RENONBILL

NATIONAL ROADMAPS FOR THE REPLICATION OF ON-BILL SCHEMES

Italy, Germany, Spain, Lithuania

2022 APRIL

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Abbreviations & Acronyms

AEV Asociación Española de Valoración (Spanish Valuation Association)

BAFA Bundesamt für Wirtschaft und Ausfuhrkontrolle (German Federal Office for Economic Affairs and Export Control)

BEG Bundesförderung for effiziente Gebäude (Federal funding for efficient buildings)

CAEs Certificado de Ahorros Energéticos (Energy Savings Certificate)

DEE Directiva de Eficiencia Energética (Energy Efficiency Directive)

DSO Distribution system operator

EPC Energy Performance Contracting

IDAE Instituto para la Diversificación y el Ahorro Energético (Institute for the Diversification and Saving of Energy)

KfW Kreditanstalt für Wiederaufbau (German Development Bank)

MITERD Ministerio para la Transición Ecológica y el Reto Demográfico (Ministry of Environment)

MITMA Ministerio de Transportes, Movilidad y Agenda Urbana (Ministry of Transport, Mobility and Urban agenda)

OBF On-bill financing

OBR On-bill repayment

OBS On-bill scheme

PREE Programa Rehabilitación Energética de Edificios (Building Energy Renovation Programme)

PRTR Plan de Recuperación, Transformación y Resilencia de España (Plan for the Recovery, Transformation and Resilience of Spain)

PVPC Precio Voluntario para el pequeño consumidor (Voluntary Price for the small consumer)

TOB Tariffed on-bill

1 Introduction

Background

In order to achieve the European Commission's long-term energy vision for 2050, it is necessary to dramatically increase the yearly buildings renovation rate, i.e. from the current 1% (roughly, depending on the country) to at least 2.3%. Deep retrofits, leading to over 60% of primary energy savings, will therefore be critical. But, as these investments can be expensive, new and innovative ways of financing them are vital. On-bill schemes represent a key innovative way of leveraging private finance for energy renovation of residential buildings.

The RenOnBill project

The RenOnBill research and innovation project (May 2019 – April 2022) is co-financed by the European Commission's Horizon 2020 programme. The project's overall objective is to scale up investments towards residential building energy renovations by promoting the development and implementation of on-bill schemes based on the cooperation between energy utilities and financial institutions. On-bill schemes (OBS) refer to a tool for financing energy renovations by using the utility bill as a repayment vehicle. Such schemes bring the upfront costs of energy efficiency upgrades on the side of the building owner down to zero. While an energy utility makes the initial investment, the utility's customer repays this investment with a periodical payment on the utility bill.

The RenOnBill project is being implemented in four focus countries: Spain, Italy, Lithuania, and Germany. In each of these focus countries, project partners established national stakeholder platforms to inform the replication process of on-bill schemes at national level. In Spain, Italy, and Lithuania, three partner utilities formed part of the project consortium, providing hands-on insights into the particularities of replicating on-bill business models in their respective national context.

RenOnBill project partners

adelphi

BLUENERGY Energia per crescere

BPIE

creara ENERGY EXPERTS

EPTA PRIME

fenie energía

KAUNO ENERGIJA

LIETUVOS ENERGETIKOS INSTITUTAS

UNIVERSITÀ DEGLI STUDI DI GENOVA

What is the roadmap?

This roadmap for replicating on-bill schemes has been drawn up by the RenOnBill project team to analyse potential barriers to on-bill replication and propose solutions that can lead to a more conducive national framework for on-bill schemes. Thus, the roadmap disseminates knowledge about the replication potential of on-bill schemes for the European market beyond the duration of the RenOnBill project itself.

The objectives of this roadmap are to:

- ✓ Raise awareness for on-bill schemes;
- ✓ Disseminate knowledge on on-bill scheme replication in Europe, based on 3 years of research;
- ✓ Inform about different types of on-bill schemes;
- ✓ Point to the momentum for energy renovations in residential buildings that has started to build up at EU level;
- ✓ Lay out a path for the replication of on-bill schemes in the four RenOnBill focus countries Italy, Spain, Lithuania, and Germany;
- ✓ Explain relevant challenges and potential solutions for on-bill scheme replication in Italy, Spain, Lithuania, and Germany.

The roadmap is *not* a detailed guideline on how to develop an on-bill business model. For this purpose, the RenOnBill project published "On-bill business model development guidelines", providing a detailed methodology that energy utilities can follow for the launch of an on-bill programme. Also, the roadmap does not contain detailed information on the energy renovation markets in the four focus countries, since this information is provided in the report "The residential building renovation market in Germany, Italy, Lithuania, and Spain" (May 2020). Similarly, the report "Upscaling the residential sector with on-bill schemes – Replicability potential in the EU" (November 2020) offers a detailed analysis of ten potential on-bill frameworks for replication.

Recommendations for further reading

The report **"The residential building renovation market in Germany, Italy, Lithuania, and Spain"** (May 2020) provides a detailed analysis of the main data, drivers and challenges involved in the energy renovation of residential buildings in the four RenOnBill focus countries. Each country section goes through the definition and quantification of the country building stock, the main trends in the renovation, the regulatory framework, the potential impact of building energy renovation in the market and the financing schemes available at national level for building renovations. The report concludes with a section on the multiple benefits and key challenges to energy efficiency renovations.

The report **"Upscaling the residential sector with on-bill schemes – Replicability potential in the EU"** (November 2020) suggests ten business model frameworks applicable to the European context. Starting from the two general models "(standard) on-bill financing" and (standard) on-bill repayment), the report presents possible variations of on-bill schemes with different service infrastructures and different typologies of financial arrangements.

For utilities and other market participants that are interested in developing an on-bill offer for the energy renovation of residential buildings, the **"On-bill business model development guidelines"** (2022) provide practical guidance. The guidelines accompany utilities from the very beginning of the process, studying the national and local framework conditions and carrying out an examination of the utility's strategical preferences that will help to assess the feasibility of launching on-bill offers. Successively, the reader is invited to reflect on the advantages and disadvantages of on-bill scheme variations.

All information provided in the roadmap is based on the RenOnBill project's research between 2019 and 2021. Besides desk research, the project actively engaged with national stakeholder communities in Spain, Italy, Lithuania, and Germany to harvest and develop knowledge and insights from and with energy utilities, financial institutions, and other relevant actors. The continuous exchange was organised via interviews, a prototyping workshop, an online questionnaire, a roundtable, and bilateral calls. Moreover, the RenOnBill project regularly consulted the three partner utilities that are part of the consortium and its Advisory Board, thereby benefiting from critical external scrutiny.

Who is the roadmap for?

This roadmap aims to support policy makers, energy regulators and other representatives from the energy and financial sector to understand the replication potential of on-bill schemes and to influence decision-making with a view to innovative financing instruments for energy renovations in the residential building sector.

It will be a useful resource for energy utilities, financial institutions, policy makers, energy regulators, academia, and anyone interested in boosting the renovation rate of residential buildings in Europe with the help of innovative instruments to leverage private finance.

2 Getting started

2.1 Understanding the on-bill concept

The purpose of on-bill schemes (OBS) is to facilitate renovation projects that increase the energy efficiency of residential buildings. The need for initiatives supporting such interventions in residential buildings is undeniable: in the EU, residential buildings currently consume more than 25 percent of the EU's primary energy. The lack of energy efficiency in the majority of building stock presents a clear opportunity for climate action, but the implementation of such improvements in residential units has been historically slow. Energy efficiency renovations are often expensive, and homeowners regularly lack the funds to invest in these upgrades. Or, for rental properties, the owner of the building may have insufficient financial incentives to invest in energy efficiency since he or she is typically not responsible for paying energy bills. Furthermore, tenants commonly do not wish to invest in a property they do not own. An OBS can help alleviate and maybe even overcome these and many other barriers that frequently stand in the way of energy efficiency projects.

Under an OBS, a utility company finances a renovation or installation to improve energy efficiency in a building. The energy "end-user", typically the resident of the building or unit, repays the cost of the investment via their utility bill (thus, "on-bill"). Most OBS are designed according to the so-called "gold rule", i.e. to be "bill neutral", meaning the renovation results in energy cost savings that offset additional costs incurred from repaying the EE investments.

Actors involved in on-bill programmes gain in different ways: end-users (including those with lower income) benefit from a reduced energy bill and an upgraded property, while utilities have the opportunity to be leaders in green initiatives and comply with regulatory targets. In the case of more complex on-bill schemes, utilities are also able to share default risk of energy bills not being paid with cooperating financial institutions who in turn benefit from the existing relationships between utilities and their customers. Lastly and perhaps most importantly, on-bill programmes can benefit society by reducing greenhouse gas emissions from energy production.

"How are on-bill schemes different from Energy Performance Contracting?"

On-bill schemes and (Energy Performance) Contracting (EPC) models have in common (depending on the scheme/model) that they comprise energy efficiency investments for which the costs are initially covered by an energy service provider (e.g. an energy utility or dedicated ESCO) rather than by the end-user itself. Both types of schemes are also connected to the idea of "one-stop-shop" energy services offered to end-users.

However, while EPC typically goes along with the offer of an energy savings guarantee (e.g.: shared savings), such a guarantee is not generally a component in on-bill schemes. In fact, offering energy-savings guarantees in the residential sector is usually not considered attractive due to low investment volumes per intervention in the residential sector, and due to difficulties in controlling residential end-user's energy consumption behaviour.

While EPC thus focuses on energy efficiency investments in environments in which energy consumption can be controlled (e.g. public lighting, commercial buildings, industry), on-bill schemes can present a relevant alternative in segments where EPC reaches its limitations, i.e. in the residential building segment.

2.2 Different types of on-bill schemes

Based on the source of financing, there are two main mechanisms applicable to on-bill programmes: on-bill financing (OBF) and on-bill repayment (OBR). Within an **OBF** scheme, the renovation investment is provided and renovation costs are covered by the utility company with its own or public funds, while the end-user repays the renovation costs through the utility bill. In an OBF scheme, the utility's activities might be perceived as credit lending. OBR schemes, on the other hand, involve a third-party financing institution as a capital provider. In **OBR** schemes, the involved financial institutions can either transfer the capital via an escrow account[1] to the utility, or provide finance directly to the service provider that implements the energy efficiency measure.

Variants of on-bill repayment schemes include **OBRSPV**, **OBRM**, and **DSOF**.

In case of an **OBRSPV**, a Special Purpose Vehicle (SPV) is set up to operate the scheme. In this model, the "originators" (utility and renovation services provider) propose a bundle of projects to the SPV which evaluates their investment attractiveness, acquires capital from a financial institution and channels the capital towards the originators.

The **OBRM** model includes the presence of a "Master Servicer", which, differently to the OBRSPV is not an investor, but rather a service provider, possibly controlled by a state agency. The Master Servicer scrutinises the investment possibilities offered by the utility and manages various on-bill transactions in a market as a supervisory and intermediary body. The services of a Master Servicer must not be restricted to a single utility or financial institution, but offers these services to all interested utilities and financial institutions.

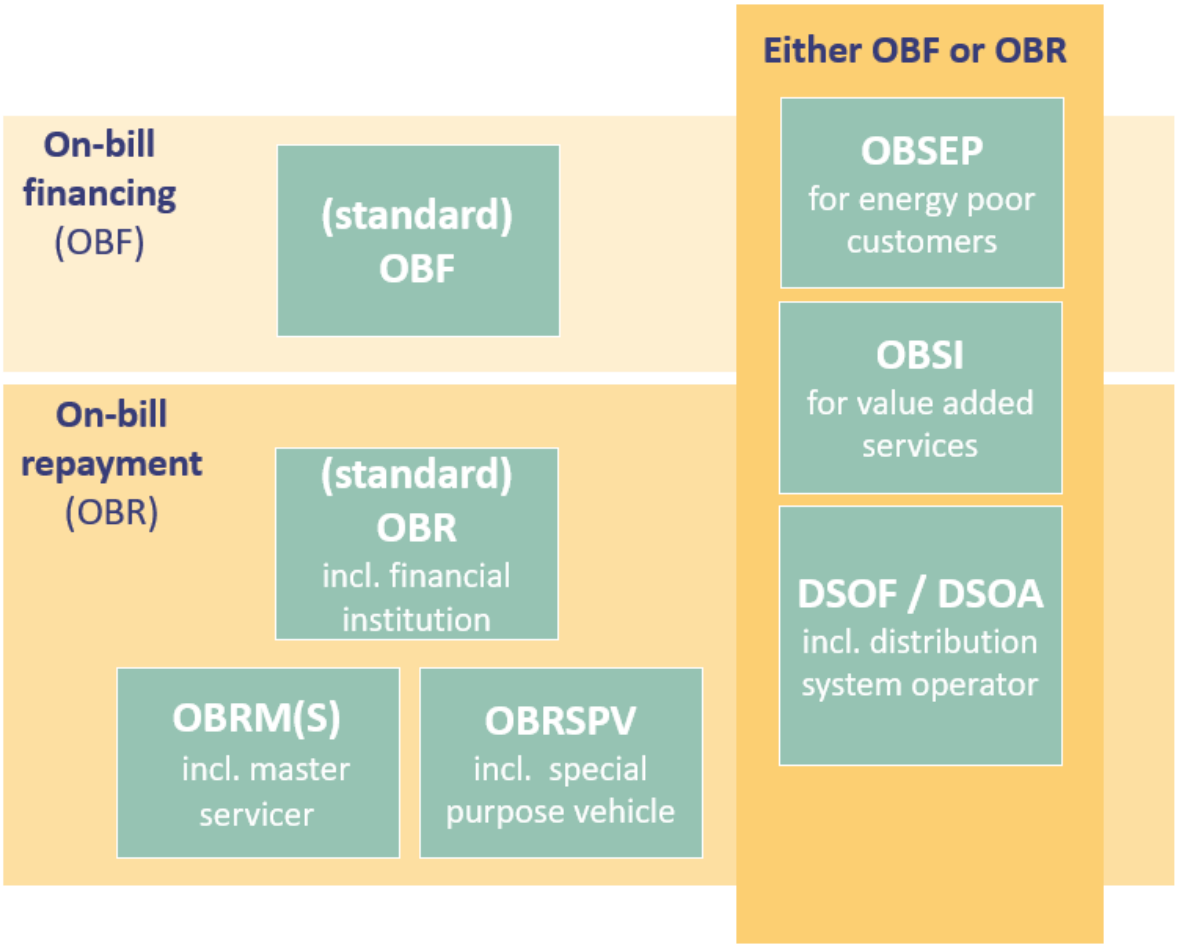
An OBR or OBF scheme can also be designed as a **DSOF** which includes a Distribution System Operator (DSO) acting as a Facilitator (**F**). As DSOs are in charge of managing the network distributing electricity / natural gas, and are usually monopolies, a DSO can support on-bill schemes in an important way. The DSO facilitates the on-bill scheme by collecting the repayments from end-users via a DSO charge, and handing them over towards the utility that has covered the initial EE investment costs. In Italy, for instance, DSOs already collect money from customers to convey it to third parties (e.g. government agencies). This set-up enables final users to change their energy supplier while continuing to serve the on-bill repayments, as the DSO fee can be moved to the energy bill of the new energy supplier chosen by the customer. The facilitator role can potentially be shifted to a different entity set-up by the regulator or government.

Further potential on-bill schemes include **OBSEP** (targeting energy poor customers), **OBSI** (scheme supporting the commercialisation of value-added energy services, e.g. charging

[1] An escrow account is a sort of temporary deposit of funds of the financial institution participating in an OBR scheme. The utility will keep the funds until the contractual agreement related to the OBR scheme between the financial institution and the final customer is concluded. Thus, funds placed on an escrow account do not represent a debt or a loan for the utility.

columns for e-vehicles etc.) and **DSOA** (scheme in which a DSO is actively engaged with final users). The figure below provides an overview of the various forms of on-bill schemes.

Figure 1: Overview of different types of on-bill schemes



Detailed information on all on-bill schemes can be found in the RenOnBill report "Upscaling the residential sector with on-bill schemes – Replicability potential in the EU".

2.3 Using the momentum at EU level

On-bill schemes aim to accelerate residential building renovation rates at a time where there is a strong commitment to tackling global warming. **The European Union has committed to play a key role in the fight against climate change**. To act in line with the goals of the Paris Agreement, the European Commission has adopted the "European Green New Deal" in 2019, which sets the European Union on a transformative path towards climate-neutrality. This endeavour was confirmed in 2020 by defining the goal to reduce domestic greenhouse gas emissions by 55% compared to 1990 until 2030, and reach climate neutrality by 2050. This sets out clear objectives for the upcoming years.

Selected EU climate policy activities

"Fit for 55"-Package
- July 2021

The package revises current climate, energy and transport-related legislation. It sets out legislative proposals and amendments to existing regulations to bring them in line with the climate neutrality objective.

Renovation Wave
- October 2020

Strategy published by the European Commission to boost renovation by "greening buildings, creating jobs, and saving lives". It aims to double the rate of current energy efficiency renovations, which today only around 1% of buildings undergo every year.

The **Green Deal** is designed as a holistic policy approach, which underlines the importance of all EU actions and policies to contribute to its targets. The numerous policies adopted by the EU within the last years demonstrate the urgent need and strong willingness to act.

The **"Fit for 55"** package reviews current legislation to be aligned with the common goal of GHG reduction by 55% in 2030. The building sector being responsible for more than one third of the European Union's greenhouse gas emissions, is of special significance to reaching the set goals. Therefore, the EU has adopted the **"Renovation Wave"** as a central strategy. It targets the decarbonisation of the buildings sector, economic recovery, and tackling energy poverty. Renovating private and public buildings plays an important part in delivering on energy efficiency targets for the building sector.

However, **financing requirements** to reach these goals are high; including investment needs for energy efficiency in buildings that are estimated at €90 billion a year. To reach this number, private capital needs to be mobilised to join public investments. This is where on-bill schemes come into play. They are tools for involving the energy utilities and financial institutions in energy efficiency financing that can help resolve some of the existing barriers to energy efficiency investments.

The exploitation of on-bill schemes has demonstrated to be viable and beneficial in the **North American context**, where on-bill schemes were introduced already in 1987, and have seen strong growth ever since. Numerous schemes evolved, most of them based on the Pay As You Save (PAYS) framework which allows tenants/owners to take energy efficiency measures without incurring upfront costs. Adjusting OBS to local market and strategic needs, the schemes have become a successful instrument in the US and Canada.

RenOnBill is the first comprehensive research and innovation project looking at OBS in the European context. As the project comes to end in April 2022, it has collected significant amounts of information on OBS in the European context. Chapters 3 to 6 present the findings in a concise way, demonstrating the current discussions and next steps for OBS uptake in Italy, Spain, Lithuania, and Germany. The roadmap focuses on possible solutions that can overcome the barriers and challenges which were identified in the various stages of the RenOnBill project.

3 Italy | National roadmap for on-bill replication

3.1 Overview of the Italian context

The Superbonus 110% support scheme

The Italian energy renovation market is currently focused on the so called "Superbonus 110%", which has been introduced by Decree 34 issued on May 19th 2020.

The Superbonus came out as an unexpected move by the Italian government and has several positive effects:

1. It changed people's mind on energy efficiency renovations, focusing mainly on their benefits (value increase of the dwellings, less energy consumption, more comfortable houses), as costs are borne by the State;
2. By allowing the tradability of tax credits resulting from the renovation investments (not only for the Superbonus but also for other support measures), the Superbonus made energy renovation investments affordable to almost all households;
3. It boosted the economy in a period of depression.

On the other side, the Superbonus created an artificial excess of demand. Construction companies are often fully engaged and look for big projects (big buildings) at the expense of smaller ones. To address this issue, the Superbonus - which is a temporary incentive lasting until the end of 2023 - should be enhanced.

How does the Superbonus work?

The Superbonus 110% is a tax credit on energy efficiency expenses, subject to some conditions and on a temporary basis (so far, until the end of 2023).

For every euro spent in energy efficiency renovations, the owner of the dwelling gets 1,1 euro of tax credit. The credit can be used to compensate any tax liability towards the State (taxes at national and local level, social insurance) over a period of five years with equal installments for each year.

The Superbonus is reserved for residential buildings of private owners. Companies do not qualify for the Superbonus, but may use other forms of incentives. Social housing entities, although sometimes organised as companies, can have access to the Superbonus and have a longer period to carry out the works, given that they are subject to very strict anti-bribery laws and procedures.

What are the conditions to be met?

In order to be eligible for the tax credit, all dwellings of a single building have to increase by at least two energy classes as a result of the renovation measures. Since, in general, the lower the energy class, the easier the change in energy classes, the Superbonus implicitly targets buildings that were constructed between the 1950s and 1970s. Many of these buildings were

built before the first energy efficiency regulation came into effect in 1976. They represent the majority of the Italian building stock and are the least energy efficient.

Which interventions can be financed?

Two different typologies of technical interventions can be financed under the Superbonus:

- **Principal measures**: thermal insulation (at least 25% of the surface of the building), and/or heating plant replacement; at least one of the two principal measures has to be executed in order to be eligible for the Superbonus and to be able to add any of the secondary measures;
- **Secondary measures**: change of external windows and doors, installation of solar panels, installation of electric car/motorbike charging points.

The combination of principal and secondary measures must lead to the required result (two energy classes improvement). The «ex ante» and «ex post» status of the building must be certified by a qualified professional.

Electric vehicles charging points, although not relevant for energy efficiency, are a part of the Superbonus as an incentive to promote the use of electric cars and bikes.

How can beneficiaries use the tax credit?

Once entitled for the tax credit, beneficiaries have three different options:

1. Use it to repay their liabilities in equal installments for a period of five years;
2. Trade it with other taxpayers (including companies and financial institutions);
3. Swap it with the company performing the works in exchange for a 100% invoice discount.

Tax credit tradability is key to the success of the Superbonus. Before this scheme, tax credits were transferable only between the beneficiary and the company performing the works. The latter was forced to utilise the tax credit on its books. As a result, companies had an accounting limit: they could not accept works after having fulfilled their tax liability for the current year. Allowing multiple transfers of the tax credit opened the market even to subjects with fiscal liabilities.

The level of 110% for tax credits considers the financial costs in exchange for 100% invoice discount for the beneficiary (the tax credit is redeemable in five years). The invoice discount (option 3) is, by far, the preferred choice of the beneficiaries.

Is the Superbonus working?

So far, the results are in line with the government's expectations. As of September 2021, the government agency in charge of the Superbonus (ENEA – Ente Nazionale per l' Energia Alternativa) accounted for more than 46.000 interventions for a value of EUR 7,5 billion. New intervention registrations have not peaked after nearly 18 months: the trend is still upwards.

According to some estimates, at the end of the programme, carbon dioxide emission of buildings in the F and G class should be lowered by 50%.

Is the Superbonus creating a bubble?

A market bubble is a situation in which participants to a certain market artificially push asset prices up, loosing connection to the usual demand-supply relationship and resulting in market distortion. A market bubble may be the result of high government incentives.

Given that the financial activity associated with the Superbonus is quite simple and given the existence of a well-known and widely traded asset quite similar to the credits (the 5 years Italian treasury bill), the bubble scenario is quite unlikely. The high number of potential buyers of the credit and the reference to a well-established financial benchmark (five-year treasury bill), should be a mitigation factor of a bubble growing scenario.[2]

So far, housing prices did not react to the Superbonus. In fact, the "UBS Global Real Estate Bubble Index" for 2021 ranks the city of Milan (the only rated Italian city) among those "fair valued".

Quite possibly (no data is available yet), the value of renewed houses could have a premium over the unrenewed ones, echoing what happened in Italy thirty years ago with individual heating dwellings. Since the Superbonus will be in place until the end of 2023 and targets a specific segment of the building stock (those built in the 1950s to 1970s), most likely the market will have time to assess itself (i.e. demand and supply will have time to reach a new equilibrium).

In any case, the premium value of efficient buildings could have two positive effects: 1) for the owners as it strengthens their investment, and 2) for the banks that often hold dwellings as a collateral of the mortgages.

An increase in price of raw material, work in progress and appliances for the renovation project is currently under way. An artificial increase in demand as the one triggered by the Superbonus certainly played its role, but the trend may have a lot to do with the general situation of supply strains that is hitting the economy, particularly in Europe.

Finally, the Superbonus revamped the construction industry and the professionals involved (engineers and architects), giving momentum to an industry that was languishing in the past years. As a "side" effect, the Superbonus has a wide impact on the GDP growth in Italy as the construction industry has a very big multiplier.

[2] The more a financial asset is traded the more its price is determined in a supply/demand interaction. So, each operator, at a given time, can exactly know what the price of the asset is. The opposite is a situation where prices are set according to different schemes (i.e. market power of the seller/buyer). The latter situation gives room to the arbitration schemes that may lead to the creation of a bubble. The superbonus credit, being very similar to a five-year treasury bill cannot be mispriced; thus, the risk of a bubble is low (though not equal to zero).

Future developments

As very clearly stated in the document "*L'impatto sociale ed economico del Superbonus 110% per la ristrutturazione degli immobili: stime e scenari*" edited by the National Council of Italian Engineers, "government expenses for the EE and seismic intervention on dwellings… cannot be compensated by the increased tax collection … linked with the renovation works".

As a result, the Superbonus is a cost for the government so it is likely that, in the future, its generous 110% incentive could be reduced.

As far as the tax credit tradability is concerned, the tool should remain in place although with some limitations (number of trades allowed for each credit, wider responsibility of the buyer of the credit).

Impact on on-bill schemes

With the Superbonus in place, there is small room for OBS as almost the whole burden for the renovation works is paid for by the government.

In case the Superbonus will be reduced beyond 2023 (e.g. from the current 110% to 75-90%), OBS can play a very important role, acting as a vehicle for the repayment of the share of works that is not incentivised. The combination of government incentives and of the OBS could also help to meet the golden rule (i.e. no increase of the invoice) after the energy efficiency intervention.

3.2 Replicating on bill schemes in Italy: challenges and solutions

The potential for replication of on-bill schemes in Italy is determined by the six factors outlined in the next sections.

1 – Regulation

A first issue to mention is a potential regulatory problem that can arise from the collection of amounts *unrelated to the energy supply* through the energy bill. In 2016, the Italian Government began collecting the the public TV company fees by means of the energy bills, with the purpose of reducing TV tax evasion. Recently, the European Commission formally asked the Italian Government to eliminate any charges that are not related to the energy supply from the energy bills. The request comes as part of the requirements for accessing the EU funds of the National Recovery and Resilience Plan and is about the elimination of any obligations for energy suppliers to collect charges not related to the electricity sector, as these charges are considered to be improper for not being related to the typical items of an energy bill.

Of course, an overly restrictive interpretation of this rule could lead to a halt to any uncommon on-bill retail activities, including the repayment of energy efficiency measures especially if carried out through financial intermediaries. However, it should be possible for decision makers to establish a clear distinction between on-bill energy efficiency schemes and the

collection of television fees. This should avoid any unjustified ban on on-bill charges, which are based on interventions that concern still energy supply, although indirectly. In fact, on-billing for energy efficiency is a well-established instrument in other markets.

2 – Superbonus

A second question concerns the specific situation of the market for energy efficiency interventions in Italy, temporarily but heavily influenced by the so-called Superbonus. The Superbonus is a subsidised regime that currently represents a powerful alternative to on-bill schemes. It is based on the tax deduction of 110% of the qualifying expenses for efficiency improvements in residential buildings.

This tax credit can be set against tax liabilities of the property owner over five years. The additional 10% added to the total qualifying expenses actually incurred is intended to cover the rate of discount that is likely to be applied if the tax credit is sold to a financial institution, thus possibly obtaining the down payment for the entire works performed.

This has represented an unprecedented change in the market for efficiency measures in Italy and has had the merit of affirming the importance of energy efficiency interventions to the general public. The Superbonus is a powerful but fiscally expensive and naturally temporary measure that will be modified, extended for a limited period and with lower subsidy percentages. The current scheme runs until the end of 2023.

As long as these exceptional subsidies are in place, the use of on-bill schemes could be a valid complement to the energy bonuses that do not cover all the costs of the interventions and could work as their progressive replacement[3]. During this phase of complementarity, special attention should be paid to the additionality of on-bill schemes in terms of energy efficiency. Ideally, the combination of Superbonus and OBS could reinforce compliance with the "golden rule" regarding the invariance of the bill after the energy efficiency intervention, compared to a solution that does not include the OBS.

3 – Decision-making in multi-family buildings

Achieving swift decision making in multifamily buildings (condominiums) is another challenge for on-bill scheme replication. Apartment buildings as potential users of an OBS constitute a complex reality: without legal personality as entities, without joint and several liability of individual owners, and with rules for the formation of majorities that can in fact add complexity and obstacles to energy efficiency interventions.

In this respect, two recent regulatory changes in Italy are positive developments for potential on-bill replication. While specifically concerning the Superbonus, both changes demonstrate

[3] The Superbonus is a public grant and as such is subject to restrictive requirements as regards the technical characteristics of the energy efficiency interventions, the subjects admitted to receive the subsidy and the procedures for recognition of the contribution. Private on-bill schemes could effectively complement public schemes, offering more flexibility and yet fulfilling an incentive function for the energy efficiency of buildings.

the sensitivity of the legislator to energy efficiency and can pave the way for similar measures in favour of on-bill schemes.

These amendments simplify the adoption by condominiums general assemblies of resolutions to allow energy efficiency interventions (pursuant to the so-called "August Decree") and authorise the the dwelling owners in favour of the intervention to bear the costs in full, exempting other non-interested owners or allowing to reduce the expenses incurred by them (pursuant to the budget law for 2021).[4]

4 – Transferability of repayment obligation

A fourth issue is the transferability of the repayment obligation derived from an on-bill intervention in case of a sale or rental contract or in the event of a change of tenant. In fact, the possibility of linking the scheme to individual meters (POD - Point of Delivery) would be the ideal solution but is questionable in the Italian context, as there are no known examples of debt portability of this type. In fact, the real estate market should apportion the residual value of the plant taking into account who bears the residual on-bill costs, therefore having these costs paid upfront by the seller/landlord or deducting them from the price of the sale or the rental contract. At the same time, although this may seem like a complication, the on-bill repayment obligation being attached to the property and not to the householder appears to be a necessity for the mechanism to function.

Possible solutions could therefore envisage the following:

- upfront payment of residual debt in case of sale/change of tenant;
- assumption of the outstanding debt by the incoming owner or tenant, with deduction of the value concerned from the price or from the rental of the property, similarly to what happens with the acceptance of the loan in real estate sales;
- inclusion of Distribution System Operators (DSO) or another designated national entity as a facilitator in the event of transfer of the usage of the property (via a sale or rental contract) with an incoming user who, for the supply of energy, relies on a utility different from the one which implemented the energy efficiency measure.

Distribution companies (DSOs) operate downstream of the National Grid Operator (which in Italy is Terna, the Transmission System Operator - TSO) and are a substantially stable presence on the territory, even after the liberalisation of the electricity market, since they benefit from a situation of natural monopoly. In an on-bill scheme involving a DSO, an ad-hoc on-bill tariff could be collected by the utility, which is holding the ongoing supply contract with the user of the real estate unit affected by the energy efficiency intervention, and then transferred to

[4] The regulatory changes in more detail: the 2020 "August" decree law (n. 104/2020, art. 63 "Simplification of condominiums' general assembly procedures") provides that the resolutions of the condominium assemblies concerning the 110% subsidised interventions are approved by a majority of those present representing at least one third of the building's value. The 2021 budget law (n. 178/2020, art. 1 paragraph 66 letter p), established from 1 January 2021 that the resolutions of the shareholders' meeting, relating to the attribution to one or more dwelling owners of the entire expense related to the intervention decided, are approved by a majority of those present representing at least one third of the value of the building, provided that the dwelling owners to whom the expenses are charged issue a favourable opinion.

the DSO or another designated national entity. This, in turn, would re-transfer this on-bill tariff back to the utility responsible for the original energy efficiency interventions.

5 – Change of energy supplier

A fifth point of attention is the change of energy supplier.

The possibility for the end user, provided for by law, to easily replace the energy supplier (utility) represents an issue as the user or debtor is not obliged to maintain the supply with the utility or on-bill creditor for the entire debt amortisation period. In fact, the retail electricity market liberalisation means that for on-bill schemes, which by their nature require an energy efficiency intervention implemented with a specific utility and repaid over time through an addition to the bills due to that utility, it becomes necessary to channel the payments linked to the intervention to those who incurred the costs even when they become different from those who currently supply electricity and issue the related bills.

Possible solutions could include the following:

- upfront payment of residual debt by the household to the utility being replaced, before entering into the new energy supply contract with the new utility;
- transfer of credit from the utility being replaced to the new energy supplier, subject to acceptance of the same and upfront payment of the relevant amount to the old supplier;
- inclusion of the Distribution System Operator (DSO) or another designated national entity as a facilitator (see above).

6 – On-bill schemes as an asset class with favourable risk characteristics for financial institutions

Finally, a sixth issue of general nature is represented by the possibility that on-bill schemes emerge as an asset class with favourable risk characteristics for financial institutions, since these could progressively integrate certain characteristics of on-bill schemes into their credit assessment procedures. This can occur regardless of whether (in the case of an OBR scheme) or not (in the case of an OBF scheme) financial institutions lend money directly to households. These features can be listed as follows:

- The facilitation of payment and consequent credit enhancement is implicit in the on-bill payment. On-billing of cost of energy efficiency renovations makes payments both easier and connected to a category of outlays (payments for utilities) that is generally perceived as necessary;
- The financial capacity and implicit collateralisation generated by well-conceived and correctly implemented energy efficiency interventions (so-called "golden rule"). As with the case of Energy Performance Contracts in the non-retail market, retail on-bill schemes imply that the savings generated by the intervention translate into lower costs for energy consumption, which tend to offset the initial cost of investing in energy efficiency. In financial terms, these offsetting cash flows constitute an implicit guarantee for the repayment of the investment. In fact, the initial outflow for the energy

efficiency intervention is matched by the subsequent negative outflows corresponding to the energy savings in monetary terms, which translate into lower overall outflows compared to the situation prior to the intervention;

- The additional credit information coming from the bill payment history of the customer possibly provided by the energy supplier. The track record of payments recorded by the energy supplier could represent a valid tool for assessing the credit standing of customers, particularly in the case of OBF schemes that require a financial institution to lend money directly to households.

Although the Central Italian Bank does not allow these elements to be considered in terms of reducing the absorption of regulatory capital, these overall "project-like" characteristics could facilitate the granting and pricing of credit to on-bill schemes. In due course, these characteristics could also be reflected in banking supervision rules, thus further incentivising the on-bill schemes.

3.3 Pilot project

Bluenergy, an energy utility located in northern Italy, is carrying out an interesting pilot project aimed at the renovation of a large apartment building based on an on-bill scheme. In line with what has been mentioned above, this intervention is complementary to the restructuring bonuses ("Superbonus" and "Facade Bonus") recently provided for by the Italian legislation and refers to the part of the energy efficiency expenditures not covered by these benefits. Since the individual dwelling owners are the holders of the tax credits, it has been necessary to act through the building manager and condominiums' general assembly meetings. The possibility of paying off the energy efficiency works in on-bill installments was generally welcomed by the condominiums dwelling owners.

This successful experiment demonstrates the viability of on-bill schemes (in this case OBF) for energy renovations at the retail level in the Italian market - even in the presence of alternative, strong public subsidies like the Superbonus that can have crowding-out effects.

Conclusions regarding on-bill replication in Italy

A. **An OBS with retail end users has been implemented on an experimental basis in Italy in the form of on-bill financing and has proved feasible.** The reason for the pilot project's success may be that the OBF does not require direct credit scoring of individual users by financial institutions which is a difficult and potentially uneconomic activity for banks due to operational and prudential supervisory reasons.

B. The OBF scheme assumes that the deferred payment granted by a utility is a form of consumer credit, extended by a non-financial entity in relation to the supply of goods and services and not for the purpose of lending money in itself. This should make **on-bill schemes viable in Italy from the point of view of the banking legislation**, since utilities would not be allowed to lend money in the form of loans as a financial institution.

C. The use of on-bill schemes could be facilitated by the removal of certain limiting factors, particularly the progressive elimination of **competing public incentive schemes** (e.g.

Superbonus), the simplification of **multifamily housing decision-making processes** and the **involvement of DSOs (or another designated entity)** as facilitators to transfer energy efficiency on-bill payments via ad-hoc on-bill fees. DSOs have stable territorial characteristics due to their natural monopoly and this may help overcoming operational difficulties arising from the change of users or utilities.

D. **Financial institutions may progressively consider certain positive features of on-bill schemes in their credit assessment procedures.** The on-bill payment of energy efficiency interventions has an implicit character of credit enhancement due to the "naturalness" of the payments made through energy bills and the collateralisation implied by energy efficiency interventions that are generally self-repaying ("golden rule"). Additional credit information about the customer's credit history that may be provided by the energy supplier may also play a role. Hopefully, banking supervisory authorities could progressively factor these positive elements in bank capital absorption rules.

E. This improvement of the credit assessment process can be facilitated by the **involvement of Italian ESCOs** that already play a crucial role in the implementation of Energy Performance Contracts (EPCs) and that can help to transfer some characteristics of the project finance attitude, which is typical of EPCs for the institutional market and tends to emphasise the aspects mentioned in the previous paragraph, to on-bill schemes.

4 Spain | National roadmap for on-bill replication

4.1 Key insights

This document intends to give an insight as to how the energy renovation rate of the Spanish residential building stock can be accelerated, and how on-bill schemes (OBS) may be implemented, making use of the qualitative data collected via the interviews carried out with relevant stakeholders during summer and autumn 2021 in Spain. Stakeholders included high-level representatives from the government and national ministries, regulators and policy makers, the major banks in the country, consumers organisations, consultants, and property evaluators.

Renovation activity experienced significant growth between 2017 and 2019, with a 10% increase in the number of buildings refurbished and a 35% increase in the budget, according to MITERD (MITERD, 2020).

However, the pace is still significantly lower than in neighbouring countries, and insufficient to meet the targets set out in the National Integrated Energy and Climate Plan (PNIEC) 2021-2030, which proposes the refurbishment of a total of 1,200,000 dwellings over the whole period, starting with 30,000 dwellings per year in 2021 and ending with 300,000 dwellings per year in 2030.

The state support programme enjoying the largest continuity providing subsidies for renovation has been the PREE and its predecessors (PAREER, PAREER-Crece and PAREER II) which accounted with a total budget of EUR 404 million and have enabled the energy renovation of approximately 80,000 homes (IDAE, 2021).

In addition, in 2021, the Royal Decree 853/2021, regulating the support programme for residential renovation and social housing under the Recovery, Transformation and Resilience Plan (PRTR) was published. The programme counts on EUR 4,420 million (including EUR 450 million to finance tax incentives). The creation of renovation offices and the promotion of a new figure, the renovation agent – in which role, eventually utilities could fit – will smooth the process of renovation.

Remarkably, the government is working on the creation of an Energy Savings Certificate scheme which will constitute an alternative for utilities to comply with the obligations derived from the Energy Efficiency Directive (EED) by accrediting the achievement of an amount of energy savings though the implementation of energy efficiency measures which will be collected in a catalogue.

After delving in the national policies, subsidies and regulations, actively supporting the involvement of utilities and financial institutions in the process, a characterisation of the main challenges divided by categories was performed. The key insights from this assessment are presented below.

Market level

One of the major issues identified is how to stimulate the appetite for renovations among final users; in fact, funds supporting public programmes for renovations have not always been exhausted in the past. Raising awareness through campaigns focused on the multiple benefits of energy renovations and the available supporting schemes along with the implementation of the "renovation offices" as foreseen in the Royal Decree 853/2021, are the main proposed measures to face this challenge.

On the other hand, the renovation market is a fragmented one: standardised and comprehensive solutions able to tap on the potential for energy savings are scarce. The solution can be in the implementation of the "renovation agent", acting as a focal point gathering administrative, technical, financial, and commercial knowledge bridging the gap between the end-user and the market. This agent has been introduced by the Royal Decree 853/2021. However, it is unclear whether utilities will fit in the legal definition of the proposed renovation agent.

Technical level

Undertaking deep renovations in Spain not always makes economic sense due to the relatively benign climate conditions of the country. Including on-bill renovation among measures on the catalogue of measures that will complement the regulation of CAEs (Energy Savings Certificate) can incentive deep renovations, but utilities must be able to claim deep on-bill renovations to accredit the fulfilment of their obligations imposed by Article 7 of the Energy Efficiency Directive (EED).

Regulatory/policy level

In Spain, the issuance of the regulation for the transposition of the EU Directive 2014/17 or equivalent modifications on the national law (so that utilities are entitled to lend money as part of their role in an OBS project) is still lacking. That contributing to certain legal uncertainty that ultimately discourages utilities to launch on-bill programmes.

Another challenge is how to solve the issue of the transferability of OBS. That is, if the energy supplier changes before the energy renovation investment has been completely reimbursed, parties must find a fair solution to pay off the remaining debt. In addition to that, there are two other proposed measures: 1) the inclusion of meter-attached (tariff on-bill) arrangements in the contract; the debt is linked to the meter not to the person; and 2) an on-bill scheme integrating on-bill tariffs. The latter would solve the problem of attaching the OBS service to the meter (tariffed-on bill) by using an ad-hoc vehicle (on-bill tariffs) similar to those already used for other payments (e.g., network tariffs, taxes, smart meter fees).

Financial level

When deciding whether to grant financing or not, traditional financial institutions tend to focus on client's credit profile, overlooking any other aspects, such as the project's risk and energy savings. That leads banks to set the interest rate similarly as for consumer's credit which often turn out to be not very affordable for final users. One of the solutions would be

the introduction of state-backed guarantees that can help to diminish the risk perceived by financial institutions and, consequently, the interest rates.

Awareness

Lack of awareness from society in general about the benefits of energy renovations is one of the major challenges that OBS replication faces. To this respect, besides the development of awareness campaigns, other measures can be put in practice, i.e.: combining energy efficiency measures with complementary ones such as elevators installation, or introducing mandatory clauses in the upcoming law to enforce energy renovation in residential buildings.

4.2 Overview of the Spanish context

The Spanish building stock currently consumes 30% of final energy. It has been acknowledged that there is a significant potential for the introduction of energy efficiency measures and the incorporation of renewable energies. Although renovation activity experienced a significant growth between 2017 and 2019, with a 10% increase in the number of buildings rehabilitated and a 35% increase in the budget (MITERD, 2020), only 0.3% of existing buildings have undergone energy refurbishment (MITERD, 2020).

For this reason, energy refurbishment is included as a priority measure in the National Integrated Energy and Climate Plan 2021-2030, which has set the target of energy refurbishing 1,200,000 dwellings by 2030. This objective has also been included in the long-term strategy for energy renovation in the building sector in Spain.

In addition, there is still a portion of the housing stock in Spain that is not equipped with heating installations. According to studies carried out by the Institute for the Diversification and Saving of Energy (IDAE), this percentage amounts to 10%, which could potentially mean around 200,000 homes that could be heated with renewable energies. In addition, the possible renovation of existing heating and cooling installations with obsolete equipment and/or fossil fuels should be considered.

A significant part of the NextGenerationEU recovery fund is expected to be spent on Green Deal objectives[5]. This fund will provide Spain with approximately EUR 140 billion in transfers and loans for the period 2021-2026. The Spanish government is preparing a set of ambitious policies to stimulate the renovation of the Spanish building stock with emphasis on the residential sector.

In this context, the Plan for the Recovery, Transformation and Resilience of Spain (PRPT) outlines the roadmap for the modernisation of the Spanish economy. Below, an overview of the current supporting schemes for energy renovation is provided.

[5] For further information consult *European Green Deal*

The Building Energy Renovation Programme (PREE and PREE 5000)

A support scheme that has being traditionally offered by the Spanish government for the energy renovation of existing buildings comes by the acronym of PREE (Programa Rehabilitación Energética de Edificios; Building Energy Renovation Programme). The PREE has been managed by IDAE (Institute for the Diversification and Saving of Energy) and MITERD (Ministry of Ecological Transition). The latest edition of this programme ended in July 2021, but the PREE programme and its predecessors (PAREER, PAREER-Crece and PAREER II) have been in force from October 2013, with a total budget of EUR 404 million, and have enabled the energy renovation of approximately 80,000 homes (IDAE, 2021).

The objective of the PREE was to give a boost to the sustainability of existing buildings in Spain, through interventions ranging from changes in the thermal envelope, to the replacement of thermal generation facilities with fossil fuels for thermal generation based on renewable sources (biomass, geothermal, solar thermal, heat pump) or renewable electricity generation for self-consumption and the incorporation of managing and control technologies, as well as the improvement in energy efficiency in lighting.

In addition, the PREE aimed to promote projects carried out by renewable energy communities or citizen energy communities, as set out in the latest directives on renewable energies and the internal energy market. Another distinctive aspect of the PREE was the special focus given to vulnerable groups and those affected by energy poverty.

For the promotion of deep renovations, the government considered architects as the key agents. It is not in vain that IDAE, after consulting the Higher Council of Architects' Associations (CSAE), launched a guide to support the technical-administrative management of the PREE, facilitating the processing of the applications.

During the summer of 2021, another energy renovation programme (PREE 5000) for existing buildings in municipalities and towns with less than 5,000 inhabitants, was launched. Similarly to PREE, the programme aims to support energy renovations in residential and non-residential buildings through energy efficiency improvements and the incorporation of renewable energies, but only in small towns.

Support programme for residential renovation and social housing under the Recovery, Transformation and Resilience Plan

In line with the NextGenerationEU recovery fund a new instrument to support residential renovation was launched in 2021, being regulated by the Royal Decree 853/2021[6]. The programme, which will be managed by the Ministry of Transport, Mobility and Urban Agenda (MITMA) counts on EUR 4,420 million (EUR 450 million to finance tax incentives for renovation).

The new Royal Decree covers six focal areas: 1) renovations at neighbourhood level, 2) the renovation office, 3) renovations at building level, 4) renovation at household level, 5)

[6] The full text of this regulation can be consulted in this Link

preparation of the building book for refurbishment and the drafting of projects, and 6) the promotion of social housing.

The subsidised amount ranges from 40% to 80%, according to the scope of the renovation, depending also on the achieved energy savings (the climatic zone is taken into account to set the targets). Interventions in individual houses are less subsidised (40% of the costs, with limits between EUR 1,000-3,000), compared to renovation at (multi-family) building or neighbourhood level (the latter can reach 80% of subsidy). In addition, for vulnerable people, subsidies can reach 100%. However, there is always a cap on the total amount that can be received.

Funds will be transferred from MITMA to public administrations at regional level, which will be responsible for launching the calls for grant support in their respective territorial areas, in accordance with the provisions of the Royal Decree 853/2021.

Besides the impact that this new push will have on the renovation landscape, a couple of points considered in the Royal Decree 853/2021 deserve a special attention since they are particularly related to the replication of OBS and therefore, are commented below.

The renovation office

Under the second focal point of Royal Decree 853/2021, this measure aims to finance so-called renovation offices, i.e. "one-stop shop" institutions that offer comprehensive services of information, management and accompaniment of renovation set up by the regional authorities or the local entities, beyond those established in the framework of actions at the neighbourhood level.

The renovation agent

The "renovation agent" is a figure introduced by Royal Decree 853/2021. These agents oversee all technical documentation, the paperwork needed to apply for public subsidies, and the technical part of the works. They are also in charge of the commercial part of the projects, convincing neighbourhood communities and landlords to undertake the renovation measures.

According to Article 39 of the proposed Royal Decree, renovation agents can be among the beneficiaries of the subsidy along with "developers, builders or energy service companies, meaning the broadest possible definition of the energy services companies, understood as the broadest possible definition of organisations providing such services, as well as renovation agents or manufacturers and installers".

Energy Savings Certificate (CAEs) and the Catalogue

In Spain, the transposition of Article 7 of Directive 2012/27/EU consisted in the creation of the National Energy Efficiency Fund aimed at the implementation measures to increase energy efficiency in the different energy-consuming sectors. To comply with annual energy saving obligations, obligated parties (including utilities) must make a financial contribution to the Fund, to be paid in four equal payments during the corresponding year (no later than 31

March, 30 June, 30 September and 31 December) for the amount resulting from multiplying their annual savings obligation by the financial equivalence established.

However, article 71 of Law 18/2014, of 15 October 2021, opens the door for establishing a mechanism for accrediting the achievement of an amount of energy savings which would be equivalent to the compliance with the energy savings obligation. This mechanism will be based on the presentation of Energy Savings Certificates (CAEs in Spanish) resulting from the implementation of energy efficiency actions.

From February 2021 to June 2021, the Spanish Government made a public consultation to analyse the creation of this mechanism for the period 2021-2030[7].

In parallel, the government is currently working on a catalogue of standardised measures to complement the Energy Savings Certificate, according to Article 10 from the proposed Royal Decree. The catalogue would contain a list of measures that can be potentially implemented by the obligated parties to obtain the Energy Savings Certificate.

4.3 Replicating on-bill schemes in Spain: challenges and solutions

In this section we present the main challenges and solutions related to energy renovation of buildings, both in general and in particular for the implementation of OBS, as a result of stakeholder consultations throughout 2019 – 2021, including interviews and a final roundtable.

Market level

Challenge: Lack of demand for renovation

Context: At market level, one of the major issues is how to stimulate the appetite for renovations among final users. In reality, funds supporting public programmes for renovations have not been exhausted in the past.

A combination of factors might be causing this issue. Some of these factors constitute barriers on their own, and will be treated independently as such in this chapter:

- Coastal regions in Spain enjoy a mild climate which allow to have some degree of comfort that diminishes the need for renovation;
- The complexity of the application process for public support measures and the bureaucracy that it entitles might discourage potential candidates to apply for funds and renovate their homes.

Proposed solutions:

[7] The full text of the consultation can be found here: https://energia.gob.es/es-es/Participacion/Paginas/DetalleParticipacionPublica.aspx?k=382

Attending to the multifactorial nature of this challenge, proposed solutions are also varied, as listed below:

- ✓ Raising awareness through campaigns focused on the multiple benefits of energy renovations[8] and the available support schemes;
- ✓ Implementation of the "renovation offices" as foreseen on the Royal Decree 853/2021 regulating the programme for residential renovation and social housing. "Renovation offices" have the goal of "coordinating, informing and facilitating the management of the subsidy and the provision of services that contribute to speeding up the implementation and comprehensive management of energy refurbishment projects in the residential area at the service of citizens, homeowners' associations, companies and refurbishment agents" (see section 5**Error! Reference source not found.** for further detail);
- ✓ On-bill renovation programmes can also incentivise the demand and smooth the whole renovation process; especially when the utility assumes the role of coordinating and supervising the project. One of the on-bill business models subtypes includes the figure of a Master Servicer, which offers "turnkey" projects to end-users. This agent can be a utility that can capitalise its expertise and reputation in the energy market and the confidence its customers have in it.

Challenge: The value of renovations is not easily monetised

Context: Often, the increase on the property value is only visible when the house is sold and, in some cases, also when it is rented. Therefore, landlords do not perceive that their assets increase in value after performing these renovation measures. On the other hand, it is very hard to give an exact monetary value to this revaluation. Organisations as the Valuation Association (AEV) seek to address this challenge by developing professional standards for valuators.

Proposed solutions:

- ✓ According to AEV, it is mainly a problem of perception from homeowners' side, since evidence demonstrates that the market is capable of reflecting the increase of value on the prices. Therefore, the solutions may come from the side of awareness campaigns to correct this misperception.

Challenge: increasing energy prices which undermine the effect of the energy savings

Context: Customers who have incurred in energy renovations may not actually perceive a real saving in the energy bill due to the increasing energy prices, turning out hesitant in implementing any further energy renovation. In particular, those who are unfamiliar with the baseline concept. Savings are calculated from a baseline that includes, among other

[8] Multiple benefits of energy renovations refer to additional impacts that building renovations and linked energy efficiency investments can carry, among them the increased value of the dwelling, the improvements in comfort, and the creation of a healthy indoor environment.

variables, energy prices; increasing prices may end up wiping out the savings but could be economically worse for them if they had not implemented any saving measures.

Proposed solutions:

- ✓ Raising awareness through campaigns focused on the benefits of energy renovations;
- ✓ Enabling access to consumers to simple, user-friendly tools that demonstrate the kWh saved, and the corresponding economic savings.

Challenge: Market fragmentation

Context: The renovation market is a fragmented one. That carries consequences on the promptness and ability of end-users to start renovation projects. Deep energy renovation calls for a set of skills that go from architectural/structural knowledge to energy engineering and technology capabilities, which are difficult to find altogether in a single provider. Standardised and comprehensive solutions able to harness the potential for energy savings are scarce in the market. The time and effort required to get enough information to decide, apply for a loan, and arrange for the work to be done may simply be perceived not to be worth the return in terms of energy savings (BPIE, 2010).

Proposed solutions:

- ✓ The implementation of Royal Decree 853/2021 for residential renovation and social housing is planned to enhance the figure of the "renovation agent", who will act as a focal point gathering administrative, technical, financial, and commercial knowledge bridging the gap between the end-user and the market. However, it is unclear whether utilities will fit in the legal definition of renovation agent. Including them could be the key for the expansion of on-bill schemes. In this regard, in other countries, utilities are already legitimated to act as "one-stop shops", entitled to manage public subsidies and therefore contributing to rolling out the renovation programmes launched by public authorities.

Technical level

Challenge: Which are the "ideal" renovation measures to implement using on-bill schemes?

Context: During the interview process, several stakeholders expressed their concern on the appropriateness of deep renovation (such as façade insulation). According to them, the relatively benign climate conditions of the country and the long payback period of deep renovation measures must be carefully considered in the selection of measures for on-bill renovations.

Proposed solutions:

- ✓ Include on-bill renovation among the catalogue of measures that will complement the regulation of CAEs (currently under preparation, see 5 for further details). Utilities must be able to claim deep on-bill renovations to accredit the fulfilment of their obligations imposed by Article 7 of EED.

- ✓ Renovation measures with shorter payback period make most sense when designing an OBS. In addition, for awareness reasons it is important that the final user gets to visualise the saving on the energy bill. Therefore, a combination of funds could be used: public funds for long pay-pack period measures (deep renovation) and OBS for short pay-back measures or for the part that is not covered by public support.

Regulatory/policy level

Challenge: Lack of continuity from public authorities regarding government support and excessive bureaucracy

Context: In the past, support programmes for renovation rolled out by authorities have had part of its budget left unspent, which might be partially due to the difficulties from end-users to assimilate the changing conditions to obtain public support.

Proposed solutions:

- ✓ Continue working on additions and extensions of PREE (Building Energy Renovation Programme) which has been already in place for a long time and is presumably well known by the public.
- ✓ Improve the sector digitalisation, not only with respect to the subsidies' application process, but also in other aspects: i.e.: energy efficiency certificates and Property Registry.
- ✓ Implement the figure of the "renovation agent" which helps to centralise the efforts needed to apply for the public support.

Challenge: Stringent quorums needed to undertake renovations in multifamily buildings according to the Horizontal Property Law

Context: The decision-making process in multifamily buildings is complex and time-consuming, exacerbated by the qualified majorities needed for renovations as requested by the Horizontal Property Law.

However, the Royal Decree-Law 19/2021, of 5 October 2021, on urgent measures to promote building renovation in the context of the Recovery, Transformation and Resilience Plan has solved, at lease to some extent, this issue. Renovation works that contribute to the improvement of the building's energy efficiency or the implementation of renewable energy sources in common use, such as solar panels now require "a simple majority system for carrying out such works, as well as for applying for aid and financing for their development"[9].

[9] Prior to this amendment the law established that projects involving the installation of common or private systems for the use of renewable energies must be agreed "by a third of the members of the community, which in turn represent a third of the participation quotas" (Article 17 of the Horizontal Property Law).

However, limits on the amount apply: it must not exceed nine months' current expenditure, which in practice penalises in-depth renovations[10].

Proposed solution:

- ✓ Revising the requirements imposed by the Horizontal Property Law to undertake renovation measures, especially the part referred to the limits of nine months' current expenditures.

Challenge: PVPC (Precio Voluntario para el pequeño consumidor; Voluntary Price for the small consumer) implies a strictly regulated tariff which does not allow introducing changes on the invoice

Context: Roughly 11 million energy supply contracts are PVPC (Precio Voluntario Para El Pequeño Consumidor (PVPC) | Red Eléctrica de España, n.d.). This tariff is a system used to determine the price of electricity, implemented by the government, for all customers in the regulated electricity market. These clients have their contract with a utility and a contracted power of max. 10 kW. Any type of change in the invoice under the PVPC tariff would require a change in the regulation, with the corresponding time that this might take. According to the recent developments, the EU policies are leaning towards the elimination of this regulated tariff by 2025[11].

Proposed solution:

- ✓ Modify the regulation related to PVPC so changes can be introduced in the energy bill in order to incorporate the fee for the renovation part.

Challenge: Limitations imposed by the Creditor's law: utilities cannot incur in credit lending activities since financial activity is strictly regulated and reserved to certain institutions

Context: Certain modalities of OBS (the so-called OBF models) imply that the utility itself provides the upfront cost for an energy efficiency investment, which is repaid by the final user on the bill. The fact that the creditor is not the bank, but the utility, can be in in conflict with the limitations imposed by the Creditor's law[12].

On the other hand, Directives 2014/17/EU on credit agreements for consumers relating to residential immovable property and 2008/48/EC on credit agreements for consumers allow utilities and other non-credit institutions to provide credit for the renovation of residential

[10] Eduado Brunet, Greenward Partners, https://www.idealista.com/news/inmobiliario/vivienda/2021/10/13/792754-nueva-ley-de-propiedad-horizontal-largamente-esperada-bienvenida-y-aun-a-tiempo-de

[11] This fact was confirmed during the interview process, and it has been also mentioned by media.

[12] The EU Directive 2013/36/EU on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC imposes very strict conditions for non-credit institutions such as utilities, and so does Spanish Law.

buildings, but unfortunately, they have not been transposed yet[13], applying therefore, the Spanish Law. It is worth mentioning more than three years have passed since the deadline imposed by the Commission to implement Directive 2014/17.

In practice, non-financial entities use different modalities of contracts that can be ruled by different laws: Instalment Purchase Law, Consumer's Credit Law, or Commercial Code and Civil Code for renting or leasing. However, this situation is not ideal: utilities are sensitive to the uncertainty of the legal framework and therefore discouraged from exploring OBS options.

Proposed solutions:

- ✓ The issuance of the regulation for the transposition of the EU Directive 2014/17 or equivalent modifications on the national law so that utilities are entitled to lend money as part of their role in an OBS project;
- ✓ Clarifying in the regulation that the on-bill obligation to pay does not constitute a "loan" and, therefore, is not subject to financial regulations;
- ✓ Using alternative schemes such as renting or leasing.

Challenge: How to solve the issue of the transferability of OBS

Context: During the lifetime of an on-bill project, end-users may want to change their energy supplier for different reasons. On the one hand, end-users have the legitimate right to change their energy provider (in fact energy supply contracts normally have a maximum length of one year). On the other, when the property is sold or rent the new occupant may not want to remain with the same energy provider. When these events occur before the energy renovation investment has been completely reimbursed, parties must find a fair solution to pay off the remaining debt. For example, if a tenant or owner changes, he or she must take care of paying the remaining instalments, unless differently agreed with the previous owner or tenant. Other solutions to solve the transferability issue are listed below:

Proposed solutions:

- ✓ Meter-attached (tariffed on-bill) arrangements could ensure the transferability. In these arrangements, the obligation to pay for the renovation is tied to the property meter (and not to the person, as opposed to so-called "on-bill loan" schemes) and is therefore transferrable to the next occupier. Tariffed on-bill schemes should be linked

[13] According to Directive 2014/17/EU on credit agreements for consumers relating to residential immovable property secured either by a mortgage or by another comparable security commonly used in a Member State or by a right related to residential immovable property and granted for various purposes, included the renovation of the property, the EU regulation provides that Member States shall ensure that non-credit institutions are subject to adequate admission process including entering the non-credit institution in a register and supervision arrangements by a competent authority.
According to Directive 2008/48/EC on credit agreements for consumers and amounting to a sum between EUR 200 and EUR 75.000 (but, if finalised to the renovation of a residential property, also to a sum higher than EUR 75.000), the EU regulation provides that Member States shall ensure that creditors are supervised by a body or authority independent from financial institutions or regulated.

to the end user's point of delivery (POD), i.e., the physical point where the meter measuring the energy supply to the dwelling or building is located. If the dwelling is sold to a new owner or, in case of a rented dwelling, when the tenant changes, the newcomer (unless differently arranged with the previous owner), while enjoying the benefits of the renewable energy renovation will continue paying the on-bill tariffs associated to its meter.

- ✓ Integrating Distribution System Operators (DSOs) in the model, either as facilitators or with an active role[14]. This would solve the problem of attaching the OBS service to the meter (tariffed-on bill) by using an ad-hoc vehicle (on-bill tariffs) similar to those already used for other payments (e.g., network tariffs, taxes, smart meter fees). In case an end-user decides to change their utility, the on-bill repayment fees could be transferred to the original OBS utility through the DSO that collects them. Alternatively, the facilitator role of the DSO may be assumed by another national entity designed to do so;
- ✓ Establishing a liquidation mechanism to pay off the debt in case a change of the supplier occurs.

Financial level

Challenge: How could loans for energy renovation be considered by banks under a different category than consumer's credit?

Context: When deciding whether to grant financing or not, traditional financial institutions tend to focus on client's credit profile, overlooking any other aspects, such as the project's benefits, which, in the case of energy renovation projects is intrinsically connected to the energy savings. That leads banks to set the interest rate similarly as for consumer's credit which often turn out to be not very affordable for final users.

Proposed solutions:

- ✓ Aligning the bank's protocols to grant financing with utilities' information and back-office processes to determine the credit scoring through a broader spectrum of parameters (i.e.: including potential savings, utility bill payment record etc.);
- ✓ Looking for innovative ways of financing: e.g. crowd funding, energy communities, green bond issuance;
- ✓ Introduction of state-backed guarantees: when municipalities step in with a loan-loss reserve, grants and housing benefits, the default risk almost vanishes. This should also be reflected in the interest rate since they are trustworthy collaterals which can replace other controversial collaterals such as disconnection[15].

[14] The difference is that in the first case DSO acts as a facilitator, enabling the repayment to the original utility who made the investment through the on-bill tariff. In the second case, the DSO takes an active role in offering on-bill services.

[15] Disconnection has been used traditionally in other examples of OBS, mainly in the US.

Awareness

Challenge: Lack of awareness from society in general about the benefits of energy renovations

Context: Sometimes final users do not understand the added value that energy renovations can have on their households, which could carry a revaluation in their dwelling, reduced energy consumption, extra comfort, etc. In particular, older generations are difficult to reach for this type of long-term investment. This is a potential problem given the inverted population pyramid present in Spain, characterised by a large aging population and a low birth rate.

Proposed solutions:

- ✓ Combining energy efficiency measures with other additional or complementary improvements which contribute to the project's attractiveness (i.e.: elevators, building aesthetics, etc.).
- ✓ Start setting the basis for a regulation that enforces certain energy renovations measures. According to the latest developments of the EU policy, energy end users might in the near future be obliged to undertake renovations and penalties can be imposed if they do not meet these obligations. Particular attention should be paid to the revision of the Energy Efficiency Directive, which may include mandatory minimum energy performance standards for residential buildings.
- ✓ Raising awareness through campaigns focused on the multiple benefits of energy renovations and the available supporting schemes.

5 Lithuania | National roadmap for on-bill replication

5.1 Key insights

One of the key factors affecting the replication of on-bill schemes (OBS) in Lithuania is whether they can be put to practice in consonance with national and EU policies, subsidies, and regulations. The main strength of existing instruments for financing energy renovation is a substantial public financial support. Any scheme without public support appears less attractive.

This roadmap intends to provide valuable insights on the replication potential of on-bill schemes in the Lithuanian context, making use of the qualitative data collected via stakeholder consultation in Lithuania throughout the RenOnBill research project.

The **policy/regulatory context** in Lithuania is characterised by significant public support for deep energy renovation of buildings. The existing governmental support programme for deep renovation of multi-apartment buildings covers 30-40% of the renovation costs. Therefore, alternative schemes such as OBS without support are not attractive.

Energy utilities consulted during the RenOnBill project were rather hesitant to show active interest in OBS. This has several reasons: district heating utilities that are located in bigger cities/towns are not allowed to perform any reconstruction/renovation inside the buildings due to the danger of monopolistic power abuse. Also, any utility seeking to provide a credit must get a license. There are no special laws in Lithuania regulating the rental housing market. Therefore, only the landlord can decide for energy renovation measures. Thus, owners of the apartments are not very much interested in renovation, since only the tenant benefits from lower energy bills after an energy renovation.

The **financial context** in Lithuania is characterised by quite high inflation rate. Therefore, utilities would only consider investing in any renovation scheme that would ensure an internal rate of return (IRR) of at least 8%. The average investment per renovation project is expected to be not less than EUR 4 million. This could cover the renovation of 100-150 apartments. For entire buildings blocks or multiapartment buildings, the minimum investment would be EUR 20 million. The prices for energy are increasing (district heating, natural gas and electricity) but they are not (yet) high enough to incentivise energy renovation projects. The construction sector is expanding significantly in Lithuania. Many large-scale projects of new constructions are under development, and these projects show high profit margins. Renovation projects are characterised by both a low interest rate and public support, as these are the key factors to make renovation attractive to renovation customers. The latter is not attractive to financial institutions that seek to maximise their financial performance.

The **technical context** in Lithuania is characterised by a need for qualified renovation experts in utilities as offering energy renovation services would be new for these companies. In smaller municipalities there is a strong need for renovation experts. Some new managerial qualifications to handle the renovation projects might be needed as well.

The public and other stakeholders' awareness for energy renovation or for on-bill schemes in Lithuania is characterised as low. Stakeholders consulted within the RenOnBill project pointed

to a lack of information and proper education on renovation issues. The main takeaways from stakeholder consultations in Lithuania are:

- Regulatory and legal changes are needed to prepare new procedures for a public support OBS to be applicable;
- Rising energy prices are not at a level to activate the renovation process;
- Significant public support for deep energy renovation undermines the attractiveness of other schemes where support is not foreseen;
- District heating utilities are not allowed to perform any reconstruction/renovation in bigger cities/towns inside the buildings due to the danger of monopolistic power abuse;
- Banks have little or no interest in financing renovation projects;
- Smaller/ municipal utilities may lack technical staff and management capacities to manage the process;
- The stakeholders are poorly informed and educated about potential renovation measures (financial and technical aspects, benefits of renovation etc.).

Therefore, the current situation in Lithuania regarding the replication of on-bill schemes is perceived as "overall scepticism".

5.2 Overview on the Lithuanian context

In March 2021, the Lithuanian government approved the Long-Term Renovation Strategy. The strategy foresees the renovation of approximately 99,000 buildings (including almost 10,000 multi-family buildings) before 2030 and eventually the renovation of approximately 436,000 buildings (including 30,000 multi-family buildings) until 2050. By achieving these goals, primary energy consumption could be reduced by 60% until 2050.

Lithuanian regulatory and policy instruments such as the National Energy Strategy and the government programme for multi-apartment building renovation consider renovation as a driver to increase energy efficiency in residential buildings.

The government encourages deep renovation (including new envelop and new engineering systems) in order to achieve maximum efficiency. National funding programmes for multi-apartment buildings offer subsidies for project development and soft loans for construction works, as well as grants for low-income earners. Under these programmes the Lithuanian government intends to deeply renovate 500 apartment buildings every year. Government support for deep apartment renovation projects, currently covering about 30% of construction works and loan repayments for low-income citizens plays a major role in deciding for or against a renovation measure.

5.3 Replicating on-bill schemes in Lithuania: challenges and solutions

Market level

Challenge: Lack of demand for renovation without a public support

Context: During stakeholder consultations, a majority pointed out that one of the major issues is how to stimulate the demand for renovations among final users. The Lithuanian government financially supports deep renovation. Therefore, on-bill schemes without such public support are less attractive. Increasing the share of rented apartments also lowers the interest in renovation, because only the tenants would benefit from reduced energy bills. Moreover, the process of OBS application, as well as renovation per se, is often perceived as complicated; an example is the decision-making process in multi-owner buildings where it is often not easy to reach a consensus, as qualified majorities are needed.

Proposed solutions:

Attending to the multifactorial nature of this challenge, the proposed solutions are also varied, as listed below:

- ✓ Raising awareness through campaigns (initiated by the Lithuanian government) focussing on the multiple benefits of energy renovations16 and the available support schemes;
- ✓ On-bill repayment schemes that include a "master servicer" (OBRM(S) schemes) appear more promising than other schemes at this point. The reason is that a master servicer is business-wise motivated and will find the best possible ways to convince end users and therefore incentivise the whole process.

Technical level

Challenge: Lack of inhouse renovation experts

Context: Smaller/ municipal utilities often lack technical staff and managerial capacities to manage a renovation process. In general, utilities expressed that they face a lack of working capital to build up technical expertise as they need to heavily invest in the replacement of old district heating infrastructure.

Proposed solution:

- ✓ The lack of inhouse renovation experts results from the generally low interest in OBS application among Lithuanian utilities and can be solved by hiring staff when the interest in the activity grows.

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[16] **Multiple benefits of energy renovations** are additional impacts that building renovations and linked energy efficiency investments can have (e.g. increased value of the dwelling, improvements in comfort, and creation of a healthy indoor environment).

Policy/regulatory level

Challenge: Lack of supportive regulation

Context: During stakeholder consultations, it became evident that another major challenge is how to stimulate the demand for renovations among final users. The Lithuanian government heavily supports deep renovation. Therefore, on-bill schemes without such support are not attractive.

Also, only banks are allowed to finance renovation processes in Lithuania. Enlarging the number of financial players that can participate in an OBR scheme could promote the uptake of on-bill schemes. Any company interested in providing financial services must obtain a respective licence, issued in accordance with procedure established by national law, regulating the provision of financial services and the activities of financial institutions. To obtain a licence, a company must meet the requirements close to those of a bank or credit institution (e.g. mandatory financial reserves, loan insurance, real estate coverage of financial assets, etc.). Given this hurdle, Lithuanian banks, Lithuanian credit unions or banks from other EU countries appear as the most likely financial players in an OBR scheme.

Proposed solutions:

- ✓ Revision of the state buildings renovation support policy in order to properly incorporate on-bill schemes;
- ✓ The policy on credit institutions' licensing options should be revised in order to allow more financial institutions to take a part in renovation financing. The following stakeholders would be involved in this revision: Lithuanian Bank, Ministry of Finance, and the Parliament of Lithuania.

Financial level

Challenge: Lack of financial incentives

Context: The majority of utilities consulted within the RenOnBill project pointed out that they are focused on their core business and (at the moment) not interested in additional business activities (other than business-as-usual). Many large-scale projects of new constructions are under development, and these projects show high profit margins and therefore attract financial institutions and investors.

Residential renovation projects are characterised by both low interest rates and public support, as these are the key factors to make renovation attractive for homeowners. However, the renovation process is also associated with considerable administrative burdens (e.g., meeting the required procedures, obtaining a consensus amongst all dwelling owners of the building). These administrative challenges make renovation projects less attractive for traditional banks.

Proposed solutions:

- ✓ Revision of credit institution licensing policy and therefore possible attraction of additional financiers and investors that can respond more dynamically to the challenges mentioned above;
- ✓ The presence of clear procedures on how to deal with a new support scheme such as OBS would possibly encourage utilities to take a more active role. Setting up such procedures would involve the Ministry of Energy, the Ministry of Environment, and the energy agency.

Awareness

Challenge: Lack of education and information of stakeholders

Context: All stakeholders involved in the consultation process mentioned that they lack of clear, concise information about renovation measures. Ideally, this information would be collected and provided in a web page that is administered by an independent authority. Also, education of end users (e.g. households) about the benefits of energy renovation measures was one of the issues to be improved.

Proposed solutions

- ✓ Raising awareness through campaigns focused on the multiple benefits of energy renovations and the available support schemes;
- ✓ A pilot case in a smaller active municipality, with support from a public authority (e.g. Ministry of Energy, Ministry of Environment, Energy agency or similar) can also be an important milestone for OBS replication in Lithuania. However, even a pilot scheme in a smaller utility would only work with public financial support

Summary

Based on the analysis of challenges, context and proposed solutions above, the table below summarises potential next steps to facilitate the replication of on-bill schemes in Lithuania.

Actor(s) involved	Potential contribution for the replication of on-bill schemes in Lithuania
Ministry of Energy, Ministry of Environment, Energy agency, municipalities	Raising awareness focusing on the multiple benefits of energy renovations and the available support schemes
Ministry of Energy, Ministry of Environment, Energy agency, municipalities	A pilot case in a smaller municipality, with support from a public authority
Ministry of Energy, Ministry of Environment, National Energy Regulatory Council, National Bank	Revision of policy and regulation on credit institution licensing and the state buildings renovation support

6 Germany | National roadmap for on-bill replication

6.1 Key insights

From the analysis in the following chapters and based on three years of research, analysis, and stakeholder consultations within the RenOnBill research and innovation project, we draw the following potential next steps for all those who wish to promote the development of on-bill schemes for the German market of residential energy renovation:

Actor(s) involved	Potential contribution for the replication of on-bill schemes in Germany
Policy actors	✓ Discuss further potential regulatory needs for OBS replication – e.g. with concrete pilot example, to carve out needed **regulatory changes, including allowing for transferability of long-term OBS arrangements** ✓ **Clarify the legal set-up** of OBS to set clear guidance for future OBS design ✓ Reiterate the need for renovation efforts in Germany to **fulfil set policy goals** and **add private financing options like OBS** to this picture more prominently, alongside existing state-financed support options
Financial institutions, utilities	✓ Get active in the implementation of a potential **"pilot OBS"** to make the first move and set on-ground experience that encourages more actors to get involved in on-bill schemes ✓ **Build on the market experience with Energy Performance Contracting** to establish OBS as a viable option for the residential housing segment ✓ **Utilities**: **Use the momentum** of need for climate action to take on a new position in the renovation market, secure client base and implement OBS after thorough feasibility check

6.2 Overview of the German context

Status Quo: Residential buildings & energy renovation in Germany

Germany is the largest European country in terms of population, with **83 million inhabitants** as of 2019. The majority of the country's building stock consists of **residential buildings** (approximately 19 million). A considerable majority (83%) of these residential buildings are **single- and two-family houses**, while multi-family houses account for only 17% of the country's residential building stock. These multi-family houses alone account for 21.5 million residential units (apartments).

While ownership structures of residential buildings in Germany are generally quite diverse (ranging from private owners to owners' associations, municipal housing companies, and

private housing companies), **renting is very popular in Germany**. Only 47% of residential units in Germany are occupied by their owners.

Energy consumption

The residential building sector's final energy consumption accounts for approximately 30% of the national final energy consumption, and 64% of the total building energy consumption. Energy demand levels across the building stock differ significantly; the highest demand is seen in those buildings that were constructed in the 1970s or earlier, i.e. before the first thermal insulation ordinance came into effect. These old buildings account for two thirds of today's building stock. For such old buildings, the potential for energy renovations is particularly high.

Energy supply

There are four large privately owned energy suppliers operating supra-regionally in Germany. The majority of German households, however, receives their energy from small and medium-sized municipal enterprises. Given that minimum contract durations for electricity and gas are 1-2 years, customers tend to often switch their suppliers. This is enabled by consumer protection laws and promoted by web-portals that provide comparative data on competing energy suppliers for a specific region and therefore facilitate frequent changes of energy providers. In the case of heat supply through district heating networks, contract durations are in general longer and customers usually cannot switch the heat supplier.

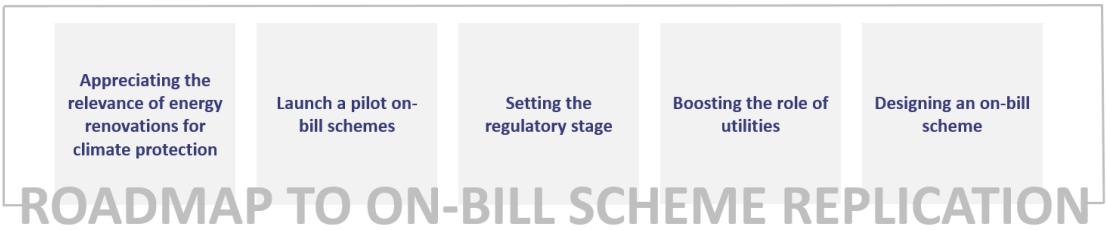
Energy renovation

The building sector is key for achieving Germany's GHG reduction goals. However, the German energy targets for the residential building sector will only be met if a renovation rate of 1.4% to 2% is achieved. During the last years, renovation rates stagnated between 0.8% and just over 1%. The potential for energy renovation in Germany is therefore significant, especially for those buildings that were constructed before the 1970s. As of now, only every third building renovation undertaken in Germany goes along with the implementation of energy saving measures, and most energy savings measures do not meet the optimum renovation depth.

Source: RenOnBill Report "The residential building renovation market in Germany, Italy, Lithuania and Spain" (May 2020)

6.3 Replicating on-bill schemes in Germany

Based on the research, analysis and stakeholder consultations conducted within the RenOnBill project (2019 – 2022), the roadmap suggests five building blocks for replicating on-bill schemes in Germany.



1 – Appreciating the relevance of energy renovations for climate protection

Challenge and context: Investments in building energy renovation measures have more potential to save carbon emissions than investments in new constructions. However, awareness about the importance of renovation measures only slowly translates from the political agenda into daily business. **Justifying the need for on-bill schemes requires more political guidance on the long-term strategy for housing renovation and its connection to climate protection**. While the German government has passed its Long-Term Renovation Strategy already in June 2020, criticism remains that "on the ground" measures to increase the renovation rate in the building stock are still missing. During stakeholder consultations, financial institutions and utilities confirmed that it is often (financially) more attractive to engage in new construction projects than to engage in renovation projects. **There is room for action in Germany to successfully promote housing renovation, and to interconnect it with climate and social aspects**. Being one of the major "countries of tenants" within the EU, owner structures and incentive schemes for renovation have to be designed differently than in "countries of owners". This is because the owner-tenant dilemma (a situation of misaligned interests between landlords and tenants) is a major obstacle, especially in big cities with tight housing markets and rising rents.

Proposed solutions:

- ✓ Policy actors should **strengthen the political rationale** for energy renovations. The newly established "Federal Ministry of Housing, Urban Development and Construction" of the German government elected in October 2021 shall step up efforts for renovation alongside the set priority of new constructions.
- ✓ Policy actors could set up **public education campaigns** for consumers that explain interconnections between housing, climate action and social aspects[17] for a more positive framing of renovation efforts.

2 – Launch a pilot on-bill scheme

Promoting private financing instruments

Challenge and context: The necessary investments in renovation exceed the possibilities of public funding. Additional private investments are therefore key to achieve the climate targets in the building sector. Interest in private financing instruments for housing renovations exists and is increasing. However, the establishment and promotion of (new) business models and incentive schemes still lags to pick up pace in Germany. Energy renovation is often financially supported by public support/grant programmes offered through KfW and BAFA (via the Federal funding for efficient buildings (BEG)). These offers are widely known and show high demand, but leave room for complementary and additional financing schemes. For this, the visibility of private options like OBS and their viability needs to be highlighted in the public discourse and renovation strategy.

Proposed solutions:

- ✓ Actors interested in private financing for renovations (utilities, financial institutions, policy actors) should build on the **stakeholder network established** through the RenOnBill project to translate the outcomes into action on the ground. The network

[17] Social aspects relate to the vulnerability of economically weaker tenants and their consideration in renovation processes.

can be an entry point for institutions interested in a "matchmaking process" to set up an OBS or discuss ideas. A pilot project will be beneficial to break new ground and raise awareness for private financing options that can convince more actors to get involved.

- ✓ Interested stakeholders - such as utilities, financial institution, and others - are recommended to take the first step and run a **"pilot OBS"** with a target segment to provide hands-on experience with an OBS, which will bring additional learnings concerning client group and target segment, and motivate more players to jump on board.
- ✓ Policy actors should capitalise on the opportunity to **include private sector approaches** (like OBS) more visibly in their strategies to act upon the urgency and dimension of renovation needs, alongside existing state-financed efforts.
- ✓ The involvement of **private sector actors** (utilities, banks, etc.) in the design of new business models (like OBS) early in the development phase (through e.g. capacity building measures, knowledge exchange, sharing of hands-on experiences, and more) – as seen with the stakeholder consultations within the RenOnBill project - is beneficial. This could be implemented by policy actors and RenOnBill stakeholders to jointly explore options to include OBS in BAFA / BEG/ KfW support schemes, making an uptake of OBS more attractive to end-users

Building on the market's experience with Energy Performance Contracting (EPC)

Challenge and context: Positioning on-bill schemes in the German market requires clear communication about the differences between OBS and EPC. In Germany, EPCs have to date mainly been applied in the municipal and commercial building sector, but barely in the residential sector. Measuring and verifying energy savings is a central element in each EPC. The residential sector looks at consumption behaviour of individual customers, which makes guaranteed projected energy savings very difficult. **OBS can bring some of the attractive and successful features of EPC to the residential building segment: Providing third-party investment and on-bill repayment - without guaranteed savings - designed as a "one stop shop" solution.** OBS could fill a gap by addressing the residential sector where EPC is to date hardly common and/or feasible. Moreover, OBS could target small-scale investments and/or smaller lots of investment projects as opposed to EPCs.

Proposed solutions:

- ✓ Stakeholders (utilities, utility associations, energy agencies, consumers' associations) should **make use of awareness building and information on OBS** conducted throughout the RenOnBill project to further illuminate and promote the distinction of OBS vs. EPC.
- ✓ Stakeholders (utilities, utility associations, energy agencies, consumers' associations) could engage in a process to **develop the concept of EPC further and use their lessons learned** for a set-up of an OBS that potentially contains EPC components, but specifically targets the residential building segment.
- ✓ Policy actors and first movers for on-bill schemes could **frame OBS** as a measure for residential housing and EPCs for non-residential housing for marketing purposes and co-existence of the two concepts; this will be of special relevance for consumer awareness, clear communication and responsibilities.

3 – Setting the regulatory stage

Challenge and context: Two key challenges when replicating on-bill schemes for the German market are the questions 1) how to deal with short maximum contract durations between energy utilities and households, and 2) how to enable transferability of OBS

arrangements. For many customers, energy utilities are perceived as interchangeable service providers and in fact, frequent changes of energy providers are quite common. The highly liberalised German energy retail market allows for minimum contract durations of 1-2 years in energy contracts due to recent changes[18]. **However, short energy contract minimum durations in the residential building segment significantly limit the potential for the design and implementation of on-bill schemes** since only small-scale renovation projects with short payback times appear feasible within these time frames. For relevant stakeholders (financial institutions, utilities), however, bigger volumes are preferable and maybe even a precondition for OBS to be of interest to them. There is disagreement within the stakeholder community about possible loopholes for energy contract duration that could be used as a work-around approach (as seen with long-distance heating contracts in EPC that allow for longer periods, this is however, currently under revision and will potentially be reduced in tenor as well).

Proposed solutions:

- ✓ Stakeholders and policy makers should evaluate possibilities to **enable - in cases where an OBS is implemented - longer energy contract durations** as exceptional cases of §309 No. 9 BGB.
- ✓ Further assessment of the possibility to **allow for transferability of OBS arrangements via the creation of OBS fees** in the energy bills that can be easily transferred to the original utility that made the investment in the OBS: This option has been evaluated by the RenOnBill project team (see scientific paper "Business models for supporting energy renovation in residential buildings. The case of the on-bill programs").

Relevant laws/regulations:

- EnWG – Energiewirtschaftsgesetz: The energy act governs grid-based energy, including regulation on network fees that consumers are allowed to be charged with. Relevant fees need to be approved by the Federal Network Agency and based on the ordinances on fees for access to gas and electricity. This will play a role for the addition of potential OBS charges on the energy bill.
- §309 No. 9 BGB (German Civil Code) regulates the standard tenor of consumer contracts / contractual relationships which include the delivery of goods or a regular provision of services, which applies for energy contracts and has been reduced to a maximum of one year in 2021. This is relevant when considering to utilise OBS to enable energy efficiency investments with payback/amortisation rates beyond minimum contract durations.
- Messstellenbetriebsgesetz (MsBG, Metering Point Operation Act): regulates mandatory and optional configuration and operation of measuring sites of energy supply (meters), which is relevant for the "tariffed on-bill" option where the obligation to pay for the renovation is tied to the property's meter and not to the person.

[18] The Fair Consumer Contracts Act (19/26915) was promulgated in the Federal Law Gazette on 17 August 2021, thus ending the legislative process. It will enter into force in a staggered manner; changes to § 309 will be in force starting March 1, 2022.

4 – Boosting the role of utilities

Challenge and context: Energy utilities are *the* key stakeholders in every on-bill scheme. However**,** German utilities are not (yet) perceived by their residential building customers as relevant actors when it comes to energy renovation. In the German market, homeowners traditionally rely on KfW / BAFA support[19] when it comes to energy efficiency measures in private buildings. Moreover, homeowners rather contact the heating mechanic than the energy utility for renovation requests and advice. Consequently, utilities currently focus on new buildings more than the renovation segment because it is (financially) more attractive. During stakeholder consultations, utilities stated a preference for the provision of energy to newly constructed buildings/neighbourhoods as opposed to engaging in (small scale) renovation projects.

Failed positioning, as seen in the case of the smart home or energy service contract business in which utilities did not successfully position themselves as important players, can result in lack of demand and acknowledgement by customers and hence missed opportunities. Therefore, the challenge is to **actively position energy utilities in the renovation market**. Utilities often worry about their credibility and trustworthiness when offering energy efficiency measures that are – presumably – contradictory to their commodity business. Special to Germany's utility landscape is the prominent role of Stadtwerke (municipal utilities), which have strong ties to their customers in local communities and at the same time have a more prudent business strategy due to their core business activities and their accountability to their public shareholders.

Proposed solutions:

Positioning energy utilities can be achieved in two ways:

- ✓ **Active positioning:**
  - Energy utilities should develop easy, appealing on-bill renovation offers with limited tenor and market these "one-stop shop" offers to their clients. The (perceived) **simplicity of the product**/offer is important to both convince final customers and to stand out from competing products/offers
  - Energy utilities could **develop a targeted communication/marketing campaign** and a close monitoring of the on-bill offers acceptance in the market tracking its success to make timely and adequate adjustments
- ✓ Energy utilities should capitalise on the funds from BEG (Bundesförderung für effiziente Gebäude) which provides financial support for renovations (building envelope, heating engineering etc.) more than they currently do to make use of this financial opportunity.

- ✓ **Passive positioning:** Taking a **third party** with direct and trustful connection to final customers on board: e.g. regional energy agency, consumer agency to position energy utilities as a relevant contact for energy renovations

[19]On January 24 2022, the Federal Ministry for Economic Affairs and Energy and KfW announced an immediate freeze on applications and commitments for the Federal Efficient Buildings Programme (BEG). This **only** concerns part of the KfW support, BAFA-BEG funding for individual measure will remain unchanged. The ministry has announced some changes that will enable to focus subsidies more strongly on the energy modernisation of *existing* buildings in the future (as opposed to subsidies for the construction of new buildings).

- ✓ **Explaining the need for action:** Utilities need to strongly advocate for their new role in the German Energiewende (energy transition) and renovation in their client communication, e.g. by framing the need for innovative financing as part of their climate strategies. While "energy efficiency" is still high on the political agenda and undeniably relevant, it has become a less popular and attractive label or branding compared to e.g. "carbon neutrality" and "climate action" – and can help position utilities as relevant actors for these topics.

5 – Designing an on-bill scheme

How to finance an OBS and how to deal with potential credit lending activities

Challenge and context: Accessing financial means to start an OBS is not per se considered a major challenge by German utilities – however, utilities stated that they are rather reluctant to act as a lender in an OBF (on-bill financing) scheme. In order to engage in credit lending activities, utilities would need to obtain a BAFIN license. This step requires financial know-how and equity, making it unattractive for both small and big utilities. **Hence, using an OBS for a large-scale renovation measure in Germany will only work when using the OBR model, which involves a financial institution responsible for the capital provision for the projects. Financial institutions hence will play a key role for OBS in Germany and the schemes need to consider financial institutions interests and motivations in their set-up.**

While Directives 2014/17/EU on credit agreements for consumers relating to residential immovable property and 2008/48/EC on credit agreements for consumers allow utilities and other non-credit institutions to provide credit for the renovation of residential buildings, all utilities consulted within the RenOnBill project's stakeholder consultation processes confirmed that credit business is considered unsure to impossible for utilities.

Proposed solutions:

Concerning OBF schemes:

- ✓ To provide financial institutions the scale of volume they need for OBS to be an attractive option, **refinancing a portfolio of (small scale) energy renovation projects** that have been implemented and bundled by a utility over several years could be a viable possibility. This option leaves room for action for both small-scale project volumes and bigger refinancing volumes within an OBF scheme.
- ✓ OBF schemes can be **financially backed with public funds** for energy renovation. Policy actors and financial institutions could elaborate on strategies to enable the involvement of a financial institution in OBS with publicly backed fall-back options. **This leverage of public investment** would be in line with the political agenda that is highly prioritising energy efficiency and energy renovation.

Concerning OBR schemes:

- ✓ **Think big**: OBS can and should be "thought big" in case actors (financial institutions, building owners) are interested in larger volumes. E.g., a total volume of investments implemented by a single OBS of €500,000 or more is especially interesting for German financial institutions, according to RenOnBill stakeholder consultations.
- ✓ **Financial institutions could assess the creditworthiness** of potential customers for an on-bill offer since this is part of their core business and avoids additional transaction costs. Utilities usually do not have the capacities and know-how to evaluate creditworthiness while financial institutions show great expertise in this field, hence the separation makes sense.

How to identify the most suitable client for an on-bill scheme and how to decide on its scope

Challenge and context: The housing market in Germany is very fragmented with many different owner groups possessing the current housing stock. This offers many possible entry points for OBS, but the group's differences in market share, positioning and suitability for OBS are important to consider when designing an OBS. Political need for large-scale renovation projects is recognised and big investment volumes are needed for successful onboarding of financial institutions for OBS. **Identifying the right client and scope for a successful pilot OBS is crucial**. As stated above, Germany being a "country of tenants", rented apartments bring along some challenges. Landlords with motivation to renovate their property and an interest to capitalise on their investments face limitations by strong consumer protection laws that limit additional financial burdens that could be placed on tenants, and protest against additional costs for renovation in already tense housing markets with rising rents in cities.

Proposed solutions:

- ✓ Stakeholders interested in the up-take of an OBS should analyse **potential target groups**. The largest owner groups of housing in Germany include the following:
- ✓ **Private individual(s)**[20]**,** including owners' associations representing owner-occupied housing: They currently mostly use own funds for renovation projects and are often unaware of additional options – one point of entry here could be the associations' chairpersons;
- ✓ **Municipal housing companies:** In many cases they have already established cooperation with service providers of contracting models (typically for upgrading the heating system) and therefore have a limited interest in other/competing renovation offers. Moreover, municipal housing companies have access to other sources of (public) finance and therefore a limited demand for other financing sources for their renovation projects – however, they experience more public pressure through their shareholder to engage in climate action;
- ✓ **Private housing companies:** Can be a point of entry to enable OBS at scale, as they usually own a large number of housing entities and are experienced in streamlining activities;

[20] Wohnungseigentümergemeinschaften, WEGs

7 Beyond the RenOnBill project

As the RenOnBill research and innovation project comes to an end in April 2022, this roadmap seeks to contribute to the future replication of on-bill schemes in Italy, Spain, Lithuania, and Germany by making knowledge and insights from 3 years of research available and accessible beyond project duration.

The roadmap is only one step on the journey towards increased energy renovation rates, a just energy transition, and ultimately climate protection. It focusses on on-bill schemes as an innovative instrument for leveraging private capital for residential energy renovation. While this document primarily addresses readers from Italy, Spain, Lithuania, and Germany, it also gives general insights on key issues to consider when dealing with on-bill schemes to a larger audience.

We hope that readers will build on the RenOnBill project's work and invite all stakeholders that have taken an interest in on-bill schemes to freely use this roadmap to support their work in replicating such schemes in their respective environments.

For more information about on-bill schemes and the work of the RenOnBill project, please consider the following materials:

- RenOnBill project website
- RenOnBill brochure (English)
- Report "Overview of on-bill buildings energy renovation schemes" (January 2020)
- Report "The residential building renovation market in Germany, Italy, Lithuania, and Spain" (May 2020)
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