Mobilizing climate finance to support energy efficiency

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Abstract

Energy efficiency investments need to be significantly scaled up in all economies. Energy efficiency can contribute up to a third of emission reductions necessary to limit global temperature increases to less than 2 degrees Celsius by 2050. Yet, energy efficiency is not happening as quickly and broadly as it should. The estimated investment gap is in the order of USD 430 billion (Kyte 2016). Under the Kyoto Protocol for example, international mechanisms failed to tap into the energy efficiency potential in a significant manner. Part of this is due to the fact that energy efficiency does not come easily. For energy efficiency to work, the right conditions need to be in place. This *'enabling environment'* - that is, the range of upstream policy, regulatory, financial, knowledge and human measures – is important to stimulate efficiency investments to the level where energy efficiency will truly take off. In Emerging economies and developing countries such a conducive framework has a cost that can or should be supported by what we can call *'transformative funding'* typically offered by the Green Climate Fund or other sources of climate finance.

This paper discusses the significant gap between the strong potential of energy efficiency to contribute to international climate goals and the level of finance allocated to it, especially through climate finance. Financial mechanisms under the Kyoto Protocol focused more on project finance rather than transformative finance. The paper develops arguments to increase the financial flows into transformative long lasting institutional change necessary to create the enabling environment and conducive framework for energy efficiency projects and strongly contribute to lowering GHG emissions in the future. In particular the GCF and other climate funds are faced with the crucial opportunity to address the financing gap and play a critical role in allocating transformative finance for energy efficiency, filling the void left by other institutions (typically a national governments but also the private sector). The paper concludes with a series of concrete recommendations aimed at delivering energy efficiency in all economies at the levels necessary to realise the climate goal of the Paris Agreement.

Introduction

Energy efficiency can contribute up to a half of the energy related carbon dioxide (CO_2) emission reductions necessary to limit global temperature increases to less than 2 degrees Celsius by 2050 (IEA 2015). Energy efficiency is critical to achieving a clean energy transition globally. It supports the deployment of renewable energy and energy access. This makes energy efficiency a key pillar towards climate change mitigation and building resilience for a sustainable future.

Yet, energy efficiency improvements are not happening as quickly and widely as they should. Despite significant investments in energy efficiency, which reached an estimated USD 220 billion in 2015 (IEA 2016), the majority of economically viable energy efficiency investments will remain untapped under existing policies. The UN SE4All Global Tracking Framework 2015 estimates that to reach the doubling of energy efficien-

cy improvement globally the annual investment gap is about USD 430 billion (Global Tracking Framework 2015).

There is a huge literature on the barriers to energy efficiency. It is well recognized that some of the main barriers to energy efficiency relate to the lack of understanding of its benefits, lack of prioritisation, and lack of tools to facilitate the planning and decision-making process for energy efficiency investments. This is true for both the private and government sectors. Nilsson & al nicely summarize in their 2011 paper "Counting beans or moving mountains – the predicament of energy efficiency policy" what are the ingredients for a sound energy efficiency policies to address the barriers and to organize the right level of governance for energy efficiency policies.

This paper is a reflexion on the need to mobilise climate finance to support technical assistance for energy efficiency. In particular, it calls upon the Green Climate Fund (GCF) to finance capacity building activities directed towards the creation and strengthening of an *'enabling environment'* to catalyse energy efficiency investments in eligible countries, namely emerging economies and developing nations. This conducive environment comprises a range of upstream policy, regulatory, financial, knowledge and human measures, funded by dedicated capital termed '*transformative funding*'.

An enabling environment for energy efficiency can be delivered through targeted Technical Assistance

While there exist many energy efficiency policies and programmes worldwide, there is unfortunately only a very limited literature on the assessment of the amount needed to support the deployment of an optimal policy framework. The authors have not found what they were looking for despite a thorough search. Two sources have been identified.

In the Third Industrial Revolution report for Luxembourg (TIR Luxembourg 2016) the following graph nicely summarizes the leverage needed from the financial support to Programme, Policy Cost and incentives versus the investment in energy efficiency and the financial return through lower energy bill savings.

In this illustration from Luxembourg, the overall technical assistance support (including setting of financial incentives) amount to 25M per year. The new policy framework creates the conditions for investments to be made in energy efficiency technologies and solutions. The level of investment is assessed to reach €145 M, a 5.8 ratio compared to technical assistance in policy design and tools. Ultimately, the investment in energy efficiency generates savings, estimated on average to €420 M. For each € invested in policy design and implementation by national authorities, the society will save €11. Overall, the society is becoming wealthier because of energy efficiency. As long as upfront financial support is injected in policy design and implementation.

A second reference was found in the USA where appliance energy efficiency programmes are rigorously designed, implemented and monitored. In a 2002 report (Meyers 2002), the impacts of US federal energy efficiency standards for residential appliances were measured. The study concluded that that "the cumulative net present value of consumer benefit amounts to nearly US$80 billion by 2015, and grows to US$ 130 billion by 2030. The overall benefit/cost ratio of impacts in the 1987–2050 period is 2.75:1.". The article specifies that "the cumulative cost of DOE' s program to establish and implement the standards is in the range of US$ 200–US$ 250 million". There are more than 100 Millions households in the US. On average the US government spent and projected to spend US$ 2 per household over the period 1987 to 2007. For each US dollar spent by the federal administration, each household will on average save a cumulative US$ 400 by 2015 and US$ 650 by 2030.

Appliance energy efficiency policies are highly cost effective, because by design, the policies are designed to set energy efficiency requirements that are cost effective. I.e. Energy efficiency requirements are set at level where the energy savings largely exceed the incremental cost of improving the technology.

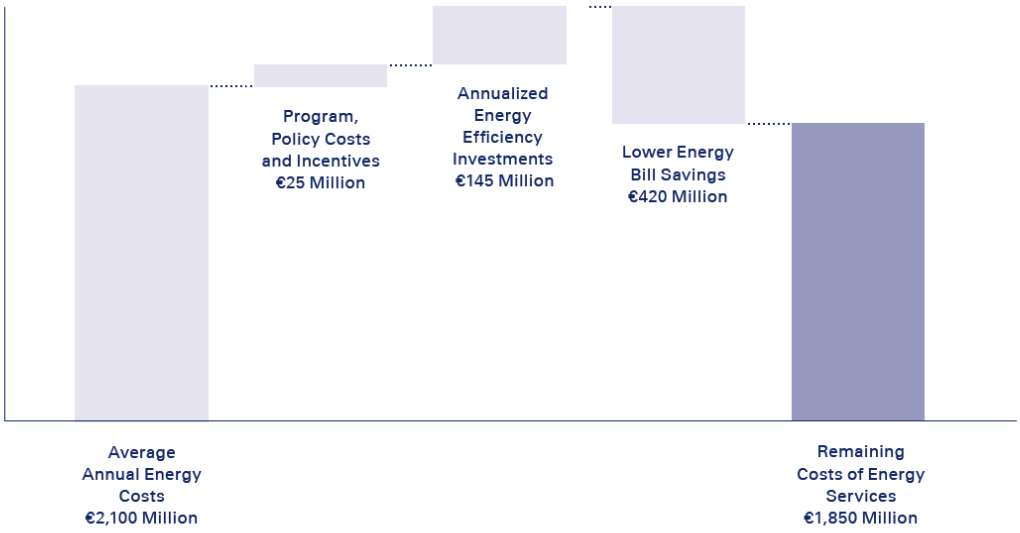

Figure 1. The Average Annual Payments for Energy Services, 2016 through 2050 in the Third Industrial Revolution report in Luxembourg. Source: Rifkin J., Laitner S. 2016.

But such savings and economic benefits to society happens only when significant and lasting financial supports are provided by public authorities to develop and implement the most relevant policy framework which consists in the case of domestic appliance at setting cost effective minimal energy performance standards.

For energy efficiency investments to deliver their multiple economic, social and environmental benefits, the right conditions need to be met. To stimulate efficiency investments at a rate commensurate with the Paris Agreement, the well known barriers to energy efficiency must be addressed through enhanced technical assistance, and an overall improved enabling environment.

Technical assistance to deliver such an enabling factors at the scale needed can be disbursed and distributed by international financial institutions (IFIs) and development banks, in the areas in Box 1. To illustrate, without accurate data on baselines and savings opportunities, for example, financial support may go to suboptimal energy efficiency projects. That is, those that provide an immediate and attractive returns (e.g. light bulbs), yet do not yield extra benefits nor attract additional private sector capital over time (e.g. deep building retrofits). For results to emerge, the elements highlighted above, along with many others, need to be continuously funded over the long-term.

The measures necessary to create an enabling environment have a cost, which can be supported by what we call *'transformative funding'*. Emerging economies and developing countries are all eligible to the Green Finance Funds (GCF 2017). With the implementation of the commitment made under the Paris Agreement, the GCF in collaboration with development banks, IFIs and other sources of climate finance, appears particularly well positioned to support the deployment of the enabling energy efficiency policy environment (typically setting minimum energy performance standards), through dedicated technical assistance.

This is exemplified in the buildings sector, which provides a good illustration of the need for upstream measures to set up an enabling framework. he buildings sector offers large potential for reducing energy-related emissions[1], Yet it faces a number of barriers that make the implementation of energy efficiency measures challenging: lack of data on energy consumed; difficulties in accurately pricing risks and rewards; market fragmentation; elevated hurdle rates (average payback of 3.6 years) – to cite just a few. There are a number of solutions to address such barriers, all of which require sustained funding to create the right enabling environment. These include for instance: Improving data and information to derisk investments. Consistent, accessible and sufficiently granular data can help inform investment decisions, which are highly specific to each project. Tracking performance on a project-by-project basis can also help assess the impact of policies. Providing advice, facilitating the accreditation of suppliers and services, for example, can enable decision-makers to take up energy efficiency. But also strengthening skills and expertise. A trained and qualified workforce in the supply chain, with the right skills and expertise, can facilitate the required assessments and recommendations to support investment decisions

1. Buildings account for over one-third of total final energy consumption (IEA, 2013).

Box 1. Description of the main areas for technical assistance to energy efficiency.

a. Ensuring availability of baseline data and indicators;
b. Creating investment grade policy frameworks and improving incentives;
c. Developing project pipelines with access to finance;
d. Building institutional capacity;
e. Providing awareness-raising and advice.

Transformative funding is required to create an enabling environment

'Transformative funding' differs from project funding. The latter is used to finance concrete energy efficiency projects such as procuring energy-efficient light bulbs and appliances, or improving the thermal insulation of commercial and residential buildings for example. On the other hand, transformative funding aims to build markets and transform the way energy is used in entire sectors. To achieve this, transformative funding aims to build capacity and improve the overarching policy drivers. These in turn create a viable environment for increased investments to be channelled into energy efficiency.

Examples of transformative actions fund activities aimed at developing: high-quality data; a skilled and qualified workforce; standard accreditations for technologies and supply chains; tailored advisory programmes; support to new business models that focus on guaranteed payback periods and scalability; monitoring tools and project evaluations; a register of replicable projects.

In sum, transformative funding aims to bring together all the critical ingredients for a comprehensive and effective institutional and market framework for energy efficiency in line with the low carbon trajectory that the Paris Agreement sets out.

Opportunity for the GCF and partner organisations

The above transformative actions were not a focus of the flexible mechanisms of the Kyoto Protocol, and are still currently inadequately supported.

In this respect, the GCF, working with other organisations, should be a significant source of transformative funding to energy efficiency through an earmarked minimum level of annual capital for such policy and investment support. This funding can support programmes and proposals for the systematic provision of technical assistance, alongside traditional development finance and policy lending, in all GCF recipient countries in the aforementioned key areas summarizes in Table 1. In view of the large GHG potential, a minimum of 10 % of the GCF should reasonably and solely go to technical assistance for transformative energy efficiency framework development.

Table 1: Transformative funding to create an enabling environment.

Key area	Activities	Expected impact
Ensuring availability of data, indicators, and information	Improving the collection, analysis, use and access by governments, businesses and consumers to high-quality data and information on energy efficiency opportunities – as well as on the impact of projects.	Provides evidence on energy efficiency opportunities for policymakers, investors and consumers
Improving policy frameworks	Addressing policy and regulatory barriers to energy efficiency; ensuring incentives are transparent; strengthening project evaluation and underpinning skills; ensuring impact assessments are integrated into new policies and programmes; evaluating energy efficiency multiple benefits.	Provides an enabling policy environment for successful policies, and business investments.
Building institutional capacity	Strengthening in-country institutional capacity for design, implementation, monitoring and evaluation of energy efficiency policies (hiring, training, support systems); encouraging the mainstreaming of an 'energy-efficiency culture' in all sectors.	Supports development, implementation and evaluation of effective policies
Raising-awareness	Catalysing the energy efficiency market through direct marketing campaigns, provision of advice to decision-makers to develop investable projects and strengthening of the supply chain through accreditation, training and development of new financing mechanisms.	Builds a register of investable energy efficiency projects and creates ongoing energy efficiency delivery capacity in market.
Developing project registers and access to finance	Supporting the private sector to mitigate risks, remove investment barriers, increase investors' confidence and certainty, leverage additional funds, and ensure greater sustainability for the fund in the long run. Giving investment exposure to high-value projects, particularly in new, evolving markets.	Enhances capital flows to energy efficiency investments.

To enable these, the GCF could define '*guiding principles*' in support of long-term, ambitious energy efficiency action in eligible countries, which comprises emerging economies and developing nations. These would be best based on best practices to stimulate energy efficiency investments, and provide an immediate checklist for GCF decisions. Best energy efficiency practices are well identified, such as building codes, mandatory energy efficiency requirement for equipment or system, etc.… One example of a principle could be that energy efficiency is costed and considered as a first-best investment option in the planning stage of all infrastructure, buildings and energy projects as suggested by the G20 Energy Efficiency Investment Principles (IPEEC 2015).

Conclusion

There is a significant gap between the strong potential for energy efficiency to help deliver international climate goals and the level of difficulty to channel finance for transformative activities, especially from international climate finance funds. Climate politics and financial mechanisms under the Kyoto Protocol focused more on project finance rather than transformative finance. They failed to finance what energy efficiency needs the most: a coherent policy and market framework that triggers investments in energy efficiency solutions and measures. The nature of energy efficiency policies is well known and analysed. They just need to be adequately resourced over a long time horizon, as energy efficiency needs time to put in place the policy framework, to engage the measures, to transform markets, behaviour and practices at the scale compatible with the 2 °C target. All economies are concerned as the potentials for energy efficiency is large in every sector and energy efficiency is by essence a dynamic process.

With the implementation of the Paris Agreement, now is the time to call the international climate change community to understand that energy efficiency is not only key to any low carbon development strategy, but to deliver, energy efficiency needs to be adequately resourced over the long time horizon. The source of financial support can be domestic or can come from international fund. A dedicated financial flow set by international institutions and forum for technical assistance is instrumental to the deployment of energy efficiency in order to build transformative policy frameworks.

The GCF, and other climate funds, are faced with this critical challenge and opportunity to urgently address this transformative financing gap and thereby play a crucial role in allocating transformative funding to energy efficiency. Only by doing so can energy efficiency deliver at the levels necessary to realise the climate goals of the Paris Agreement.

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