

How Governments Should fund Retrofits

They have it all wrong!

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INTRODUCTION

→ On average, buildings in the USA are responsible for 40 percent of the carbon emissions that lead to global warming. In big cities it is even higher. In New York it is 79 percent, Hong Kong 72 percent, and Toronto 69 percent, to give some examples. It is clear that if we are to tackle global warming at all we will have to find a way of retrofitting the built space - we need to retrofit entire cities!

President Barack Obama set a goal of improving the energy efficiency of US federal buildings and earmarked over \$25 billion of his stimulus package for the retrofitting of buildings. Governments elsewhere are also making retrofitting a priority. While the awareness and the will are there, it is still a major challenge. The number of buildings is vast and the cost of retrofitting all of them is enormous. There are around 130 million houses in the US alone, plus millions more commercial buildings and apartments. If it cost \$10,000 on average to retrofit a house, that would add up to \$1.3 trillion just for US housing alone. Asking governments to foot the entire bill through grants and subsidies is equivalent to asking them to print money for years. It is beyond their means, especially at this time. Yet the greenhouse gas reductions we could achieve if we took simple steps to make our buildings more energy efficient is significant. Given the urgency of responding to climate change, we cannot ignore this issue.

If we analyze the costs of retrofitting and look at the payback - cutting carbon emissions also means cutting energy bills - it quickly becomes apparent that we could make major cuts in emissions in a payback period that is economically attractive. A report by the World Business Council for Sustainable Development, *Transforming the Market: Energy Efficiency and Buildings*, showed that for \$150 billion on average, annually, for six major markets, the carbon footprint of buildings could be reduced by 40 percent with a payback period of five years. [The report covered the US, EU, Japan, China, India and Brazil and assumed energy prices based on oil at \$60 per barrel.]

A 40 percent reduction in energy costs with a payback of five years is an attractive return, yet there is little happening to exploit it. You would think that with a return like this a market would quickly develop, with banks and others queuing up to lend homeowners the money for retrofitting, or energy services companies (ESCOs) offering to retrofit buildings in return for the cash flows from the first few years of the energy costs savings. Building owners would buy in because they would get the work done at no upfront cost and then benefit from 40-plus percent lower energy bills from year five onwards. Its win-win – but it's not happening at the level we need it to.

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There are some obstacles. However, these are such that with a little ingenuity we could easily overcome them and unlock the enormous potential for improving the energy efficiency of our buildings. So why aren't we doing it?

WHY ISN'T IT HAPPENING?

→ One reason it is not happening is a lack of market confidence. Financial institutions are still smarting from the huge losses they suffered buying up the securitized cash flows of subprime mortgages and are wary of lending into another homeowner market.

Meanwhile, ESCOs – a new breed of initially small energy services companies with no credit track record to speak of – have a problem borrowing money against what is at the moment a relatively unsubstantiated promise of cash flows from reduced energy bills.

This is where governments can step in and make a critical difference. Governments can target their limited funds at creating the confidence for the market to take off. The way it can do this is not by offering to lend the money itself – it cannot afford the sums required – but by underwriting the loans and the cash flows.

In the case of financial institutions looking to lend money to homeowners to pay for their energy efficiency retrofitting, governments can underwrite these loans, promising to reimburse the financial institutions should a homeowner default. In the case of ESCOs, governments can guarantee the cash flows from the reduced energy bills as a result of retrofitting. ESCOs then borrow against the guaranteed cash flows, or securitize and sell the cash flows to raise the funds they need to do the retrofitting work. By acting as an insurer, government injects confidence into the market, properly designing the investment process in a way that will achieve the necessary scale of retrofitting.

LEVERAGING GOVERNMENT FUNDS

→ This is also a far more effective use of government funds. By providing insurance to the market rather than paying for retrofitting directly, government could leverage its funds by one or two orders of magnitude. Government pays out only where homeowners or ESCOs default. Even with a default rate of 10 percent, government funds are achieving a leverage of 10 times compared with investing the funds directly in grants or subsidies. [With a default rate of 1 percent, the leverage on government funds would be 100 times.]

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With the government's backing, the homeowner or ESCO loans become more attractive investments and could be packaged and sold to the financial markets in a multitude of high quality financial products. By doing this, we get two major benefits:

- For a fixed level of government funding, say \$100 million applied to insuring instead of capitalizing retrofitting, we could get up to \$10 billion dollars worth of retrofits, based on a 1% default rate in the cash flow payments; and
- The financial markets become the vehicles to achieve the levels of funding for the mass, intensive retrofitting that is required to achieve a meaningful and timely impact on carbon emissions.

In this way, the \$25 billion dollars that President Obama has dedicated to retrofitting could be leveraged to between \$1 and \$2.5 trillion dollars worth of actual retrofitting. While \$25 billion does not make much of a dent on the retrofitting needs of a major country, \$2.5 trillion sure does!

SHOWING THE WAY

→ We are beginning to see the first programs that take on board these principles. On November 9, 2010, the US Department of Housing and Urban Development (HUD) announced a pilot program that will offer creditworthy borrowers low-cost loans to make energy-saving improvements to their homes. The pilot, administered by the Federal Housing Administration (FHA) and called FHA PowerSaver, has the specific aim to explore innovative ways of leveraging government funds to achieve home energy efficiency. It is doing this by inviting the private sector to lend homeowners the money to make retrofits, with the government insuring the loans.

FHA PowerSaver will direct up to \$25 million towards insuring up to 24,000 loans over a two-year period, with an expected average loan size of \$12,500. Using the insurance mechanism to leverage the funding, "the program is therefore expected to result in the extension of \$300 million in FHA-insured energy efficiency property improvement loans over the 2-year period," says HUD. In other words, by leveraging government funds to act as an insurer rather than a capital provider, the program should achieve more than ten times the retrofitting that it would otherwise accomplish by lending the money directly.

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To help ensure the integrity and success of the program, the FHA have added two conditions: homeowners must meet minimum creditworthiness criteria and the lenders must carry some of the loan risk. Under FHA PowerSaver, homeowners must have a FICO credit score of 660 or above and a debt-to-income ratio of less than 45 percent in order to qualify for a loan. The program also restricts the government's insurance to 90 percent of any single loan and 10 percent of a lenders' loan pool total to ensure proper standards of underwriting by the lenders.

THE NEED FOR BENCHMARK DATA

→ Meanwhile, there are no technological barriers to doing the first level of retrofitting to achieve the 40 percent energy efficiency improvements. Most of the techniques, equipments and materials are known and many of the skills, such as for insulation and ventilation, can be quickly taught.

There is one thing, however, that we desperately need and that is benchmark data. Every new market requires data and benchmarks to establish credibility and give investors confidence. We need baseline data on building energy consumption and ongoing data on energy savings. This is not difficult to collect, but it is essential if we are trying to create a new market in energy efficiency retrofit funding (see [Without environmental benchmarking we will never engage the financial markets to green our infrastructure](#) by Ron Dembo, December 2010).

REASONS TO BE OPTIMISTIC

→ We face an enormous task of making buildings more energy efficient, which we must tackle if we are serious about reducing global carbon emissions. However, there are real reasons for optimism. The actual work is not difficult and does not require any new inventions or technology. There is real payback that could be achieved within reasonable timescales that are attractive to investors. We could gather the necessary benchmark data to establish the credibility of the market without too much trouble.

Yet the one major innovation we must make is to cast government in a different role; not as the banker for retrofitting program, but as the insurer of an established industry in energy services. If government did this, and used its dollars to back the market rather than fund it, it could encourage homeowners to commit to retrofitting and grow the ESCO industry that would deliver the energy efficiency improvements for a fraction of the outlay.

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In a new industry with many new companies there are bound to be defaults, which is why there is the need for insurance. But even if the default level is high, say 10 percent, it still means that 90 percent of the retrofitting is done on a commercial basis without government subsidies. A government insurance scheme would allow the energy services industry to start tackling the millions of buildings that require retrofitting. It would sweep aside the capital stumbling block that is preventing building owners, whether they be commercial, residential, or private, from retrofitting. Although many energy efficiency measures are relatively inexpensive, they are still beyond the immediate means of many building and home owners. A government-insured energy services industry would provide the capital and leave the owner to reap the long-term benefits.

CONCLUSION → We are in the perfect storm: declining manufacturing jobs, particularly in the automobile industry, and a general need to create more meaningful jobs. The good news is that we are leaders in information technology. We are great at green architecture and design. We have a solid construction industry. So retrofitting our cities makes great sense. We make a dent on global warming with a further positive spin-off – mass job creation, just at the time when we desperately need it. A number of retrofitting skills, such as home insulation and draft-proofing, can be quickly taught. With the building sector in recession, many of its workers could be easily retrained to retrofit buildings. Since this needs to be done worldwide, it could be an industry to export.

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