MEASURING OUTCOMES & IMPACT EVALUATION

NATIONAL RETROFIT HUB

INNOVATOR PROFILES

RETROMETER

The project was led by Electricity North West in collaboration with Energypro Ltd, Energy Systems Catapult, Carbon Co-Op and Manchester City Council. It received funding through Ofgem's Strategic Innovation Fund (SIF).

PURPOSE & SCOPE

RetroMeter is a UK-based initiative aimed at establishing a consistent, open-source methodology to accurately measure energy savings and other value streams from retrofit energy efficiency measures – a Metered Energy Savings (MES) approach. Its primary purpose is to unlock pay-for-performance financing, and value all multiple benefits that result from retrofits, and thereby attract blended capital into retrofit projects.

KEY COMPONENTS / STRUCTURE

It estimates how much energy is expected to be saved based on measures installed and how those measures are predicted to perform based on engineering-based calculations. RetroMeter evaluated various methodologies to meter energy savings:

- OpenEEmeter: An open-source implementation of the CalTRACK method using weather data and statistical models.
- Comparator Groups: Adjusts predictions based on consumption patterns of similar homes that did not receive a retrofit.
- Physics-Based Modelling: Estimates comfort take-back effects on energy savings.

The MES approach looks at the actual metered energy use, both gas and electricity, after the retrofit, and compares it to how much energy would have been consumed in that home during the post-retrofit period, had there not been a retrofit. In addition, RetroMeter values the multiple benefits arising from retrofits so that they can be assigned to various stakeholders and attract different types of capital.

USE CASES

RetroMeter is applied in residential retrofit projects, particularly focusing on fabric upgrades to gas-heated homes. It aimed to demonstrate the feasibility of MES as a basis for financing and scaling retrofit initiatives.

OUTPUTS / METRICS

The framework provides accurate metering of energy savings using an open source methodology as well as valuation of multiple benefits. It supports the development of business models that facilitate investment in energy efficiency through pay-for-performance mechanisms and blended capital.

RETROMETER

INTEGRATION & COMPATIBILITY

RetroMeter's methodologies are designed to be compatible with existing energy efficiency frameworks and can be integrated into various retrofit programs. The project also explores the potential for combining different methodologies into a unified open-source package.

STRENGTHS

Provides a robust, open-source data-driven approach to measuring energy savings as well as multiple benefits.

Supports the development of scalable business models for retrofit financing using blended finance.

Enhances the credibility of retrofit projects through accurate measurement and verification.

Supports impact measurement required by impact investors.

LIMITATIONS / CONSIDERATIONS

The methodologies require access to detailed energy consumption data, which may not be available in all cases.

Further validation is needed to refine comfort take-back estimates and improve accuracy.

Needs to be built into a project from inception.

STATUS & UPDATES

RetroMeter has completed its Discovery phase and progressed into the Alpha phase, focused on developing a proof-of-concept methodology for measuring metered energy savings. The opportunity to test on a larger scale, and involve more stakeholders in the development of a standard approach, is seen as the next step.

FURTHER RESOURCES

RetroMeter Case Study by Energy Systems Catapult

The RetroMeter Project: Using Metered Energy Savings to Make Energy Efficiency More Investable

THE BUILD UPON FRAMEWORK

The framework was developed by the UK Green Building Council (UKGBC) and Leeds Sustainability Institute in partnership with the World Green Building Council, Climate Alliance, Buildings Performance Institute Europe, and several European Green Building Councils. It was implemented with the collaboration of over 30 cities and local authorities, including Leeds, Cambridge, Hammersmith & Fulham, and Essex County Council.

PURPOSE & SCOPE

The Build Upon Framework is a collaborative initiative designed to assist local authorities in the UK and across Europe in measuring and understanding the multifaceted impacts of building renovation. It aims to support the achievement of net zero carbon targets by 2050 by providing a standardised approach to assess environmental, social, and economic outcomes of retrofit projects.

KEY COMPONENTS / STRUCTURE

The Build Upon Framework defines a suite of 13 Environmental, Social, and Economic indicators that can be measured in a simple, standardised way at either a city or project level. These indicators cover aspects such as energy consumption, indoor health of occupants, and job creation. The framework is flexible, allowing local authorities to measure all or a subset of these indicators based on their priorities and resources.

USE CASES

Local authorities use the Build Upon Framework to:

- Measure progress against a broad range of targets
- Learn from past projects to inform best practices
- Build business cases for future retrofit initiatives
- Increase public awareness of building renovation benefits

For instance, Leeds City Council has used the framework to track the impact of its social housing retrofit projects, aiming to create a better evidence base around what their interventions achieve.

OUTPUTS / METRICS

The framework provides standardised data on various indicators, enabling local authorities to:

- Assess the environmental impact of retrofit and renovation projects
- Evaluate social benefits such as improved health and reduced energy poverty
- Measure economic outcomes like job creation and local investment

THE BUILD UPON FRAMEWORK

INTEGRATION & COMPATIBILITY

The Build Upon Framework is designed to be compatible with existing policies and strategies, including the Energy Performance of Buildings Directive (EPBD) and the Covenant of Mayors initiative. It is also intended to inform national building and retrofit strategies and can support the implementation of the EU's Renovation Wave.

STRENGTHS

Provides a comprehensive and standardised approach to measuring the impacts of building renovation.

Supports the development of evidence-based policies and strategies.

Facilitates the scaling up of successful renovation initiatives.

LIMITATIONS / CONSIDERATIONS

The effectiveness of the framework depends on the availability and quality of data.

Implementation may require capacity building within local authorities.

The framework's success is contingent on sustained political and financial support.

STATUS & UPDATES

Build Upon 2 was a direct follow-up and evolution of the original, aiming to move from planning to measurable action — especially through local governments and cities.

- Focus on standardised, replicable data to support comparisons
- Enables cost-effective protocols for wide application
- Critical for benchmarking, policy, and funding alignment

The team are actively exploring how to evolve and apply the Frameworks more widely.

FURTHER RESOURCES

Build Upon Framework

Leeds City Council's Use of the Framework

Build Upon2 Project Details

HACT RETROFIT CREDITS FRAMEWORK

The framework was developed by HACT in collaboration with Powering Net Zero (PNZ) Carbon. It is the only verified carbon credit scheme in the UK specifically originating from the decarbonisation of housing stock.

PURPOSE & SCOPE

The HACT Retrofit Credits framework aims to unlock additional funding for housing retrofit projects by verifying both carbon emission reductions and the social value generated through these initiatives. By incorporating social impact metrics, the framework ensures that retrofit activities not only contribute to environmental sustainability but also enhance the well-being of residents and communities.

KEY COMPONENTS / STRUCTURE

Carbon Emission Reductions: Uses the Verified Carbon Standard (VCS) methodology to calculate and verify emission reductions resulting from retrofit activities.

Social Value Metrics: Employs the UK Social Value Bank to assess and quantify the social impact of retrofit projects on residents and communities.

Credit Allocation: Each tonne of CO_2e reduced is eligible for up to 20 years of crediting, with credits issued annually.

USE CASES

The framework is applied by social housing providers, including housing associations and local authorities, to finance retrofit projects.

It has been piloted and implemented across various regions, including Camden and the North East of England.

OUTPUTS / METRICS

- Carbon Credits: Verified Carbon Units (VCUs) representing the quantified emission reductions
- Social Value: Aggregated social value metrics reflecting the positive impact on residents' health, comfort, and energy affordability
- Financial Projections: Estimates indicate that credits generated can raise substantial funds for reinvestment in further retrofit works

HACT RETROFIT CREDITS FRAMEWORK

INTEGRATION & COMPATIBILITY

The framework integrates with existing environmental and social value standards, such as the Verified Carbon Standard and the UK Social Value Bank. It complements other retrofit methodologies by adding a financial mechanism that supports long-term sustainability.

STRENGTHS

Dual Impact: Addresses both environmental and social objectives, aligning with broader sustainability goals.

Long-Term Funding: Provides a continuous revenue stream for housing retrofit projects.

Proven Success: Demonstrated effectiveness through pilot programs and early adoption by multiple housing providers.

LIMITATIONS / CONSIDERATIONS

Initial Setup: Requires accurate data collection and reporting, which may necessitate additional resources for housing providers.

Market Demand: Success depends on the willingness of external buyers to purchase the carbon credits.

Regulatory Alignment: Must ensure compliance with evolving environmental regulations and standards.

STATUS & UPDATES

The Retrofit Credits framework is currently operational, with ongoing projects and partnerships. It has expanded beyond the pilot phase, involving over 150 housing providers and local authorities, with projections indicating significant long-term financial benefits.

FURTHER RESOURCES

HACT Retrofit Credits Overview

Case Study: believe housing

Camden's Approach to Carbon Offsetting

Social Value Portal

NATIONAL RETROFIT HUB

THE SOCIAL VALUE TOMS SYSTEM

The TOM System was developed by the Social Value Portal in collaboration with over 40 organisations across the public, private, and third sectors. It is based on 17 official, accredited, and publicly available government data sources. The framework is continuously refined by a team of economists and data analysts, ensuring its robustness and relevance.

PURPOSE & SCOPE

The Social Value TOM (Themes, Outcomes, Measures) System™ is a framework for quantifying and reporting social value in procurement, project delivery, and at the corporate level. It enables organisations to measure their contributions across four key themes: Work, Economy, Community, and Planet. The system is designed to ensure transparency, accountability, and consistency in social value reporting. Though originally developed for procurement and project delivery, increasingly the TOM System is used for the measurement of corporate social value.

KEY COMPONENTS / STRUCTURE

The TOM System is structured around:

Themes: The broad areas of impact (Work, Economy, Community, Planet).
Outcomes: Specific changes or benefits targeted within each theme.
Measures: Quantifiable indicators used to assess the achievement of outcomes.

Each measure is underpinned by financial proxies derived from authoritative, publicly available data sources, allowing for the translation of social value into monetary terms. The TOM System is largely based on objective data allowing for comparability which differentiates it from wellbeing based and SROI based approaches

USE CASES

The TOM System is used by various organisations to:

- Quantify and report social value in procurement processes
- Monitor and manage social value commitments throughout project delivery
- Benchmark and compare social value performance across projects and sectors
- Plan, measure and manage social value at the organisational level

Align with national and international standards, including the UK Government's Social Value Model and the UN Sustainable Development Goals.

OUTPUTS / METRICS

The TOM System provides:

- Validated social value data, ensuring accuracy, reliability, objectivity and comparability
- Financial equivalents for social value activities, facilitating clear communication of impact
- Insights into the most impactful measures across industries, based on a comprehensive database of over 10,500 projects

Social Value Portal

NATIONAL RETROFIT HUB

THE SOCIAL VALUE TOMS SYSTEM

INTEGRATION & COMPATIBILITY

The TOM System is designed to be interoperable with various frameworks and standards, including:

- The UK Government's Social Value Model
- The UN Sustainable Development Goals
- Global Real Estate Sustainability Benchmark (GRESB), Sustainability Accounting Standards Board (SASB), and Global Reporting Initiative (GRI) standards
- Local authority-specific frameworks, such as the National TOMs

STRENGTHS

Provides a standardised, transparent and objective approach to measuring social value.

Ensures credibility through rigorous validation processes.

Offers flexibility to adapt to different sectors, locations, and priorities.

Supports alignment with national and international standards.

LIMITATIONS / CONSIDERATIONS

The effectiveness of the TOM System depends on the quality and completeness of the data provided.

Organisations may require training and support to effectively implement and use the system.

STATUS & UPDATES

The TOM System is actively maintained and updated, with improvements based on user feedback and the latest research. The system was initially widely adopted across the UK by the public sector and is now expanding more and more to the private sector and beyond the UK to international adopters.

FURTHER RESOURCES

Social Value Portal solutions overview

Social Value Portal TOM System Overview

Understanding the Social Value TOM System

Free Access to the TOM System

THE UK COBENEFITS ATLAS

Lead Organisation: Edinburgh Climate Change Institute (ECCI), School of Informatics, University of Edinburgh. **Collaborators:** Committee on Climate Change (CCC). **Funding:** The Data Lab

PURPOSE & SCOPE

The UK Co-Benefits Atlas, part of the CO-BENS (Climate Outcomes and Benefits for the Economy, Nature and Society) project, aims to quantify and visualise the wider social, economic, and environmental benefits of climate actions. It seeks to demonstrate that decarbonisation efforts can lead to improved public health, economic resilience and social equity, thereby providing a compelling case for climate investment beyond emissions reductions.

KEY COMPONENTS / STRUCTURE

The Atlas employs a data-driven approach to assess the co-benefits of various climate actions. Key components include:

- **Data Integration:** Combines national datasets on health, air quality, energy use, and transport
- **Scenario Modelling:** Evaluates different climate action scenarios, such as increased active travel or widespread heat pump adoption
- **Benefit Quantification:** Calculates monetary and qualitative benefits, including improved air quality, reduced energy costs and enhanced public health
- **Place-Specific Methodology:** The model captures variation across the UK by collecting local data on variables like age, income and housing types. This allows the examination of co-benefits across socio-economic and geographical dimensions, showing the distributional impacts of reaching net-zero

USE CASES

The Atlas is intended for use by:

- Local Authorities: To inform climate action plans and investment decisions
- Policymakers: For evidence-based policy development
- Researchers and NGOs: To analyse and advocate for climate actions with significant co-benefits
- Businesses and Investors: To assess the broader impacts of their climate-related initiatives and incorporate into their funding models

OUTPUTS / METRICS

The Atlas can produce:

- Benefit Assessments: Quantitative estimates of co-benefits per capita or household
- Scenario Comparisons: Side-by-side evaluations of different climate action pathways
- Geospatial Visualisations: Maps highlighting regional variations in co-benefits
- Economic Valuations: Monetary assessments of benefits like reduced healthcare costs and increased productivity

THE UK COBENEFITS ATLAS

INTEGRATION & COMPATIBILITY

The Atlas complements existing frameworks and standards by:

- Aligning with PAS 2035: Supports retrofit planning and delivery
- Informing RIBA Plan of Work: Provides data for sustainable design stages
- Supporting GHG Protocols: Enhances scope 3 emissions assessments with co-benefit data

STRENGTHS

Comprehensive Analysis: Offers a holistic view of climate action impacts.

Evidence-Based: Grounded in robust data and modelling.

User-Friendly Tools: Accessible visualizations for diverse stakeholders.

Policy Relevance: Aligns with national climate goals and strategies.

Green Book compliant: Uses best-practice methodologies backed by the UK government.

Innovative: This analysis is the first place-specific co-benefits model to be deployed in the UK.

LIMITATIONS / CONSIDERATIONS

Data Availability: Quality and granularity of data may vary regionally.

Scenario Specificity: Findings are contingent on the selected action scenarios.

Dynamic Assumptions: Economic and social assumptions may evolve over time.

Supplementary Tools: May need to be used alongside other frameworks for comprehensive assessments.

STATUS & UPDATES

The Atlas is actively maintained and updated. Recent enhancements include expanded datasets and refined modelling techniques. Future updates aim to incorporate emerging climate actions and policy developments.

FURTHER RESOURCES

UK Co-Benefits Atlas

CO-BENS Project Page: Edinburgh Climate Change Institute

CCC Reports: Committee on Climate Change

Public Perception Insights: Grantham Institute – Imperial College London