressures would otherwise erode them. Ideally the role is held by the same Energy Agency partner that completed the audit, giving continuity of expert knowledge across the full project lifecycle.

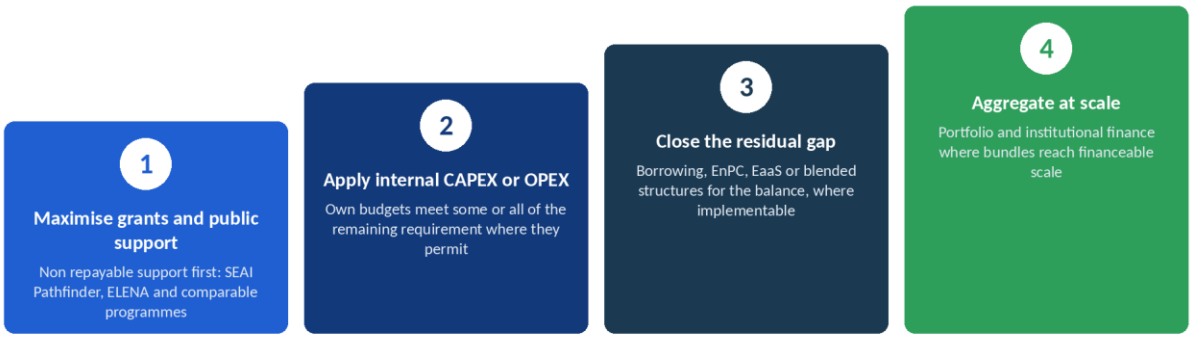
Procurement and financing: challenges and solutions

Procurement is frequently overlooked in energy efficiency renovation analysis, yet it is the critical step that moves a project from planning to implementation. TRESS examined the real and perceived barriers to procurement and financing of energy efficiency renovations in Irish public buildings, drawing on desktop research, a multidisciplinary workshop, and interviews with local authority energy, finance and procurement staff, national stakeholders and EE solution suppliers.

Six recurring barrier themes emerged consistently across this research: resource constraints, data limitations, lack of clarity of process, absence of shared best practice, the need for a more holistic approach, and funding complexity.

Progression from public funding to other financing models

TRESS identified a practical hierarchy of funding and financing sources for public building renovation. The starting point is to maximise available non-repayable grants since this reduces the overall project cost and the amount that must ultimately be funded by the public body or financed externally. Internal CAPEX or OPEX can then meet some or all the remaining requirement where budgets permit. Where a funding gap remains, other options—including conventional borrowing, Energy Performance Contracting (EnPC), Energy as a Service (EaaS), blended structures and, at sufficient scale, portfolio or institutional finance can be considered. These options are not mutually exclusive: the most appropriate structure may combine grant support with public capital, debt or a private finance/service model, subject to the relevant programme, procurement and legal requirements.



A hierarchy of funding and financing, not competing alternatives: each route is tested only after the one before it is maximised.

During the project, TRESS prioritised progressing the larger renovation projects towards sufficiently defined scopes, designs and costs while developing the alternative financing options as far as practicable. This included clarifying the differences between conventional debt, EnPC and EaaS, developing indicative secured and unsecured bank loan term sheets with third party banking input and an Energy as a Service (EaaS) term sheet, and examining the requirements for blended and portfolio approaches. TRESS also presented the alternative models to participating local authorities and public bodies using worked examples to demonstrate how the commercial structures, payments, ownership, maintenance and risk allocation could operate in practice. For example, the EaaS material demonstrated a structure with no upfront local authority capital outlay, a defined service term, provider responsibility for maintenance and performance and transfer of equipment ownership at the end of the term.

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The TRESS work therefore leaves participating bodies with a clearer framework, practical tools and indicative commercial structures with which to evaluate these alternatives as projects become investment ready. An enduring regional facilitation service, delivered by an Energy Agency(s) would support local authorities to develop a range of financing options for the next phase of renovation.

Investment Readiness

A central learning from the finance and procurement work was that identifying a potential source of finance is not the same as having a project ready to finance**.** Before approaching a lender, ESCO or service provider, a public body needs sufficient certainty on the project itself: its scope and objectives, ownership and future use of the building, baseline energy data, expected savings, market tested capital costs, funding gap, procurement strategy, risk allocation, decision making authority and ability to meet the resulting financial or service obligations. Different financing models then impose additional requirements, for example, borrowing requires legal authority, while Energy Performance Contracting (EnPC) requires a sufficiently robust baseline and measurable savings, and EaaS requires a viable service scope and whole term affordability.

TRESS therefore developed an Investment Readiness Matrix and Guide as the first diagnostic within the finance and procurement toolkit. Its purpose is to test whether a project is sufficiently developed to approach a funder or service provider across technical, governance, data, financial, procurement and delivery readiness, and to identify the gaps that need to be resolved before formal applications or market engagement. It is not intended to select the financing model; rather, it establishes whether the underlying project is sufficiently credible and mature for the available financing and commercial routes to be meaningfully assessed.

The Investment Readiness assessment is therefore intended to be iterative rather than a one off gateway. A project may initially be technically attractive but not yet financeable because data, cost certainty, approvals, procurement strategy or contractual responsibilities remain unresolved. As these matters are addressed through the Investment Grade Audit and project development process, the assessment can be revisited and the appropriate finance, procurement and risk tools applied. This approach helps avoid prematurely selecting a financing route and focuses effort first on resolving the issues that determine whether the project can actually proceed.

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Implementation and lessons learned

The TRESS model was tested and refined through live engagement with the first pilot buildings and subsequently in continuous consultation with participating local authorities, public bodies and market participants, rather than developed as a theoretical framework. The project also consulted regularly with national stakeholders, formally and informally throughout.

Stage 0 – "Well begun is half done"

The clearest lesson from the pilot sites is that the foundational stage of a project, before any audit work begins, determines its ultimate success. Effective Stage 0 activity means managing risk and stakeholder alignment from the outset, ensuring accurate data and inputs, gathering and digitising building documentation, evaluating and installing metering, building in strong processes and planning, and assembling a project team with the right expertise and experience.

Communication

Identifying the right building contacts, roles and responsibilities and engaging early and often through recurring meetings proved essential. "Boots on the ground" facilities staff are key: they hold the day to day operational knowledge, can help locate "lost" documentation, and are often the people most invested in the long-term performance of the building. Building genuine relationships with this group, and leaning in where staff are passionate about optimising their building, consistently improved audit quality and stakeholder buy in.

Stakeholder engagement and buy in

Identifying key stakeholders and clarifying who is accountable for target delivery, securing senior management leadership and buy in, and establishing each client's priorities and motivations early were all critical to sustaining momentum. Projects engaged senior managers specifically to confirm whether any change of use or disposal was planned for a building before committing audit resources to it. The TRESS approach by establishing a regional facilitation framework, allowed senior leaders to build relationships across the regio, share knowledge and create consistent decision making tools and approaches.

Building the business case

Successfully securing a renovation project internally in a public body, requires aligning it with infrastructure and capital planning and asset management strategy and quantifying both avoided costs (maintenance and repair of ageing equipment, the risk of equipment downtime or missed climate targets) and added value such as increased asset value, modernisation, public sector example setting, PR and marketing, and improved occupant comfort and indoor air quality. The TRESS approach created robust investment options appraisal analysis, that can be used by senior decision makers and potential funders.

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Cost inflation and value engineering risk

Construction prices increased significantly during the project, particularly from Q1 2026, putting pressure on decarbonisation measures within designs. Value engineering processes risked the removal of higher cost measures identified in the Investment Grade Audits. Ensuring that the TRESS experts continued into the implementation stage of the projects as the Independent Energy Consultant/Adviser ensured that carbon emissions reductions and energy efficiency measures continued to be prioritised even as budgets tightened, underlining why market tested IGA costings and an independent technical voice through construction are so important to deliver the energy efficiency and carbon reductions required to meet EU, national and local climate targets.

Capacity Building

Capacity building in the TRESS project successfully bridges the critical knowledge and leadership deficit impeding public sector decarbonisation across Ireland's Atlantic Seaboard South region. By translating evidence-based research into actionable educational pathways, TRESS equips decision-makers with the financial, procurement, and technical capabilities required to execute large-scale retrofits. Combining accessible, data-driven leadership micro-credentials with a robust Level 9 M.Sc. in Decarbonisation of the Built Environment ensures both immediate operational momentum and long-term sector capacity. Ultimately, TRESS establishes a repeatable framework that converts high-level climate targets into bankable, viable, and transformative retrofitting projects across the public estate.

Finance and Procurement

The TRESS experience confirmed that finance and procurement decisions must be developed together and must begin before the project is presented to the market. A finance model cannot compensate for an uncertain scope, incomplete baseline data, weak cost evidence or an unresolved procurement strategy. Equally, selecting a procurement route before the public body understands its funding gap, ownership preference, lifecycle obligations and capacity to manage the contract can unintentionally exclude otherwise viable options.

The work also demonstrated the distinction between theoretically available finance and a route that can be implemented by a particular public body. Borrowing depends on legal authority, approvals and affordability; EnPC depends on a reliable baseline, measurable savings and proportionate measurement and verification; and EaaS depends on a viable service scope, whole term affordability and clear asset and lifecycle arrangements. Grant conditions may also determine whether these models can be combined with public support. For this reason, TRESS developed simple, connected decision support tools that enable multidisciplinary project teams to identify gaps, shortlist routes and revisit the assessment as the scope, costs and funding conditions develop. TRESS also incorporated the realtime experience of the DeliveREE project into the project as best practice.

National Policy

Public grant support will remain central to the delivery of deep renovation in public buildings, particularly for fabric measures and other interventions that cannot be funded from energy savings alone. However, the TRESS experience indicates that the design of grant and co-funding conditions can materially affect the range of finance and delivery models available to a public body. Where grant requirements limit the remaining contribution from being structured through EnPC, EaaS or another

suitable private finance model, projects remain dependent on internal capital or conventional borrowing.

Future funding should consider how grant support can be combined with appropriate private and service based structures without weakening public procurement, value for money, accounting, transparency or performance requirements. Greater flexibility would not make private finance suitable for every project, but it would allow public bodies to assess it on its merits rather than exclude it through the funding structure at the outset. This could increase the number of technically credible projects capable of moving from audit and business case into delivery.

Charting a pathway to 2050

A recurring theme from the TRESS buildings is that no single renovation tier is sufficient on its own. Shallow measures lighting, controls, pump and fan upgrades should be implemented now, as they are low cost and quick to deliver. Medium renovations, excluding fabric upgrades, can meet 2030 targets in most cases. However, deep renovations, full fabric first upgrades, combined with heat pumps or other low carbon heat are required to meet longer term reduction targets, making it important for every building owner to chart an explicit pathway to 2050 rather than treating each renovation phase in isolation.

Results and impact

TRESS demonstrates that accelerating public sector decarbonisation is achievable when a regional facilitation service is available and delivering deep expertise and an independent technical voice to local authorities and public bodies from project planning through to project completion.

Twenty buildings across local authorities in Kerry, Tipperary, Clare, Limerick and Cork, and five public bodies, are progressing through this pathway. The project has also strengthened national alignment: with the TRESS Stage 0 Investment Grade Audit framework and project preparation requirements embedded across public sector renovations nationwide, as a national preferred approach.

The TRESS technical team has since been engaged directly by a number of local authorities and public bodies outside the original project scope to support their own building renovation plans, as a direct result of national dissemination of TRESS learnings, evidence that the model is already proving transferable beyond its original pilot sites. Tipperary Energy Agency and Codema have also established a collaboration aligning TRESS auditing with the Energy Performance Contracting competitive dialogue models developed under DeliveREE, giving public sector clients an end to end service from audit and Energy Efficiency Design through to turnkey procurement and long term verification.

Within the original portfolio of 20 buildings, 16 buildings are advancing to active works and the remainder are evaluating blended financial models including Energy Performance Contracting and grant frameworks.

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Policy insights from TRESS

TRESS draws together the lessons of the project for Irish and European policy makers. Ireland has approximately 12,500 public sector buildings, and with over 180 buildings now selected under the SEAI Pathfinder programme and a total programme value exceeding €237 million, the country has moved beyond the pilot phase of public building renovation. The consistent message from TRESS is that achieving climate targets is no longer principally a policy challenge. It is a delivery challenge: public bodies struggle to move from strategic intent to delivered projects without structured facilitation, investment grade project development and independent technical support.

Facilitation as critical public infrastructure. The clearest policy lesson is that facilitation should be treated as important public infrastructure and a permanent public capability rather than a temporary project activity. TRESS recommends the establishment of permanent regional renovation facilitation units, ideally located within local and regional energy agencies in line with European best practice, providing Stage 0 preparation, portfolio analysis, Investment Grade Audits, procurement and financing support, Measurement and Verification expertise and capacity building.

Electrification as the primary decarbonisation route. European policy increasingly identifies electrification, combined with renewable generation, as the most effective route to decarbonising buildings. TRESS experience shows that electrification should be approached as a whole building transformation programme spanning energy efficiency, heat pumps, solar photovoltaics, controls and energy management, with careful early planning around electrical infrastructure, maximum import capacity and grid connection requirements.

Aggregation and compatible finance. Project aggregation is the key to attracting institutional investment and Energy Performance Contracting at scale, but it should be selective and project led: investment ready standalone projects should proceed without waiting for a wider portfolio to mature. Grant and co-funding rules should enable non-repayable support to be combined with borrowing, Energy Performance Contracting, Energy as a Service and blended structures for the residual funding requirement, in line with Commission Recommendation (EU) 2026/537 on unlocking private investment in energy efficiency.

Performance does not end at practical completion. Many buildings require one to three years of monitoring, optimisation and operational adjustment before expected energy and carbon savings are fully realised. Future programmes should treat Measurement and Verification plans, post occupancy evaluation and continuing operational optimisation as an integral part of the renovation process rather than an optional activity.

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TRESS policy recommendations

1	Establish permanent regional public building renovation units, ideally within local and regional energy agencies
2	Develop a public sector electrification roadmap addressing grid capacity, heat pump deployment and renewable integration
3	Establish a national public building renovation delivery framework linking regional facilitation, funding and portfolio plans
4	Make grant and co-funding rules more compatible with complementary borrowing, EnPC, EaaS and blended finance
5	Adopt a common investment readiness standard before formal financing or market engagement
6	Establish proportionate procurement pathways for public renovation with standard guidance and documentation
7	Enable dual track delivery so standalone projects proceed while aggregation is used where it creates demonstrable value

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What TRESS means for the future

Audit rigour derisks delivery

Investment Grade Audits, market tested with real contractor pricing, are what allow a public body to move confidently from business case to procurement.

Independent technical oversight matters

An Independent Energy Consultant – ideally the Energy Agency that completed the IGA – protects carbon and energy outcomes through design, value engineering and construction.

Procurement clarity and early risk assessment accelerates delivery

Standardised tender templates and a clearer risk sharing model make public renovation projects significantly more attractive to the market.

Funding should follow a hierarchy

Maximise available grants and public support first, then use the most appropriate mix of CAPEX, borrowing, EnPC, EaaS or blended finance.

Stage 0 determines success

Time invested in data, documentation, metering and stakeholder alignment before audit work begins consistently saves far more time later.

Capacity building is not optional

Most participating bodies could not have assessed renovation tender submissions without TRESS's technical support; sustained capacity building is essential to scale this model nationally.

A holistic, regional view multiplies impact

Considering a building's full lifecycle and sharing learning across local authorities – including with comparable programmes such as DeliveREE – improves outcomes well beyond any single project.

Finance follows project readiness

Scope, data, costs, approvals, affordability and procurement must be sufficiently mature before meaningful engagement with funders or service providers.

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TRESS

Transforming Renovation in the Atlantic Seaboard South

https://tippenergy.ie/tress

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