



SmartSPIN

Smart energy services to solve the **S**Plit **I**Ncentive problem in the commercial rented sector

Call topic: H2020-LC-SC3-2018-2019-2020
Start date of the project: 01/09/2021
Duration: 36 months

D6.4 – GUIDELINES FOR POLICY MAKERS

Due date	31 July 2024	Delivery date	13 September 2024
Work package	Work Package 6		
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Dissemination level	Public		

Version and amendments history

Version	Date (MM/DD/YYYY)	Created/Amended by	Changes
V0.1	17/06/2024	Sophia Rodiou	First draft
V0.2	27/06/2024	Stergios Kokorotsikos	Reviewed draft
V0.3	30/07/2024	Sophia Rodiou	Addition of infographics
V0.4	31/07/2024	Luciano De Tommasi	Review. Additions to sections 2.1 and 3.1. Section 5 revised.
V0.5	02/08/2024	Ruchi Agrawal	Review
V0.6	12/09/2024	Luciano De Tommasi	Methodology section added (section 2).
V1.0	13/09/2024	Luciano De Tommasi Ruchi Agrawal	Final review and submission





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List of Abbreviations

Abbreviation	Meaning
SME	Small and Medium Enterprise
EEaaS	Energy Efficiency-as-a-Service
EED	Energy Efficiency Directive
SES	Smart Energy Services
ESCO	Energy Service Company
EU	European Union
EPC	Energy Performance Certificate
EnPC	Energy Performance Contracting
AI	Artificial Intelligence
NECP	National Energy and Climate Plan
EIA	Energy Investment Allowance
EEO	Energy Efficiency Obligation
R&D	Research and Development
NGO	Non-governmental organization
MEPS	Minimum energy performance standard
NRA	National Regulatory Authority
ROI	Return on Investment





EXECUTIVE SUMMARY

SmartSPIN is a project funded by the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement n°101033744. The project aims at developing a new business model to improve energy efficiency and flexibility in the commercial rented sector. The SmartSPIN consortium will design, demonstrate, implement, and test smart energy solutions in three European pilot sites in Ireland, Spain and Greece.

This deliverable provides guidelines for the policy makers to encourage the uptake of SES in the commercial rented sector. This deliverable draws together the results from the review of the market & revenue stream mapping (Task 2.2), the review of policies supporting smart energy services (Task 2.3) along with data and experiences of deploying the SmartSPIN business model in WP5, and the key learnings from the project's demonstration and overall implementation.

A central theme of the analysis is the development of actionable policy recommendations to support widespread SES adoption. This will be achieved through this deliverable D6.4: Best Practice Guidelines for Policymakers. This deliverable extracts key learnings from the project to develop a series of guidelines for national and European policymakers aiming to identify enabling policies for SES in Europe.

This deliverable delves into two key areas. Firstly, it utilizes findings from Task 2.2 on smart energy services market maturity across Europe to identify the various policy stakeholders based on their role in the electricity market transition and their influence on policy development at both national and EU levels. Secondly, informed by the experiences of deploying the SmartSPIN business model in WP5 and input from other work packages (WP3, WP4), this deliverable develops a methodology for identifying and addressing barriers to SES adoption. This methodology considers the roles of both policymakers and stakeholders in overcoming these hurdles. By understanding the specific challenges faced by different market segments and stakeholder groups, the deliverable aims to develop targeted policy interventions and collaborative strategies to facilitate widespread SES uptake.

The analysis uses a multi-pronged approach, including data collection and review of existing research in pilot countries (Ireland, Spain, Greece), market reports, and policy documents. By carefully examining each piece of information and understanding how they fit together, the methodology empowers policymakers to craft interventions that are both effective and sensitive to the specific market dynamics of the regions in EU.





1 INTRODUCTION

Improving energy efficiency is commonly known as the most cost-effective way to reach the EU greenhouse gas emission targets. In the European Union, it has been estimated that 75% of buildings are inefficient (European Commission, 2019) and according to the World Green building Council (2019), the building sector accounts for 39% of energy related to CO₂ emissions. Determining the most effective set of policies is crucial for energy policy makers around Europe and globally to improve the existing building stock.

The split incentive issue is a key challenge to the deployment of energy efficiency measures in commercial rented buildings across Europe (Castellazzi *et al.*, 2017). Split incentives refer to any situation where the benefits of a transaction do not accrue to the actor who pays for the transaction. More specifically, in the context of energy efficiency in the commercial building sector, split incentives refer to cost recovery issues related to energy efficiency upgrade investments due to the failure of distributing effective financial obligations and rewards of these investments between concerned actors.

The EU is actively exploring solutions to bridge this gap and incentivize energy efficiency upgrades in commercial buildings. Policymakers are looking at various approaches, including green leases that specify shared responsibility for energy use, on-bill financing that allows tenants to spread the cost of upgrades over time through their utility bills, and performance-based contracting where a third party guarantees energy savings in exchange for a share of the cost savings. These innovative solutions hold promise for overcoming the split incentive issue and accelerating progress towards the EU's ambitious climate targets.

The success of these solutions hinges on effective policy development and implementation. As such, the implementation of the SmartSPIN project and the application of the Energy Efficiency as a Service (EEaaS) business model in the three European pilots in Ireland, Spain, and Greece offer valuable insights, with results derived directly from the successful operation of the three pilot sites, as well as the definition of the SmartSPIN Business model and toolkit. By tailoring these models to the specific circumstances of different member states, the EU can create a framework that incentivizes stakeholders across the commercial rental sector to embrace energy efficiency upgrades. This will not only contribute to achieving the EU's climate goals but also lead to significant cost savings for both building owners and tenants.

2 METHODOLOGY TO DEVELOP BEST PRACTICE GUIDELINES FOR POLICYMAKERS

The methodology adopted to develop the best practice guidelines for policy makers to encourage uptake of smart energy services in the commercial rented sector, which is described in this deliverable, is a bottom-up approach that consists in extracting the key learning points from the project outcomes, such as the results from Task 2.2, which examined the maturity levels of the smart energy services markets in different countries, as well as the lessons learned about deploying the SmartSPIN business model in WP5. Furthermore, results from WP3 and WP4 have also been considered, to ensure that the right steps will be taken at each level, local, regional, national and EU to engage with all stakeholders. The conducted analysis identified strengths, weaknesses, drivers and barriers in each country, before elaborating the country-specific policy recommendations. Building on the results of the Country-level analysis, policy recommendations for promoting SES in commercial rented properties



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across Europe are then formulated. After that, the most prominent policy makers according to their role in the energy market transition are identified, considering their influence on policy development both at national and EU levels. Finally, the deliverable elaborates on the methodology for identifying and addressing barriers along with the roles of policymakers and stakeholders.

3 GUIDELINES FOR NATIONAL AND EUROPEAN POLICY MAKERS AIMING AT THE IDENTIFICATION OF ENABLING POLICIES FOR SES

This document utilizes findings from Task 2.2 (T2.2) on ESCO market maturity for smart energy services to identify enabling policies for Smart Energy Services (SES) in the commercial rented sector across Europe. The maturity of the SES market is assessed by considering the development of the Energy Service Company (ESCO) market in partner countries, especially in pilot regions. Below we are going to analyze the challenges, the strengths, weaknesses, drivers, barriers in the commercial rented sector from which we illustrate specific guidelines for policy makers for all the countries represented by the consortium members (Ireland, Spain, Greece, the Netherlands).

Challenges in the Commercial Rented Sector:

While SES offers significant benefits for energy efficiency and cost savings, the commercial rented sector faces unique challenges in widespread adoption:

- **Split Incentive:** Landlords pay for upfront installation costs of SES, while tenants benefit from lower energy bills. This lack of shared financial interest can disincentivize landlords from investing.
- **Lack of Awareness:** Many stakeholders, including landlords, tenants, and service providers, might not fully understand the benefits and complexities of SES.
- **Contractual Uncertainties:** Concerns about cost allocation, responsibility for infrastructure, and data privacy can hinder long-term agreements for SES implementation.
- **Limited Financing Options:** Access to financing for ESCO projects, particularly for smaller businesses, can be a significant hurdle.

3.1 Examples and Lessons Learned from each country

Ireland

Ireland is a developing ESCO market since 2015. Irish government is offering support for EPC market for public sector buildings and ESCOs are offering attractive market bargains to appeal to more customers. Since energy efficiency implementation plays a significant role in achieving the energy efficiency target and ensuring energy security, the energy service market is hugely supported by the government. Thus, government support, standardization and simplification of EPC and promotion of successful ESCO project case studies are the main drivers to help development of ESCO market in Ireland.

- **Strengths:**
 - Supportive government policies with financial incentives (grants, tax breaks) for landlords investing in SES.
 - Development of model contract templates to address potential contractual issues.
 - Information campaigns and resources to raise awareness among stakeholders.



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- The Sustainable Energy Authority of Ireland (SEAI) has developed a National Energy Services Framework (NESF)¹ to support the non-domestic energy efficiency market in Ireland. Under this framework SEAI provides guidance and support documentation to the businesses wishing to consider energy performance contracting. The developed documentation consists of a Guide to Energy Performance Related Payments and a template for Energy Performance Contract.
- SEAI has developed and delivered a training programme for EPC project facilitators, which significantly contributes to the training of qualified experts who can assist businesses that wish to implement energy efficiency measures through an EPC.
- **Weaknesses:**
 - ESCO market is still developing, with a focus on single-technology solutions like lighting upgrades.
 - Limited focus on integrating advanced technologies like smart meters and building automation systems.
 - The Guide to Energy Performance Related Payments and a template for Energy Performance Contract provided by SEAI do not consider explicitly the deployment of energy performance contracts in rented commercial properties.
- **Drivers:**
 - Government support
 - Research & development in energy efficient technologies.
 - Demonstration of successful ESCO project case studies
 - Guide and template for EPC made available by SEAI
 - SmartSPIN demonstration at 30 Herbert Street, Dublin will show how to deploy a performance-based smart energy service in a rented office building, likely determining a replication by means of other similar projects.
- **Barriers:**
 - Lack of appropriate form of financing
 - Inexperience of actors
 - Perceived business and technical skills
 - Perceived complexity of Energy Performance Contracting was perceived, and even higher complexity of EPC in the rented properties.
 - The EPC market in Ireland is still developing. The commercial rented properties suitable for EPC are a subset of the whole market. Because of limited resources available, the policymaker might give limited attention to the commercial rented sector, deciding to concentrate on promoting the EPC scheme in general, without addressing the specific requirements of the rented properties.

Policy Recommendations for Ireland:

- **Promote Multi-Technology Solutions:** Encourage ESCOs to offer comprehensive SES packages that combine various energy-saving measures and smart technologies.
- **Support Innovation:** Develop funding mechanisms for pilot projects exploring the use of AI and data analytics in building energy management.
- **Expand Financial Instruments:** Develop innovative financing models like loan guarantees or performance-based financing to attract private investment and cater to projects with varying payback periods.

¹ <https://www.seai.ie/business-and-public-sector/business-grants-and-supports/energy-contracting/>



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- **Enhance Technology Integration:** Encourage the deployment of smart meters, building automation systems, and data analytics tools by offering targeted financial incentives or streamlining permitting processes for projects integrating such technologies.
- **Capacity Building Initiatives:** Establish training programs and educational workshops to enhance the business and technical skills of ESCOs, building managers, and other stakeholders in the sector.
- **Public-Private Partnerships:** Foster public-private partnerships to leverage expertise and resources. Public entities can act as anchor clients, demonstrating the viability of ESCO projects and attracting private sector involvement.
- **Performance-Based Incentives:** Consider introducing performance-based incentives for ESCOs, linking a portion of their compensation to the verified energy savings achieved over a specific timeframe.
- **Standardization and Best Practices:** Develop a central platform for compiling best practices and standardized approaches to project development, measurement, and verification (M&V) of energy savings. This can minimize transaction costs and improve overall project efficiency.
- **Expand Awareness Campaigns:** Tailor awareness campaigns to address the specific needs of different stakeholder groups. For example, target building owners with information on cost savings and return on investment, while educating tenants on energy-efficient practices within their leased spaces.
- **Develop a Guide about Energy Performance Contracting in Commercial Rented Properties:** The policymaker could develop a new guide describing a suitable business model and the related arrangements between ESCO, building owner and renters, which enable to overcome the split incentive issue in commercial rented properties, thereby contributing to make energy performance related payments an appealing means for improving energy efficiency in such rented properties. The guide could show examples of successful application of the EPC-type business model to projects of different sizes tailored to different typologies of commercial buildings, e.g., ranging from office to retail buildings. SmartSPIN's results could be conveniently leveraged to develop such a guide.
- **Develop a Contractual EPC Template specific for Commercial Rented Properties:** A version of the national template for Energy Performance Contract suitable for rented properties could be created considering the learnings from SmartSPIN and the template for the smart energy service included in (SmartSPIN, D3.5), thereby facilitating the deployment of energy performance contracts in rented properties of the commercial sector. The contractual template for rented buildings should include a clause that allows the building owner to recover part of the costs associated with the investment in energy efficiency measures as it has been shown in (SmartSPIN, D3.5), in that way overcoming the split incentive issue. The template should be flexible to allow different clauses that apply to the tenants, depending on their level of engagement with the energy efficiency project and the energy/non-energy benefits which will be achieved by them (e.g., as it is shown in the factsheets included in SmartSPIN D6.5).
- **Strengthen the role of the EPC project facilitator:** Specific training content could be developed for facilitators dealing with EPC projects in commercial rental buildings. EPC facilitators with specific expertise in EPC implementation in rental properties could effectively support the decision-making process of ESCOs, building owners and tenants in relation to the setup of a performance-based smart energy service and help them determine the appropriate contractual arrangements.

Spain



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ESCO market in Spain is in developing stage and growing slowly since 2015. Smart energy services implementation is at the very starting phase in Spain. No exact official data has been released regarding the size of Spanish ESCO market. Although there are three national service associations established in Spain: Association of Maintenance Companies (AMI), Association of Energy Service Companies (ANESE) and Association of Energy Efficiency Companies, these associations do not invest in energy performance.

- **Strengths:**

- Growing ESCO market with a mix of public and private players.
- The National Energy and Climate Plan (NECP) sets ambitious energy efficiency targets and identifies ESCOs as key players to achieve the set target.

- **Weaknesses:**

- Lack of standardized contract templates.
- Limited information on available financing instruments for ESCOs and building owners
- There is no support for small ESCOs that cannot easily access finance and have no sufficient financial strength to finance projects using their own capital.

- **Drivers:**

- SmartSPIN demonstration at Centro Comercial Plenilunio and Centro Comercial La Gavia in Madrid, will show how to deploy a performance-based smart energy service in large shopping centers with multiple rented retail units, determining a replication by means of other similar projects.
- Increase in energy prices.
- Guaranteed energy saving.
- Customer demand.
- Effective ESCO legislation, such as the [Royal Decree Law 6/2010](#), that promotes the role of the ESCOs and introduces provisions in the regulatory framework for public sector contracts which enable to accelerate the procurement processes of public administrations involving ESCOs.

- **Barriers:**

- Lack of trust about the EPC business model and ESCOs, which is mainly determined by lack of knowledge of successful ESCO projects among the potential customers.
- Lack of financing. The credit risk is a significant barrier faced by national commercial banks, which determines an insufficient offer of financing schemes suitable for ESCO projects².
- ESCO contracts are too complicated and have a too long duration, which discourages potential customers as they consider them as high-risk contracts. The total average ESCO contract duration in Spain is about 8 years (7 years in the private sector and 10 years in the public sector)³. This is a significant barrier especially for the commercial rented sector.
- High transaction costs discourage both ESCOs and potential clients from undertaking an EnPC project; especially small projects are often seen as not worthwhile.
- Lack of governmental support. Numerous subsidy programs available in Spain do not account for ESCOs as a beneficiary.

² <https://www.bpie.eu/wp-content/uploads/2020/10/BPIE-AmBIENCe-Factsheet-Spain-06201.pdf>

³ <https://c2e2.unepccc.org/wp-content/uploads/sites/3/2022/09/spanish-esco-market-trends-and-barriers.pdf>



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- Lack of standardization, e.g. measurement and verification protocols are not sufficiently standardized and trusted.

Policy Recommendations for Spain:

- **Further Disseminate the ESCO model:** the dissemination of successful ESCO projects where investments generated sufficient revenues to payback the financing should be continued and intensified among the potential end users of the ESCO services.
- **Standardize Contracts:** Develop national templates for SES contracts that address key issues like cost allocation, performance guarantees, and data ownership.
- **Standardize Measurement & Verification Tools:** the IPMVP protocol has been translated in Spanish and provides a conceptual framework for measuring, evaluating, and reporting energy savings achieved in ESCO projects. The protocol may be leveraged to implement standardized M&V tools which are trusted by stakeholders. Guidelines for carrying out M&V could be developed, building on the best practices identified in ESCO projects.
- **Facilitate Financing:** Partner with financial institutions to design loan programs with attractive terms for ESCO projects in commercial buildings.
- **White certificates:** Create a white certificate scheme. White certificates are documents which certify that a certain reduction of energy consumption has been achieved. The white certificates are tradable and combined with an obligation to obtain a target amount of energy savings.
- **Tax incentives:** Schemes which promote investment in energy efficient products and equipment or link energy savings to tax reliefs,
- **Energy Efficiency Guarantee Fund:** Implement a Guarantee Fund to support energy efficiency projects through Energy Performance Contracting (EPC)⁴,
- **EPC Templates:** Prepare and publish EPC templates (buildings) for public procurements,
- **National Energy Efficiency Fund (FNEE):** Use the Spanish FNEE⁵ to promote EPCs,
- **Public Support:** Public assistance through programs for SMEs for the execution of energy audits and the implementation of identified energy efficiency measures.

Greece

The energy service market in Greece is in quite an embryonic stage although having started to foster in the late 1990s. Since then, there hasn't been much development in this market and has become stagnant due to economic instabilities. Most of the organizations lack enough capital to invest in availing energy efficiency services. Greece has scored 1 out of 10 regarding its maturity in Smart Energy Services. A national Register of Energy Services Businesses (ESB), maintained by the Directorate of Energy Policies and Energy Efficiency of the General Secretariat of Energy and Mineral Raw Materials of the Ministry of Environment and Energy, exists in Greece and ESCOs can register there voluntarily. There are four different categories: A1, A2, A3 and B. Category A includes all companies in the ESCO Registry, whereas category B includes all natural persons in the ESCO Registry. Sub-category A1 includes the companies that have implemented or have been implementing projects with a total budget of at least EUR 300 000.00 in the last five years. Sub-category A2 includes the companies that have implemented or have been implementing projects with a total budget of at least EUR 1 000 000.00 in the last five years. Sub-category A3 includes all the companies that are not included in sub-categories A1 or A2.

⁴ <https://www.iea.org/policies/1358-energy-efficiency-guarantee-fund>

⁵ <https://www.idae.es/en/support-and-funding/national-energy-efficiency-fund>



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- **Strengths:**
 - Two models of Energy Performance Contracts (EPC) have been developed by Directorate for Energy Policy and Energy Efficiency:
 - a) Model of guaranteed performance EPC
 - b) Model of shared benefit EPC
 - National [ESCO registry](#) helps identify qualified service providers.
- **Weaknesses:**
 - ESCO market is underdeveloped due to economic instability and limited access to financing.
 - Focus on conventional energy efficiency measures (building insulation upgrades) rather than advanced SES.
 - Economic stagnation and limited confidence of investors⁶.
 - Limited number of ESCOs registered in the national registry that have implemented and/or run a rather limited number of EnPC projects.
 - ESCOs lack equity and have a limited ability to repay a loan to a bank.
 - Many ESCOs have modest capacity to manage complex EnPC projects.
 - Investments in EnPC projects are small.
- **Drivers:**
 - SmartSPIN demonstration at i4G building complex near Thessaloniki will show how to deploy a performance-based smart energy service in two interconnected rented office buildings, determining a replication by means of other similar projects.
 - High energy price.
 - EEO targets.
 - Offering financial support/incentives for energy efficiency upgrades.
 - Guaranteed energy savings.
- **Barriers:**
 - Economic uncertainty.
 - Lack of financing.
 - Contracts are too complicated.
 - Unclear legislative framework.
 - Lack of standardization.
 - Lack of trusted verification and measurement tools.
 - Lack of transparency and trust by potential end users.

Policy Recommendations for Greece:

- **Financial De-risking Measures & Develop Innovative Financing Mechanisms:** Implement loan guarantee schemes or tax breaks to incentivize private investment in ESCO projects.
- **Focus on Smart Technologies:** Develop policies that support the rollout of smart meters, user friendly energy management and monitoring platforms and encourage the integration of renewable energy sources in commercial buildings.
- **Facilitate Access to EU Funding:** Streamline processes for accessing EU funding initiatives that support energy efficiency investments. Provide technical assistance to ESCOs and building

⁶Frangou, M., Aryblia, M., Tournaki, S., & Tsoutsos, T. (2018). Renewable energy performance contracting in the tertiary sector Standardization to overcome barriers in Greece. *Renewable Energy*, 125, 829-839.



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owners/managers in navigating application procedures.

- **Public Sector Leadership:** Encourage public institutions to act as anchor clients by undertaking ESCO projects. This demonstrates the viability of the model and attracts private sector participation.
- **Develop certification, validation, and assessment tools:** Such tools are needed to facilitate the verification of the business case and the bankability of the projects and will ease the access to third-party financing.

The Netherlands (Benchmark Case)

The energy service market in the Netherlands is at an advanced level and stimulated by a political framework. The ESCO market in the Netherlands has grown since 2015 with supportive national legislations on Smart Energy Services. The government of The Netherlands has already issued a list of energy efficiency measures for buildings, facilities and processes

- **Strengths:**
 - Strong political support with clear energy efficiency regulations and financial incentives like the Energy Investment Allowance (EIA).
 - Advanced ESCO market offering a variety of services, including flexibility services and integration of AI for energy management.
 - Focus on fostering a prosumer market where building owners can generate and trade energy.
 - Advancement of technology diffusion for the energy service market in the Netherlands is relatively high compared to other European countries.
- **Weaknesses:**
 - Several financial, legislative, behavioral and informational barriers persist and hinder a further growth of the Dutch EnPC market.
 - Many energy efficiency projects are eventually not implemented in industry because of limited CAPEX availability.
 - Several businesses implement only projects with very a short payback time (e.g., less than 2.5 years) and therefore the energy efficiency gains that projects with a longer payback could deliver are often not achieved⁷.
 - In the public sector, despite its maturity⁸, the EPC market is rather stationary (i.e., it is developing more slowly than in other countries). The government could better stimulate the demand for ESCO services by promoting more demonstration projects⁹.
- **Drivers:**
 - Energy cost reduction.
 - Decarbonization of grid and heating sector.
 - One stop shop solution.

⁷ <https://www.6-25.nl/wp-content/uploads/2020/12/FME-Whitepaper-625-website.pdf>

⁸ Energy Performance Contracting in the Public Sector of the EU – 2020,

https://publications.jrc.ec.europa.eu/repository/bitstream/JRC123985/jrc123985_online_br_2_1.pdf

⁹

<https://studenttheses.uu.nl/bitstream/handle/20.500.12932/12572/Afstudeerscriptie%20definitieve%20versie%20%28PUBLIEK%29%20-%20Roel%20Vreken.pdf>



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- An effective energy efficiency policy framework, e.g., the Energy Saving Obligation¹⁰, which applies to business locations in the Netherlands that use at least 50,000 kWh of electricity or 25,000 m³ of natural gas (or an equivalent) per year, prescribes to install every energy saving measure with a payback period of five years or less.
- **Barriers:**
 - High cost of projects and high cost of transactions (due to lack of standardisation).
 - Lack of trust in ESCO industry, e.g., municipalities have concerns about outsourcing their energy management processes and are often reluctant to enter an EnPC project¹¹.
 - Complex ESCO contract and lack of standardised contracts for EnPC.
 - Lack of information and complex decision-making procedures.
 - Other types of contracts are preferred to EnPC, especially in the public sector, such as public-private partnership.
 - High tendering complexity due to the combination of energy services with other services such as maintenance of buildings, renovation or construction of new buildings.

Key Learnings from Netherlands:

- **Policy Framework and Stability is Crucial:** Consistent government support and clear and effective regulations create a favorable and predictable environment for ESCO investment.
- **Embrace Technological Innovation:** Integration of advanced technologies like smart meters, smart grid, peer-to-peer energy trading, battery storage, energy management system, renewable energy system and AI can significantly improve energy efficiency and cost savings.

4 ENABLING POLICY RECOMMENDATIONS FOR EUROPE

Based on all the piloting countries analyses (*Spain, Greece, and Ireland*) and learnings from the *Netherlands (benchmark case)*, we can extract a couple of policy recommendations for promoting SES in commercial rented properties across Europe:

4.1 Financing Mechanisms & models

Energy Performance Contractual Template for Rented Commercial Buildings

Existing EPC templates do not account for the case where the commercial property is rented. The key learning point from SmartSPIN is that the standard EPC templates which apply to non-rented buildings must be modified to enable to solve the split incentive issue arising with the rented scenario. Making suitable templates available to ESCOs and their potential clients is fundamental to effectively encourage the uptake of smart energy services in the commercial rented sector. The contractual templates that will be adopted for deploying EPCs in commercial rented properties must be endorsed by policymakers such as the Governments or the National Energy Authorities and widely disseminated through institutional websites and effective communication campaigns. Therefore, a primary recommendation for the policymakers in Spain, Ireland and Greece is to work out a national standard energy performance contractual template for the commercial rented sector leveraging the SmartSPIN template developed in (SmartSPIN, D3.5). These templates should support the Guaranteed Savings Model (e.g., Figure 1) and specifically the cases where the ESCO or the building owner provides the

¹⁰ <https://english.rvo.nl/topics/energy-saving-obligation/what-energy-saving-obligation>

¹¹ <https://publications.jrc.ec.europa.eu/repository/bitstream/JRC106625/kjna28602enn.pdf>



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project finance. Such cases have been illustrated in the infographics included in (SmartSPIN, D6.5).

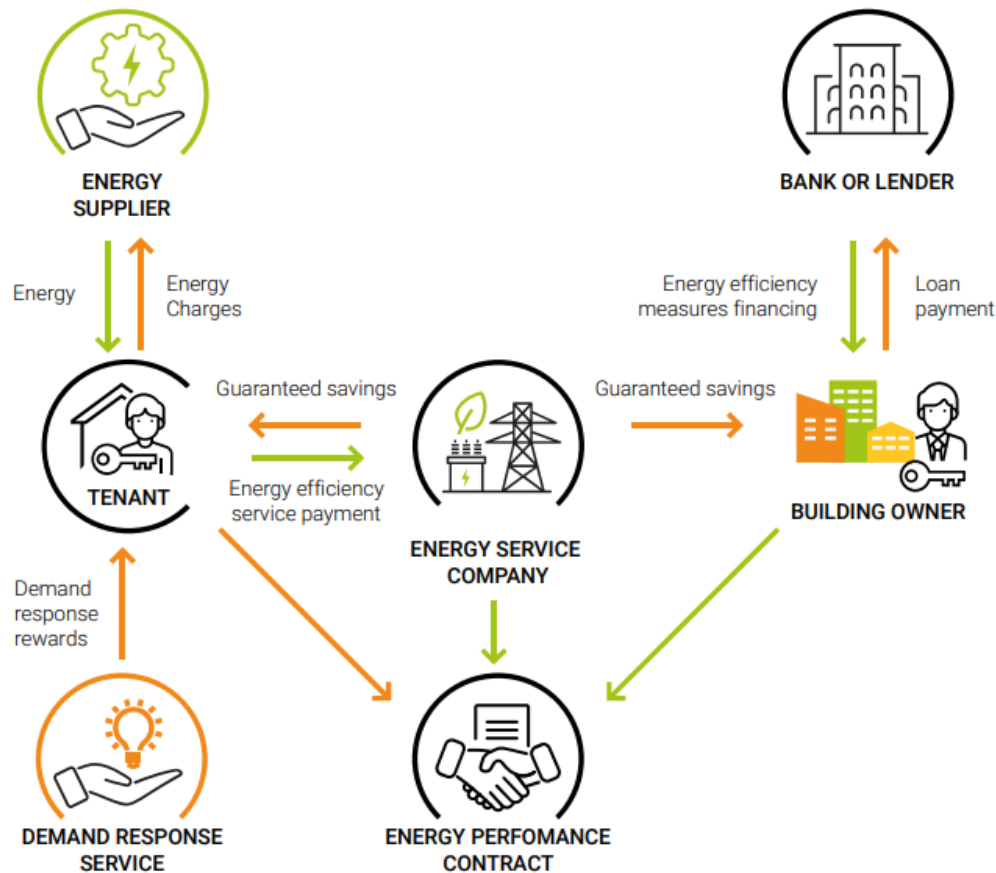


Figure 1: SmartSPIN Business Model for EPC in the commercial rented sector

On-Bill Financing

On-bill financing is a mechanism of obtaining access to capital to fund building energy efficiency upgrades, where repayments are made through the energy bill (Figure 2). On-bill financing allocates the financing responsibility to the utility and maintains the loan attached to the property, thereby offering an appropriate solution to overcome temporal split incentives. It can also avoid the need to obtain upfront capital to cover the cost of buying energy efficient equipment, which can be beneficial to the landlord. The energy utility will typically aim to make monthly payments equal to or less than the energy savings achieved through the upgrade, which means that the tenant will be no worse off financially. While an on-bill finance scheme can address both owner-occupied and rented properties, Bird & Hernandez (2012) stressed the need for a careful design of such schemes specifically targeting rented properties. A successful on-bill finance program should create incentives for all stakeholders: tenants (savings), landlords (savings/investment), utilities (protection/decoupling) and by extension, banks. As high transaction costs linked to the realization of investments deter landlords from upgrading their rented property, the authors proposed a small incentive to be considered for landlords of rented properties in the private and/or social housing sectors. If landlords are allowed to get an incentive in the form of a small share of savings, covering the transaction costs attached to the upgrade, this could trigger participation in on-bill programs on behalf of landlords.





On-Bill Financing

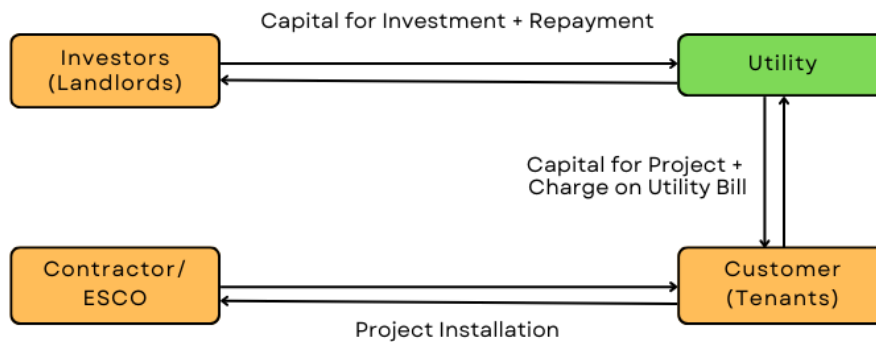


Figure 2: On-Bill financing scheme

Property Assessment Clean Energy (PACE)

Property Assessed Clean Energy (PACE) is a means of financing energy efficiency upgrade using specific bonds offered by municipal governments to investors (Figure 3). As in the case of on-bill finance, they can provide a solution to the temporal split incentive problem. With PACE, the difference is that governments use the funds raised by these bonds to loan money towards energy efficiency upgrades in residential and commercial buildings. The loans are repaid over the assigned term – typically 15 or 20 years – via an annual assessment on their property tax bill. The long repayment term attached to PACE programs allows for investments with long payback times to be considered in the upgrade. This additional tax assessment is placed on the property rather than the property owner, which means that PACE assessments are also transferable and can help overcome the split incentives between tenants and owners in commercial and multi-tenant residential buildings. PACE programs are secured by a senior line on the owner’s property, which avoids repayment security to be attached to the borrower’s creditworthiness and is therefore more attractive to financiers and borrowers alike.

Property Assessment Clean Energy (PACE)

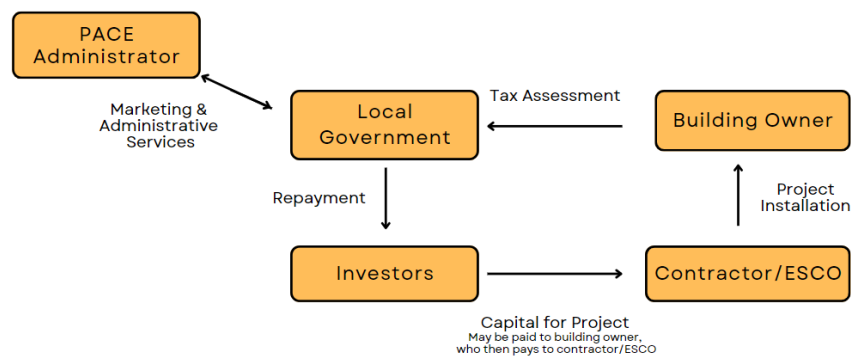


Figure 3: Property Assessment Clean Energy scheme



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Financial and fiscal incentives

Energy-efficiency incentives from governments, energy suppliers and other sources are intended to overcome upfront costs barriers. They are, however, not designed to meet the unique challenges faced by multi-unit buildings or rented properties. A survey carried out by the JRC in 2013 showed that a large share of financial instruments targeted homeowners, while many schemes whose eligible recipient list included multi-apartment or rented units, did not use financing options that were carefully designed to meet the specific needs of these segments of the building sector (Economidou & Bertoldi, 2014). Various financial and fiscal incentive schemes can be designed to support specific segments of the building sector in which involved parties would refrain from improving the energy efficiency of the building under normal circumstances. For example, in the Netherlands the state plans to make available a €400 million subsidy for landlords in the rental sector for investments in energy efficiency for the period 2014–2017 with the aim of contributing to the objectives of the Energy Saving Agreement for the Rental Sector.

4.2 Information Tools

Energy labeling

Building energy labeling is a powerful disclosure tool which provides potential buyers, tenants, financiers, and other real estate actors with information on a property's energy performance. It offers the possibility to make more informed decisions during sale and lease transactions and overcome, to a certain extent, information asymmetry issues, which typically exacerbate the split incentive barrier. Through this information, the actor can make comparisons with other similar properties of interest, gain a better understanding of the holistic costs associated with a property, and identify where and how to invest in energy efficiency upgrades. In the EU, the main policy framework through which this information tool has been introduced is the Energy Performance of Buildings Directive (EPBD, Directive 2002/31/EC). Under this Directive, all Member States were required to set up the mechanisms and establish systems of certification of the energy performance of buildings which make it possible for owners and tenants to identify the energy class of their building (Figure 4) together with recommended improvement measures on how to further increase its energy performance. These mandatory Energy Performance Certificate (EPCs) schemes set up by the Member States were further strengthened with additional requirements, introduced with the recast of the EPBD (Directive 2010/91/EU). EPCs are currently among the most important sources of information on the energy performance of buildings, which, historically, has been very hard to obtain. Available at the point of lease or purchase, they can guide a potential owner or tenant during their decision-making process, can be used as a tool for calculating the pre- and post-performance of a renovated building and predict energy cost savings as a result of an energy efficiency upgrade.





Figure 4: Energy Performance Certificate scheme

4.3 Regulatory Framework

Minimum Energy Performance Standards (MEPS)

Mandating minimum standards for rented properties is a powerful measure which can ensure that very inefficient buildings undergo energy efficiency upgrades or are simply removed from the rental market (Figure 5). This can primarily protect social tenants or tenants facing efficiency-related split incentives, who would otherwise have no power to negotiate an energy efficiency upgrade in their rented properties. Under such regulation, the responsibility rests with the owners, who are called to ensure a reasonable level of energy efficiency in rental units, thereby sending a clear signal to the market. Based on the same motivation behind minimum standards for equipment set by the Eco-design directive (Directive 2009/125/EC), this can apply to both residential and commercial properties, and can target both private and social landlords. The measure can complement existing requirements set in the building codes for minimum energy performance levels which currently apply only for new and major renovated buildings.

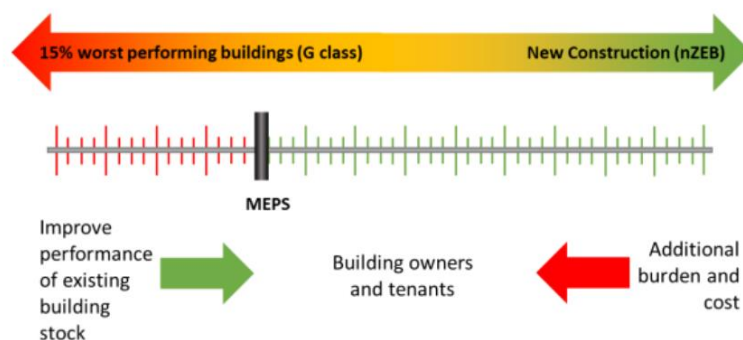


Figure 5: Minimum Energy Performance Standards¹²

Revisions in rent acts and condominium acts

¹² Note. *Minimum energy performance standards (MEPS) in the residential sector*. European Economic and Social Committee. (2022, November 11). <https://www.eesc.europa.eu/en/our-work/publications-other-work/publications/minimum-energy-performance-standards-meps-residential-sector>



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Improving the rent and condominium acts is essential for encouraging investments in energy efficiency in rented properties or multi-unit buildings. Revisions to lift barriers in regulations that inhibit the adoption of energy efficiency in these segments of the building sector need to be considered in order to support the dialogue between involved parties and introduce flexibility that would facilitate voluntary agreements between the tenant and landlord (e.g. green leases). These should lay out a legal framework and specific conditions for the redistribution of investment cost and energy cost savings of an energy efficiency upgrade between the landlord and the tenant or between multiple owners. This should be accompanied with guidelines on cost- and benefit-sharing practices. For example, when an energy efficiency upgrade is undertaken by a landlord, a contribution from the saved energy costs can be asked from the tenant, provided that both the landlord and tenant directly benefit from the undertaken work. Additional issues that need to be addressed include the extent to which the rent can be increased and conditions under which the tenants can reject rent rises. Condominium laws should also better define the democratic rules with respect to changes and maintenance work undertaken in the building and the roles of all actors involved including the owners. A single owner should not be allowed to stand in the way of the improvements, and majority-based rules should be adopted.

4.4 Voluntary approaches

Green leases

As discussed previously, traditional forms of lease create asymmetries in the relationship between landlords and tenants and therefore do not set the ground for energy efficiency investments. Green leases can bridge these differences by splitting costs and benefits between the parties in such a way that both parties can benefit from an energy efficiency upgrade (Figure 6). Given that the necessary legislative foundations exist (see section on rent and condominium acts), they can bridge the differences between landlords and tenants in a way that both parties can gain from an energy efficiency upgrade. Through a green lease, a clause or separate agreement is made between the concerned actors that allows a property owner to raise the rent to finance energy efficiency improvements to a property. As in the case of on-bill financing model, green leases assume that energy cost savings should exceed finance charges and should be set at a percentage of monthly energy cost savings to the tenant. The cost recovery, typically done by amortization, can be based on the actual or predicted energy savings. This type of leases has gained increasing popularity in the past few years in the U.S. and Australia. They are appropriate for large, commercial buildings rather than small units such as houses. Despite their potential, green leases are not currently widely used in Europe. A survey carried out by the European Property Federation highlighted that there are still various regulatory and non-regulatory hurdles that inhibit a wider use of green leases in Europe. Sharing standard green lease guidelines can increase awareness among key interest groups. The public rental sector can also lead by example by adopting green leases for their rented premises.



Figure 6: Green lease¹³

5 IDENTIFICATION OF THE DIFFERENT POLICY MAKERS BY THEIR ROLE IN THE ENERGY MARKET TRANSITION AND BY THEIR INFLUENCE ON POLICY DEVELOPMENT AT NATIONAL AND EU LEVELS

The energy efficiency transition towards a more sustainable and secure energy future involves a complex interplay between various actors and policy makers. Each one plays a distinct role in the energy market transition between market forces, technological advancements, and environmental imperatives. Considering the technical aspect of their influence is crucial for comprehending the symphony of policy development at both national and EU levels.

1. National Policy Makers:

- **National Governments and multilateral institutions:** These entities act as the conductors, setting the national energy and climate crisis objectives through legislation. They establish national renewable energy targets (e.g., percentage of electricity from renewables by a specific year) and carbon pricing mechanisms (e.g., carbon cap and trade systems) to incentivize market actors towards clean energy adoption. Additionally, they allocate budgetary resources for research and development (R&D) of innovative low-carbon technologies like grid-scale energy storage.
- **National Regulatory Authorities (NRAs):** These independent bodies serve as the system operators, ensuring the smooth functioning and stability of the electricity grid. They define technical grid codes that govern the interconnection and operation of renewable energy sources with variable generation profiles (e.g., solar, wind). NRAs also establish market rules for ancillary services (e.g., frequency regulation, reactive power) crucial for maintaining grid stability in a system with a decreasing reliance on dispatchable fossil fuel generation.

2. European Union Policy Makers:

¹³ Note. *Green lease*. (2024). Retrieved from <https://www.savills.com.au/services/sustainability-and-esg-services/green-lease.aspx>

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- **European Commission:** The Commission acts as the lead composer, proposing new EU-wide legislation related to energy and climate crisis. These directives and regulations establish minimum requirements and overarching goals for member states, such as harmonized renewable energy targets and mandatory energy efficiency standards for buildings. Additionally, the Commission manages funding programs like the Innovation Fund, which supports large-scale demonstration projects for innovative low-carbon technologies across the EU.
- **European Parliament and Council of the European Union:** These entities function as the reviewing bodies. The Parliament debates and votes on proposed EU energy legislation, influencing the final legal framework through amendments. The Council, composed of national ministers from member states, negotiates and approves EU energy legislation alongside the Parliament. This bicameral system ensures national interests are considered while maintaining a unified approach towards the energy transition within the EU.

3. Influence on Policy Development:

- **National vs. EU Levels:** National policy makers have primary control over their national energy mixes, grid investment priorities, and specific market designs (e.g., pool-based vs. capacity markets). However, EU policies set the overall direction for the transition by establishing minimum requirements and ambitious goals, exerting a top-down influence on national policies.
- **Lobbying and Stakeholder Engagement:** Various stakeholders, including energy companies, consumer groups, environmental NGOs, and research institutions, can lobby policy makers at both national and EU levels to influence policy development. The effectiveness of their lobbying depends on their resources, political connections, and the strength of their arguments.
- **International Agreements:** Global agreements like the Paris Agreement create international pressure on national and EU policy makers to accelerate the transition towards clean energy.
- **Market Modeling and Simulations:** Policy makers at both national and EU levels utilize sophisticated market modeling tools to assess the potential impact of different policy options on factors like electricity prices, grid stability, and greenhouse gas emissions. These simulations inform the design of effective policy instruments to achieve the desired outcomes for the energy transition.
- **Cost-Benefit Analysis and Techno-Economic Assessments:** Policy decisions often involve trade-offs between economic considerations, environmental objectives, and social impacts. Technical experts play a crucial role in conducting cost-benefit analyses and techno-economic assessments to evaluate the feasibility and cost-effectiveness of various policy options.

Additional Policy Actors:

- **Local Authorities:** Cities and municipalities can play a vital role in the transition by implementing local energy plans, promoting energy efficiency in buildings, and supporting the development of local renewable energy sources.
- **International Organizations:** Organizations like the International Renewable Energy Agency (IRENA) provide valuable knowledge, data, and policy recommendations to support the global energy transition.
- **Financial Instruments:** Financial Instruments (FIs) are structures that enable ESIFs to be used to offer financial products such as loans, equity and guarantees which can support projects that promote European policy aims.





6 METHODOLOGY FOR IDENTIFYING AND ADDRESSING BARRIERS ALONG WITH THE ROLES OF POLICY MAKERS AND STAKEHOLDERS

The energy efficiency transition towards a clean energy future presents unique challenges for the commercial rented sector. Landlords, tenants, and other stakeholders face complexities regarding the barriers hindering the adoption of Smart Energy Services (SES) and energy efficiency measures. A robust methodology, coupled with targeted stakeholder engagement, is crucial for navigating these hurdles.

Methodology:

1. Stakeholder Engagement and Data Collection:

- **Organize Workshops and Focus Groups:** Organize workshops with landlords, tenants, building managers, ESCOs, financial institutions, and consumer advocacy groups to communicate the needs and available options for the adoption of SES. Their discussions should identify barriers and drivers from diverse perspectives.
- **Surveys and Data Analysis:** Conduct surveys amongst stakeholders to understand their concerns and priorities regarding SES adoption. Analyze historical and current data on building energy consumption by putting for instance smart meters in the buildings, maintenance records, and rental trends to identify areas for improvement. Ideally, this analysis should take place for enough time to extract data as accurately as possible.

2. Barrier Categorization and Prioritization:

- **Develop a Barrier Classification Framework:** Classify barriers based on their nature:
 - **Financial:** Upfront costs for SES installations, limited access to financing for landlords, and concerns about cost sharing between landlords and tenants.
 - **Technical:** Lack of technical expertise among building owners/ managers, compatibility issues with existing building systems, and limited data availability on building energy performance.
 - **Regulatory:** Unclear regulations or lack of incentives for SES adoption, complex permitting processes for building upgrades, and inadequate tenant rights regarding energy efficiency measures.
 - **Informational:** Low awareness of the benefits of SES, difficulty in assessing the return on investment (ROI) for energy efficiency upgrades, and limited access to reliable information on available technologies.
- **Prioritize Barriers:** Based on stakeholder input and data analysis, prioritize barriers based on their urgency and potential impact on the pace of SES adoption. Calculate the cost of overcoming them and the feasibility of effective mitigation strategies.

3. Policy Instrument/ Design Selection:

- **Match Barriers with Solutions:** Develop targeted policy instruments (contracts, regulations) to address prioritized barriers. Examples include:
 - **Financial Instruments:** Tax breaks for landlords investing in SES, loan guarantees for ESCOs, and grants for building energy audits.



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- **Regulatory Instruments:** Introduce mandatory Minimum Energy Performance Standards (MEPS) for commercial buildings, streamline permitting processes for SES projects, and establish clear cost-sharing mechanisms between landlords and tenants.
- **Informational Instruments:** Launch public awareness campaigns on the benefits of SES, develop standardized reporting frameworks for building energy data, and create online resources for building owners and tenants.

4. Implementation:

- **Develop Implementation Plans:** Create detailed plans outlining timelines, responsible entities, and budget allocations for implementing the chosen policy instruments.
- **Communication and Collaboration:** Maintain open communication channels with stakeholders throughout the process. This allows for early identification of challenges and facilitates adjustments.
- **Capacity Building and Support:** Offer training programs for building owners/ managers on SES technologies and project management and provide educational workshops for landlords and tenants on energy-saving practices.

Roles of Stakeholders:

Policymakers:

- Lead stakeholder engagement and data collection initiatives.
- Develop the barrier classification framework and prioritize barriers based on national and EU goals.
- Design and implement targeted policy instruments, considering cost-effectiveness and market impact.
- Remove the persisting regulatory barriers that hinder the growth of the ESCO services markets. Make public procurement EnPC friendly, introducing criteria in public tenders that are attractive for ESCOs.
- Allocate resources for capacity building programs and support initiatives for stakeholders.
- Monitor and evaluate the effectiveness of implemented policies and adapt them as needed.

Landlords:

- Participate in workshops and surveys to share their perspectives and concerns.
- Evaluate potential SES investments based on available financial incentives, ROI calculations and payback time of energy efficiency measures.
- Collaborate with ESCOs and tenants to implement effective cost-sharing agreements for SES projects.
- Upgrade building infrastructure to facilitate the integration of SES technologies.
- Act as a guarantor taking responsibility for financial obligations with the lender, when the ESCO cannot meet them, whenever possible.

Tenants:

- Participate in surveys and workshops to voice concerns and priorities regarding energy efficiency.



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- Advocate for transparent communication from landlords regarding building energy performance and potential cost savings from SES.
- Consider energy efficiency when choosing office spaces and adopt energy-saving practices within their leased units.
- Engage with landlord, building owner/manager and ESCO to enable the implementation and delivery of SES once that benefits have been clearly presented.

Building Managers:

- Play a crucial role in liaising between landlords, tenants and ESCO on SES projects.
- Collaborate with ESCO to develop and implement building energy management plans that optimize energy usage.
- Collaborate with ESCO to monitor and manage the performance of SES systems once implemented.

ESCOs:

- Collaborate with building owners to design and implement cost-effective SES solutions.
- Offer financing options and performance guarantees for SES projects. Combine grants for energy efficiency measures and loans (subsidized loans).
- Provide ongoing maintenance and technical support for installed energy efficiency measures and systems.

Financial Institutions:

- Develop innovative financing products for SES projects, such as loans for energy efficiency investments or energy efficiency mortgages, that provide additional funds as part of the mortgage, for the renovation of a newly purchased building.
- Partner with ESCOs to facilitate access to financing for landlords and tenants.
- Participate in workshops and provide insights on financial requirements, barriers and potential solutions.

7 CONCLUSION

Rented properties are an important sector that poses special challenges to overcome to improve their energy efficiency. The split incentives issue is considered the most important barrier between building owners and tenants, which prevents stakeholders from investing in the energy efficiency building sector. Whilst regional authorities realize the benefits of energy efficiency investments, further actions are required to change their behavior and ensure appropriate efficiency is targeted and achieved by decision-makers.

The issue is quite complex and involves several different policymakers and stakeholders to take into consideration. The measures can vary, and, in many cases, are linked to each other or require others as prerequisite. A wide range of policy responses exists that attempts to tackle split incentive problems in general or specific aspects of them. These responses can be categorized in two ways, as previously mentioned in this deliverable.



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First are the ones that function on a specialized contract basis (Tripartite EnPC, Green lease, PACE financing, On-bill financing). These contracts formulate an agreement which has been designed to overcome parts of split incentives. The second is via a more conventional way of policy design – the regulatory framework (MEPS, Revisions in rent acts and condominium acts). Regulatory approaches have great potential to be effective for overcoming split incentives but are frequently politically biased, which could be problematic in cases where voluntary participation is required.

The most effective approach to overcoming split incentives in rented properties likely involves a combination of these strategies. Regulatory frameworks, such as Minimum Energy Performance Standards (MEPS), can set baselines for energy efficiency, pushing landlords to make improvements. However, these regulations alone might not incentivize significant upgrades. This is where contractual approaches like green leases, tripartite EnPC, or on-bill financing can play a crucial role. By offering shared responsibility for energy use or spreading the cost of upgrades over time, these mechanisms can create a win-win situation for both landlords and tenants.

Successfully navigating this complex landscape requires a multi-pronged approach. Policymakers should work closely with stakeholders like building owners, tenant organizations, and the financial sector to develop and implement effective solutions. Educational programs can help raise awareness of the benefits of energy efficiency for both property owners and occupants. Additionally, fostering innovation in financing models and streamlining administrative processes can further incentivize participation in energy efficiency upgrades for rented properties. By implementing a combination of these strategies, regional authorities can provide their full support to landlords, tenants and ESCOs to overcome the split incentive barrier and unlock the full potential of energy efficiency in this critical sector.



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