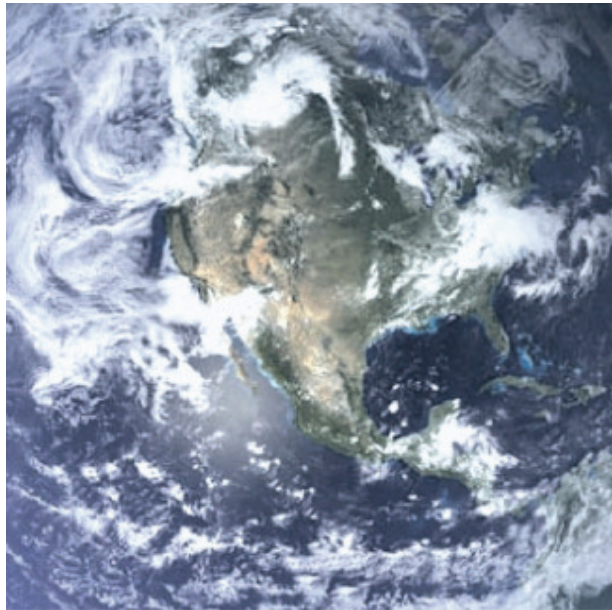


# CLIMATE & STRATEGY P A R T N E R S



## **Financing Energy Efficiency Building Retrofits**

International Policy and Business Model Review  
and Regulatory Alternatives for Spain

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## GLOSSARY OF TERMS

AIM – Aggregated Investments Model

buildings – all residential and commercial buildings, including homes, apartments, large and small office buildings, hotels, hospitals, and government buildings.

CERT – Carbon Emissions Reduction Target (UK)

CESP – Community Energy Saving Program (UK)

comunidad de vecinos – residential cooperative board that governs decisions over the vast majority of Spanish residences.

CRC – Carbon Reduction Commitment (UK)

DFA – Direct Financial Assistance

EEA – Energy Efficiency Asset

EEM – Energy Efficiency Mortgage (US)

EERS – Energy Efficiency Resource Standard (US)

energy efficiency – using less energy to achieving the same level of energy services in buildings, demand management.

energy retrofit provider – any entity that provides energy efficiency retrofits. (ESCO's are just one of many possible forms that an energy retrofit provider might take.)

EPBD – Energy Performance of Buildings Directive (EU)

EPC – Energy Performance Certificate (UK)

ESCO – Energy Service Company, finances an energy efficiency retrofit and recovers invested capital based on retrofit performance and energy savings.

EU ETS – European Emissions Trading System

IBI - Impuesto sobre bienes inmuebles, i.e. property taxes (Spain)

IDAE - Instituto para la Diversificación y Ahorro de la Energía, IE. Energy Diversification and Savings Institute (Spain)

LHA – Local Housing Authority (UK)

PACE – Property Assessed Clean Energy (US)

SME – Small and Medium Enterprise

White Certificate – A certified, tradable, improvement in energy performance. (UK, Italy)

## EXECUTIVE SUMMARY

A large and well documented global opportunity exists to save money and reduce greenhouse gas emission by using energy more efficiently. This report will focus on cost effective opportunities to improve the energy efficiency of the residential building and commercial building stock and in doing so, improve living quality and reduce greenhouse gas emissions. Such energy efficiency retrofits require significant up-front capital that can be paid back through lower building energy costs in the future. Engaging adequate finance together with supportive policies and broad-scale education initiatives are the keys required to unlock this largely untapped global opportunity. We hope that our recommendations will accelerate the development of this market.

Spain, the UK and the US are nations currently renewing their policy focus and activities in this area. Our analysis reviews progress to date in these countries and develops a new business model which we believe can greatly accelerate the pace of energy efficiency retrofit uptake in the residential and SME sectors. Finally, we conclude by looking forwards in the Spanish context at possible regulatory pathways which we believe will enable Spain to capture more of the value from energy savings in its buildings.

Buildings represent between 40-45%<sup>1</sup> of our target countries' energy needs. Numerous studies indicate that buildings' energy usage can be cost-effectively reduced by some 20-50%<sup>2</sup>, and, depending on how 2050 emissions reduction targets are met, it is likely that many countries will have to go significantly further<sup>3</sup>. Improving the energy efficiency of the existing building stock not only generates energy savings with attractive levels of return on investment, it improves a nation's energy security, creates jobs and makes buildings more liveable. Studies show that \$60-\$300 billion could be invested globally each year to fully capture the cost effective energy efficiency opportunity. Estimates vary widely because of different baselines and assumptions, but all agree that the opportunity to cost-effectively improve our energy efficiency is enormous.

While energy efficiency policy has a long history, dating back to the oil crisis of the 1970s and before, it has only in recent years returned to the full attention of Governments as the financial crisis forces an unparalleled focus on the cost efficiency of measures designed to help consumers save (in this case energy) and reduce emissions. This paper provides a useful summary of the current policy initiatives underway in the US, UK and Spain which promote investment in energy efficiency as a framework for its further analysis.

Despite the benefits energy efficiency building retrofits provide, global investments in energy efficiency building retrofits are happening at a scale many times less than the estimated amount of investment-worthy, cost effective, retrofits available each year. Our paper examines the many reasons why current business models have delivered such meagre investments in buildings in the US, UK, and Spain and we propose an improved model which can greatly accelerate up-take in the residential and SME sectors.

We analyse the three main business models that have grown in response to the energy efficiency retrofit opportunity: First, the owner financed model, in which buildings' owners design, project

<sup>1</sup> Pew Center on Global Climate Change (US number 43%), European Commission (EU numbers, 40%)

<sup>2</sup> WBCSD, *Transforming the Market*, 2009; US EPA, *National Action Plan for Energy Efficiency*, 2006; McKinsey, *Unlocking Energy Efficiency in the US Economy*, 2009; European Carbon Foundation *Roadmap 2050* 2010.

<sup>3</sup> WBCSD, *Transforming the Market*, 2009

manage and finance an energy efficiency retrofit to their property and take full responsibility, as well as liability, for the quality of the project and the economic returns on their investments. Second, the utility fixed repayment model, in which the up-front capital cost of an energy efficiency retrofit is organized, subsidized and at times fully provided by a utility, and this investment is repaid through monthly, fixed, non-performance related surcharges. Third, the energy performance model, in which an energy efficiency retrofit provider designs a retrofit, and finances it, and is repaid only through the energy savings, therefore assuming the responsibility for the economic success and quality of the retrofit.

Retrofit business models have multiple stakeholders to satisfy and market challenges to navigate. Stakeholders include the building's owners and occupants, financing institutions, utilities/ energy suppliers, retrofit providers and government. Each of these stakeholder's interests must be met for any business model to rapidly grow to serve the full potential scale of the market. There are also various hurdles which limit the speed and uptake of retrofits and add complexity to the market. These include structural challenges (such as a fragmented market, changes in ownership and tenancy, agent problems and regulatory distortions), financial challenges (such as cherry picking, changes in energy needs, and high hurdle rate requirements), and behavioural challenges (low information and awareness, non-economic decisions and the rebound effect). To be successful, a retrofit business model must contemplate and substantially resolve these challenges, as well as satisfying all relevant stakeholders.

Our new business model, the aggregated investments model, is designed to better meet stakeholder interests and to address the challenges in the residential and SME sector of the market and, we believe, can deliver additional wholesale and more efficient retrofit debt and equity finance at scale to this sector. The aggregated investment model has four key design features: the creation of a standardized energy efficiency asset, multi-channel origination, on-bill repayment and the potential for securitization with (or without) government credit enhancement.

The aggregated investments model has the flexibility to be applied in any market, but it does rely on having a regulatory environment that enables it. In fact, our research and interviews indicate that the achievement of optimal uptake of energy efficiency retrofits requires all three groups of challenges we highlight to be addressed simultaneously: Structural, Financial and Behavioural. We believe that our model, together with an enabling policy framework, can address the structural and financial challenges, but there also needs to be significant and complimentary investment in education and information campaigns to address the behavioural hurdles which no amount of financial wizardry can remove. There are many excellent studies on the significant behavioural challenges facing energy efficiency which is a subject area that this paper does not seek to directly address.

Finally, we develop a set of ideas and regulatory pathways which we believe will increase energy efficiency retrofit activity in Spain. While the Spanish regulatory framework is presently further away from swiftly enabling on-bill finance (a key feature which improves the financial characteristics, recoverability and packaging of retrofit repayments) when compared to the US or the UK, we see no structural reasons why this cannot be contemplated in the future. Furthermore, in the short-term and with the right policy signals, we believe that pilot activity can be undertaken among Spanish banks, construction firms, ESCOs and energy companies that will underscore various of our conclusions.

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