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1. The SENSEI project
2. Energy Performance Contracting (EPC)
3. Third-party financing of EPC – SENSEI findings
4. The main arguments of SENSEI
5. P4P and energy communities
6. Conclusions

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The SENSEI project

SENSEI – Smart Energy Services to Improve the Energy Efficiency of the European Building Stock (https://senseih2020.eu/)

Duration: September 2019 – February 2023

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The overall goal of the SENSEI project is to propose services that allow energy efficiency to be treated as a transactable asset, as well as business models that utilize these services in order to valorize energy efficiency as a grid resource.

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The SENSEI project

To this end, the pay-for-performance (P4P) concept has been adopted by SENSEI as a way to bridge the aforementioned services and business models, and define the transactions between two or more involved parties.

The main premise of the P4P concept is simple: compensate an asset or a service according to its actual impact.

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The SENSEI project

Performance-based agreements are already part of the ESCO model. SENSEI focuses on designing public programs that support energy efficiency by compensating (paying) energy efficiency retrofits based on the energy savings they actually deliver (performance).

The P4P concept can be thought of as an “energy efficiency feed-in-tariff”. P4P schemes, just like feed-in-tariffs, focus on the output rather than on the means (technological upgrade or other intervention).

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Energy Performance Contracting (EPC)

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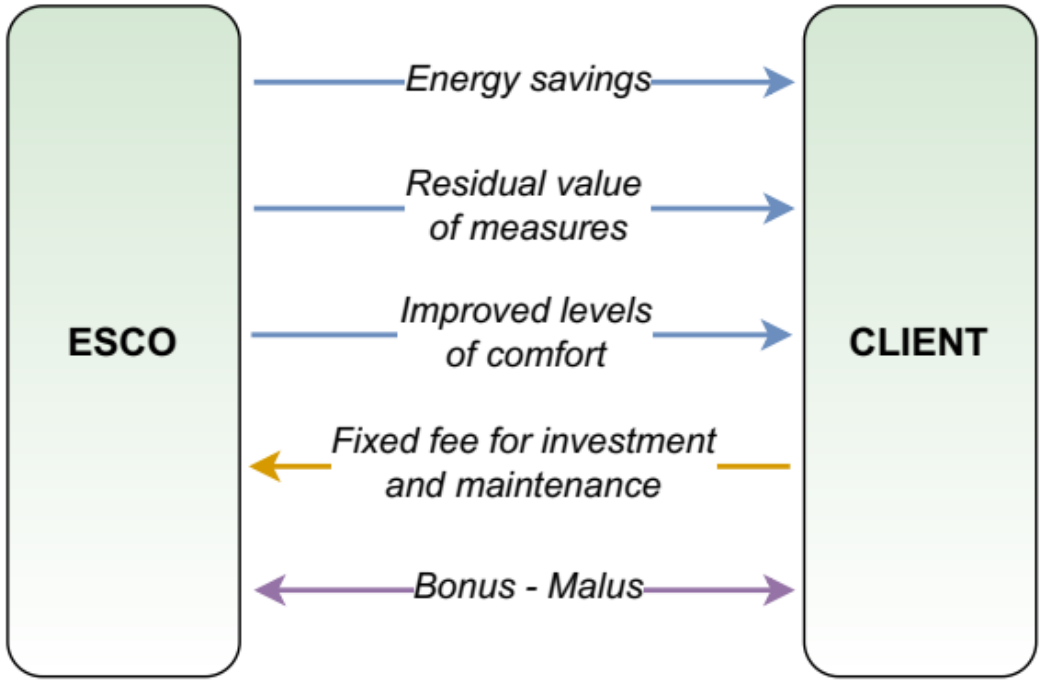

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- If the ESCO provides investment capital → EPC with shared savings

  Most ESCOs self-finance their projects due to limited access to third party finance.

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Third-party financing of EPC – SENSEI findings

SENSEI engaged financial sector stakeholders to explore the conditions under which they would regard an EPC project as a sensible investment option.

Findings:

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Third-party financing of EPC – SENSEI findings

1. Aggregation of projects into portfolios.

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2. Transparent and standardized (automated) project assessment procedures – criteria to include buildings/projects in the portfolio.

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Third-party financing of EPC – SENSEI findings

1. Aggregation of projects into portfolios.
2. Transparent and standardized (automated) project assessment procedures – criteria to include buildings/projects in the portfolio.
3. Dealing with failure in fulfilling obligations. Banks and insurers are used to investing in assets where a form of recourse is embedded in the structure. Otherwise, investments will be regarded as having a higher risk profile.

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Third-party financing of EPC – SENSEI findings

4. Stable cash flow streams. This puts limitations on the type of buildings and measures to be included in the portfolios, and demands for correct baseline calculation, monitoring and verification tools.

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5. There must be at least one highly credit-worthy counterparty involved in the transaction structure (main reason behind preference for on-bill repayment schemes in the U.S.).

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The main arguments of SENSEI

Argument #1: P4P increases the impact of public programs for energy efficiency financing by introducing accountability.

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P4P is not meant to completely replace grants and subsidies subsidizing the upfront investment costs is a strong driver for energy efficiency upgrades and, in particular, for deep retrofits.

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P4P is not meant to completely replace grants and subsidies subsidizing the upfront investment costs is a strong driver for energy efficiency upgrades and, in particular, for deep retrofits.

Linking part of the subsidies to ex post results/impact helps increase the cost-effectiveness of public programs (as if imposing an upper bound to the acceptable amount of Euros per MWh saved).

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The main arguments of SENSEI

Argument #1: P4P increases the impact of public programs for energy efficiency financing by introducing accountability.

- Do these benefits of P4P outweigh its implementation costs?
- Find synergies to increase benefits for same costs.

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The main arguments of SENSEI

Argument #2: P4P can (and should*) be used to offer a premium to energy efficiency projects when their implementation leads to load shape changes that are beneficial for the power grid's operation.

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SENSEI has demonstrated (SENSEI Deliverable D4.2) that:

- Energy efficiency is valuable when its impact is aligned with persistent needs of the power grid that reflect the regularity and seasonality of power demand at the aggregated level.

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SENSEI has demonstrated (SENSEI Deliverable D4.2) that:

- Energy efficiency is valuable when its impact is aligned with persistent needs of the power grid that reflect the regularity and seasonality of power demand at the aggregated level.
- The design of a program that compensates energy efficiency for its contribution to the grid does not need a radically new toolset, but can be done using the tools that power system operators already use.

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The main arguments of SENSEI

* Adopting P4P is necessary because all other alternatives for ensuring the power grid's reliability – capacity reserves and demand response – are compensated based on their performance.

Treating energy efficiency on equal basis with the alternative options that system operators have at their disposal means that energy efficiency should be rewarded based on actual impacts.

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The main arguments of SENSEI

Argument #3: P4P programs can incentivize the development of the know-how and infrastructure necessary for energy retrofit project aggregation.

P4P programs create a market for aggregation, along with all the *governance structures* and *technical capabilities* to support it.

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The main arguments of SENSEI

Governance structures:

SENSEI introduces the concept of a P4P program facilitator: a third party that is responsible for the execution of a P4P program on behalf of the corresponding program owner (SENSEI Deliverables D6.3 and D6.5).

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Governance structures:

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Technical capabilities:

- Project screening and evaluation methods
- Measurement and verification of impact from retrofit (SENSEI Deliverable D7.1, https://github.com/hebes-io/eensight)

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The main arguments of SENSEI

Argument #4: P4P programs can help blend public and private funding.

The facilitator/aggregator:

- receives capital from investors for (part of) the energy efficiency upgrades,
- receives payments from the ESCOs/buildings in the portfolio that correspond to (part of) the value of the avoided energy usage,
- is responsible for distributing both the payments from the ESCOs/buildings and the P4P program to all involved parties.

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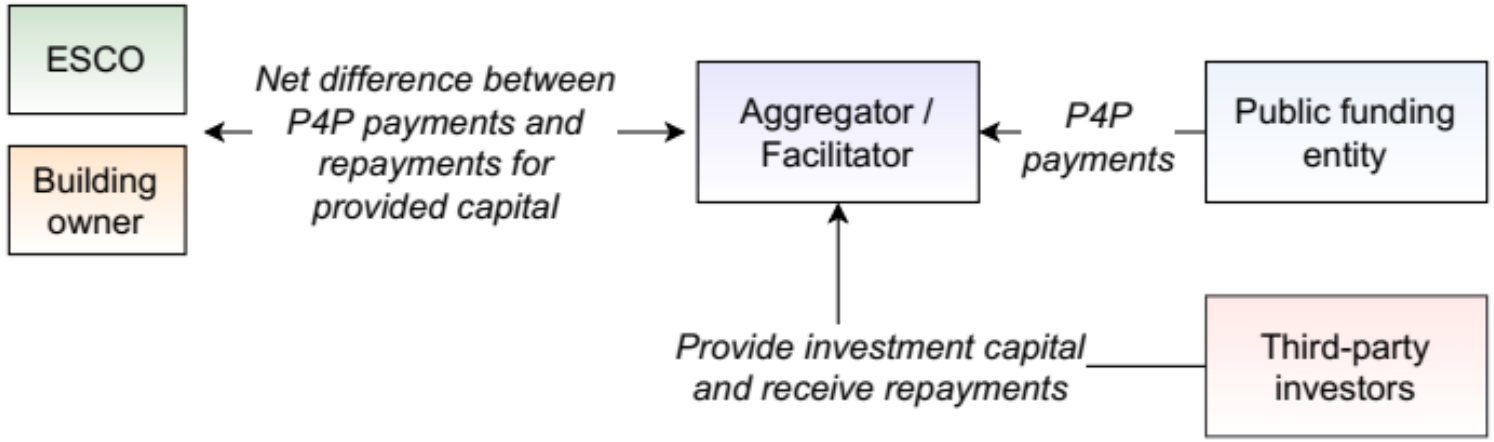

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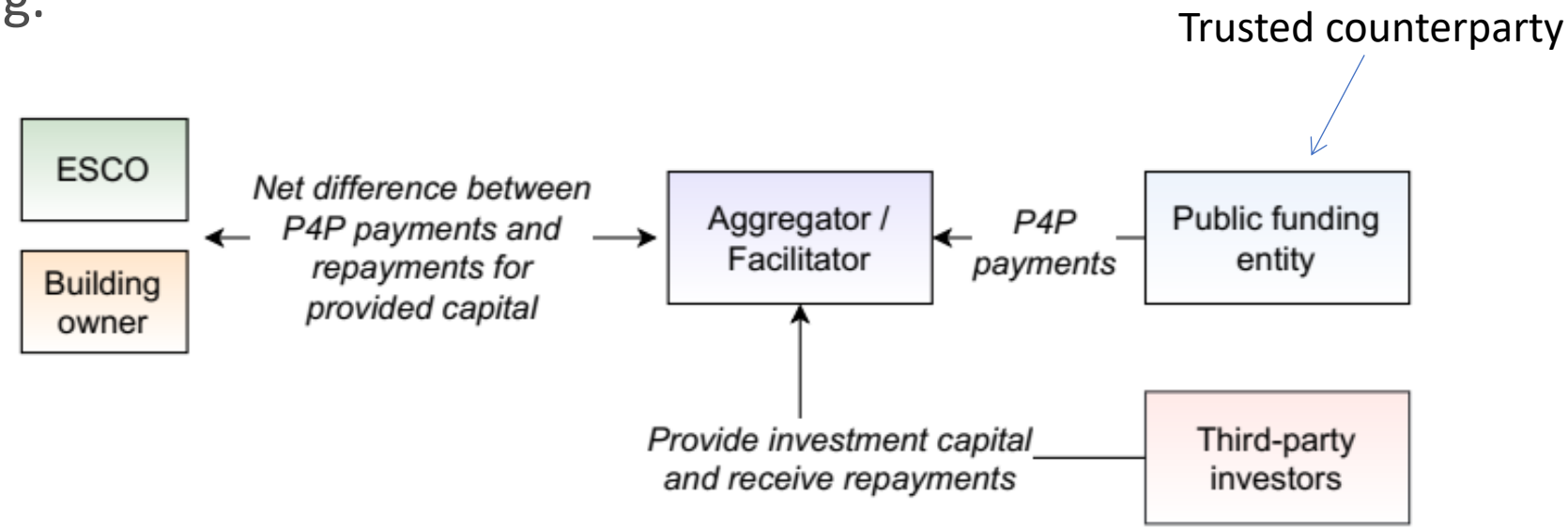

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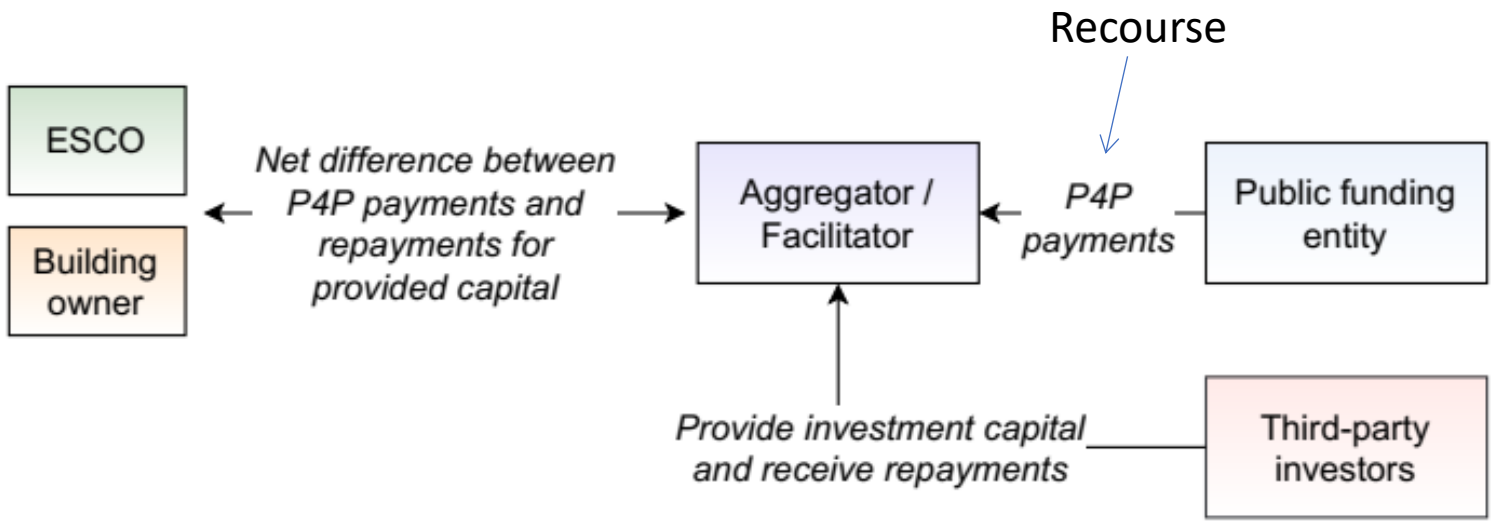

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An escrow account acts as a buffer between the ESCO/building and the aggregator. Both direct part of their payments to the account as collateral to ensure that payment obligations will be fulfilled.

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Argument #4: P4P programs can help blend public and private funding.

An escrow account acts as a buffer between the ESCO/building and the aggregator. Both direct part of their payments to the account as collateral to ensure that payment obligations will be fulfilled.

The escrow account limits the risk of accumulating performance deficit by directing payments according to how much the retrofit project seems to over- or under-perform at any given time. The account can be linked to the M&V information so that its minimum level adjusts according to the upgrade's performance trend.

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P4P and energy communities

Energy communities can take up the roles of both the project aggregator and/or the capital provider (including crowdfunding from the community members).

Monitoring, measurement and verification, and real-time allocation of payment obligations can help energy communities in treating energy efficiency interventions as a collective asset.

Governance structures and technical capabilities for project aggregation can level the field for energy efficiency improvements to be financed and valorized in the same way that generation assets are financed and valorized in energy communities.

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Conclusions

The energy efficiency services sector is lagging behind renewable energy generation in terms of demand for investments, as well as business models for aggregating projects and attracting investment capital from institutional investors.

While a lot of work has taken place in measuring energy savings and formally covering risks and uncertainties at the individual project level, scaling energy efficiency up to project portfolio level still faces challenges.

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Conclusions

SENSEI argues that the design and roll out of P4P pilots for energy efficiency projects can lay the groundwork for the development of the methods and standards that are necessary for creating large-scale pipelines of projects.

P4P pilots constitute an effective use of public finance to discover best practices for the aggregation of a large number of energy efficiency projects into portfolios, and they can act as a workbench for developing financing tools and risk allocation mechanisms.

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Thank you for your attention

Any questions or comments?

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