How to optimize the financing of buildings energy efficiency programs

Eric Morel – May 2015

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He has been involved in Smart Grids development since 2000. He created the first Energy Efficiency and Smart Grids BU at Schneider Electric, is a co-founder and has served as a Board member at the Gridwise Alliance. He has developped for 10+ years, activities and companies delivering Smart Grid solutions; he has led several projects and initiatives and is today an expert recognized by the main public bodies.

Addressing the issue of financing energy efficiency can not be achieved without several bases. What actions we are talking about? Have they all the same characteristics for who must fund them? What are the possible sources of funding and their respective strengths?

Based on the answers to these questions, I can articulate some thoughts about the meaning of the optimization of the funding.

1- The different types of energy efficiency initiatives

There are four main types of building energy efficiency actions.

Two are passive energy efficiency ie their performance is tied to changing the condition of buildings:

- Thermal renovation of the envelope (insulation, windows etc. ...)
- Replacement, upgrading and evolutions of energy-consuming systems to less consuming ones for equal or better performance (lighting, ventilation, etc ...)

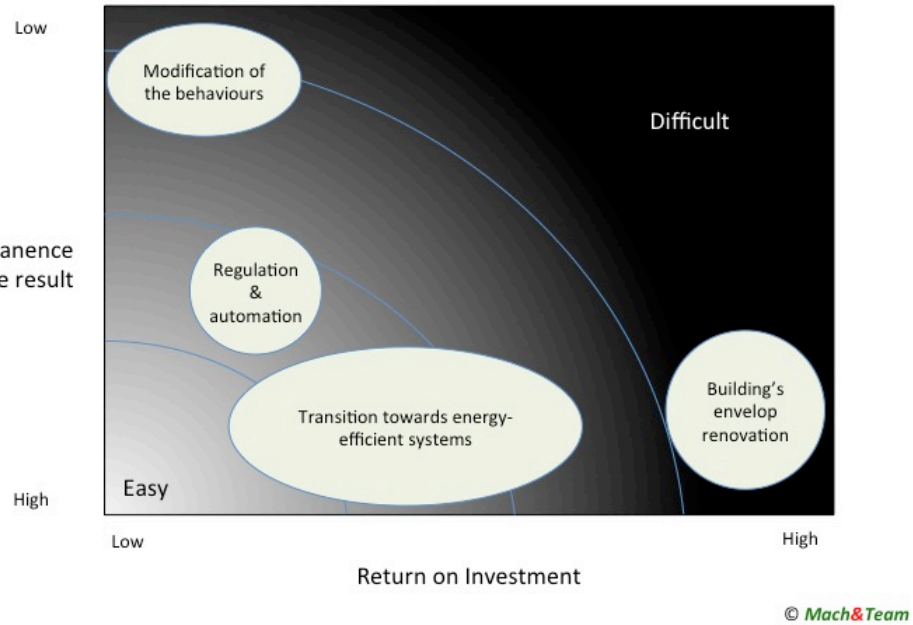
Two are active energy efficiency ie their performance is attached to the use of buildings:

- The control, automation of energy-consuming systems for a use according to the most adjusted need.
- Improved behaviour of occupants

Passive energy efficiency action plans give rather stable results over time. The only lack of building or systems maintenance can lead to an erosion of performance, rarely exceeding a few %. Passive energy efficiency actions are expensive, showing ROI ranging schematically, from a minimum of 3 years (lighting) and 25-30 years (insulation of the envelope).

Meanwhile, the actions of active energy efficiency are less expensive and often allow shorter return on investment (a few months for the simplest to a couple of years). A return on investment of over 5-8 years in this type of action should lead to immediate reflection on the merits of the action. For cons, the results have no "natural" sustainability. Control features have to be adjusted to each building configuration change or every change of how the building is used; and regarding the behaviour of the occupants ...

In that category of actions, the first expenditures aim at reducing consumption, the following ones aim at avoiding the return to the initial level of consumption.



As shown above, the various possible actions in an energy efficiency program are more or less difficult to implement according to their cost and to the sustainability of the achieved results. So most of the programs prioritize the most profitable renewal of systems, before the actions of regulation and automation, before stumbling over the most complex actions to be implemented.

2- The pallet of financing schemes

To support all of these actions and encourage building owners to improve their property to make it more energy efficient, there is a rather small range of schemes:

- Some take the form of grants from public bodies, ie money given to owners in various forms and never recovered.
- Others are loans with more or less attractive terms to owners.

The cost of all actions to be taken on the housing stock in each country is enormous and being able to fund most of them in the shortest period of time is at stake. Subsidies quickly exceed the limits of the public budget, which determine largely today the rate of progression of the energy savings. It is therefore necessary to design arrangements that will maximize the use of private investments. If private investments are bigger, the boundaries of the funded perimeter will be pushed further thanks to the same bearable support of the public policy.

Each funding mechanism should therefore be assessed through the leverage it provides to private investment.

Then we can imagine that each funding scheme comes gradually to complete the least efficient ones:

- Apparently, the ideal is that the building owner directly funds certain actions as the pay-back is quick. This case is possible for the renovation of systems with fast return on investment (lighting). It applies if the owner is the occupier; otherwise, it has no return on investment, either via the energy bill (he does not pay) or via an increase of the rental charges (that is strictly regulated, most of the time), or via a valuation of his property .

Funding is provided either in cash by the owner or through a bank loan.

All initiatives helping to create a collective dynamic (energy efficiency meetings, clubs), to capitalize on good practices (benchmark, basic skills) are all effective investment stimulators. Experience shows that the most efficient initiatives that have the highest impact are local, as well as the most efficient ones are those that are focused on the result and the measure.

- The system of Energy Performance Contracting (based on a performance contracting model) allows a service company (ESCO kind or Energy Service Company) to fund energy renovation works on behalf of an owner, and to be paid back by capturing the savings for a given period. This scheme has the advantage of costing nothing to the owners. He was deployed to date on professional customers, especially in the public sector. I had the opportunity to design unique adaptations of the model to make it even more attractive for private clients.

The self-financed actions described above, destroy part of the interest of EPCs: achieving itself actions with fast RoI (Return on Investment), the consumer robs potential savings for the EPC that could be captured for the benefit of actions with longer RoI.

The EPCs have only a limited interest for actions with short RoI, but they allow to fund actions without any need of public subsidies.

This model has not been sufficiently explored by the market and by the regulation for the market of rental housing. An owner could very well be financed by savings collected for a period of time on the tenants' energy bills.

- To reduce the financial risks assumed by the owners, public-private investment funds partly owned by a town, a city or a region can lend to energy efficiency projects' deciders. In priority, such projects should be led by energy service providers paying themselves on energy savings.

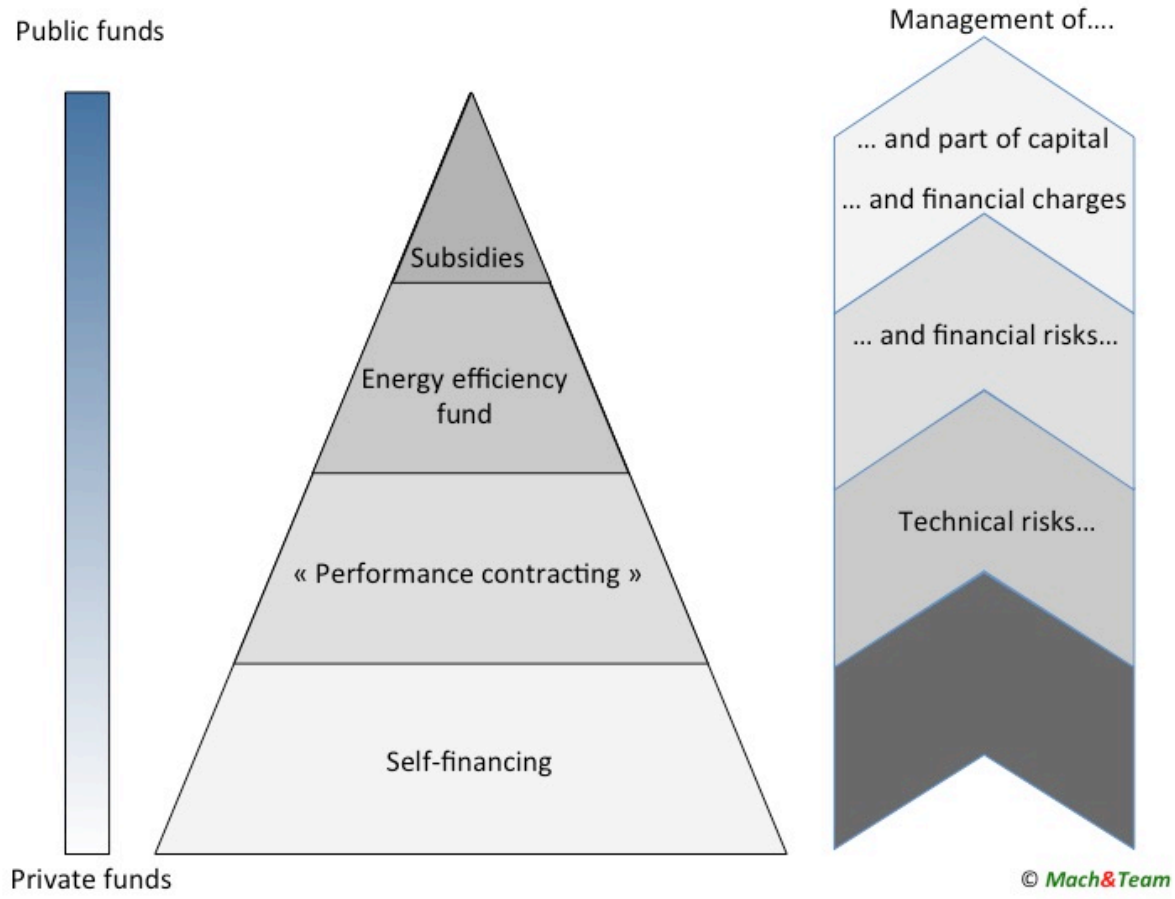
Thanks to a thorough understanding of the characteristics of energy efficiency projects, these funds can afford to push the limits related to the ignorance of these projects by the usual lenders and banks, culturally more used to support the development of promoters that ensure optimization of operations.

I am not convinced by the value of public ESCO type structures because the profitability of this type of activity requires extremely rigorous management processes that are incompatible with the governance of the "public sector".

- Finally, public subsidies can complete the panel of funding schemes to ensure the missing profitability of some projects.

These "subsidies" can take many forms and present effects of more or less leverage (loan interest subsidy, tax reduction, tax credit, supported a part of the investment).

It seems to me important that they are not always awarded "automatically" because it is important to validate that all ways to get private investment have been explored before committing public funds in achieving the desired project profitability. It is in this hierarchy and that "coordination" of various schemes that lies the optimization of financing energy efficiency and maximizing the GLOBAL leverage effect on public investment.



3- How to optimise the financing of energy efficiency programs

According to the diagram above, the "continuum" of funding schemes corresponds to an increasing share of engagement in energy efficiency actions:

- At the first level, the owner bears all costs.
- The EPC allows to “outsource” the technical risks associated with the evaluation of potential savings of a given action. This is another reason not to restrict EPCs to lighting applications. The interest of lighting EPCs is easily understood from a "short-sighted" energy service provider perspective, though the interest for the client or the community is questionable.
- The Energy Efficiency "investment fund" discharge owners of financial risks
- Finally, subsidies, according to their form, provide compensation for some of the financial costs (loan bonus) or for part of the capital.

Implicitly, it appears, through the rough description of the various modes of financing, that the various players are heavily interdependent. Two types of interdependencies predominate:

- Interactions between funders and accompanying project leaders. An energy efficiency project can only achieve its purpose if all stakeholders are competent and effective (installers, integrators etc ...). Real expertise of project management's assistance may be the guarantor for the parties to achieve the objectives.

- Public-private links. The interpenetration of roles and stakes is total. At a territory (should it be the region or the city the proper one), an agreement or coordinated operations of all the parties is the guarantor of the proposed optimization. In absence of this formal agreement, public authorities can only provide subsidies that guarantee neither result nor leverage.

The optimization of the financing of energy efficiency actions deployed in a territory necessarily requires the management of these interdependencies. This optimization is therefore easier to aim, on a limited territory (city, neighbourhood).

Some attempts have been made (France, Switzerland) to have an electrical supplier offering financing schemes in parallel with commercial offers. In neither case, coordination between initiatives was provided; the observed result was rather an internal competition between teams and between business models. Pity!

Does this mean that the overall coordination should be ensured by a semi-public body, under the authority of the territory? It must be very neutral, preserve competition, be very business-oriented, because the offers with a high leverage capability should be efficient on the market to meet the expectations of the overall cluster of funding mechanisms and very close to all players: a real challenge!

Once the question of optimizing the funding mechanism addressed, Smart Cities "will only have to" add to the overall system, effective solutions to drive the consumers' behaviours change.