



Deep-dive into policy strategies to boost building renovation

Canada EU exchange on energy efficiency in buildings and housing

20/04/2021 | Oliver Rapf, Executive Director, BPIE



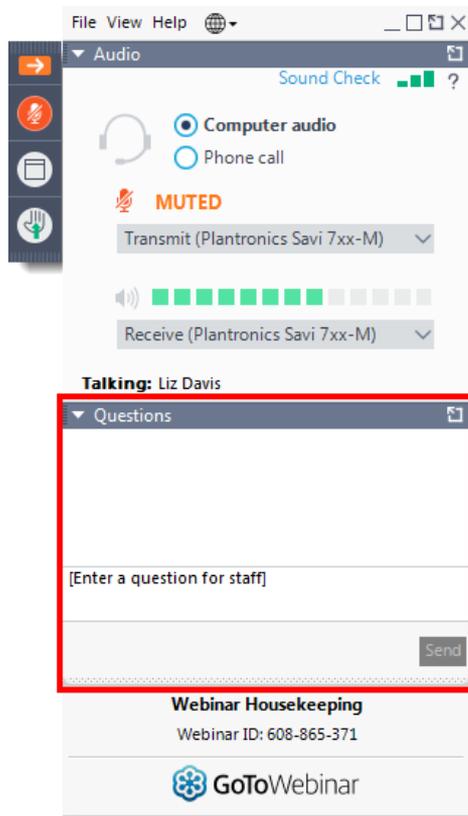


HOUSEKEEPING

A screenshot of a webinar interface. The main window shows the title 'Webinar Housekeeping' and the organizer/presenter 'Liz Davis'. It includes contact information for the United States (+1 (951) 384-3421), an access code (400-696-084), and an audio PIN (19). A 'Questions' section is visible on the right side of the interface, with a text input field and a 'Send' button. The audio settings panel on the right shows 'MUTED' status and options for 'Transmit' and 'Receive' using Plantronics Savi 7xx-M devices. The Windows taskbar at the bottom shows icons for Internet Explorer, File Explorer, Google Chrome, and the Start button.



HOUSEKEEPING



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- Submit questions and comments via the Questions panel
- Please continue to submit your text questions and comments using the Questions Panel

Note: Today’s presentation is being recorded and will be provided within 48 hours, along with the slide deck.





AGENDA

16:00-16:05	Welcome & agenda – Oliver Rapf, Executive Director, BPIE	10:00-12:00
Session 1 16:05-17:05	From EU policy to national reality: Developing and executing national long-term renovation strategies <ul style="list-style-type: none">• Introduction to Member States’ role in the EU agenda: national long-term renovation strategies – Gaspard Demur, Team Leader for National Renovation Strategies and Recovery, DG Energy, European Commission• Flanders’ long term renovation strategy – Roel Vermeiren, Renovation Strategy advisor, Flemish Energy Agency• The Spanish Long-term Renovation Strategy and the Recovery, Transformation and Resilience Plan– D. Javier Martin, Residential and Land Managing Director, Ministry of Transport, Mobility and Urban Agenda, Spain• Q&A with audience	10:05-11:05
Session 2 17:05-17:55	Implementing strategies to accelerate efficient retrofits and decarbonize the building sector in Canadian provinces and territories <ul style="list-style-type: none">• Tracking provincial policies and performance on energy efficiency: Efficiency Canada’s annual Scorecard & policy database – James Gaede, Senior Research Associate, Efficiency Canada, Lead Author of the Provincial Efficiency Scorecard• Strategies and initiatives from British Columbia– Katherine Muncaster, Director, Energy Efficiency Branch, British Columbia Ministry of Energy, Mines and Low Carbon Innovation• Q&A with audience	11:05-11:55
17:55-18:00	Closing remarks – Gaspard Demur, Team Leader for National Renovation Strategies and Recovery, DG Energy, European Commission	11:55-12:00





SESSION 1

From EU policy to national reality: Developing and executing national long- term renovation strategies





SESSION 1

Introduction to Member States' role in the EU agenda: national long-term renovation strategies

Gaspard Demur, Team Leader for National Renovation Strategies and Recovery, DG Energy, European Commission





Renovation Wave

The European Green Deal

#EUGreenDeal

**Webinar EU-
Canada**

Pathways to 2050

20 April 2021



”

I want the NextGeneration EU to kick start a European renovation wave and make our Union a leader in the circular economy.

*President von der Leyen
State of the Union speech,
2020*

#EUGreenDeal



COVID-19

Buildings: in the centre for our lives

For millions of Europeans, the home has been the focal point of daily life: an office for those teleworking, a classroom for children and pupils, a hub for online shopping or entertainment



- Investing in buildings can **inject a much-needed stimulus** into the construction sector and the macro-economy
- The Renovation Wave can **trigger a large-scale transformation** of our cities and built environment

Building Renovation for Climate Neutrality and Recovery



The building sector is one of the **largest energy consumers** in Europe, responsible for more than one third of the EU's energy-related emissions.



Effective actions are crucial to make Europe climate-neutral as:

- Only 1% of buildings undergo energy efficient renovation every year
- Roughly 75% of the building stock is energy inefficient
- Almost 85-95% of today's buildings will still be in use in 2050



Therefore, by 2030:

- 35 million buildings could be renovated and
- Additional green jobs created in the construction sector

The Renovation wave

Greening our buildings faster, Creating jobs, Improving lives

On 14 October 2020, the European Commission presented its Renovation Wave Strategy. The Commission aims to at least:

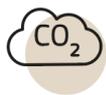
- **double renovation rates** in the next ten years;
- make sure renovations lead to **higher energy and resource efficiency**.

This will enhance the quality of life for people living in and using the buildings, reduce Europe's greenhouse gas emissions, foster digitalisation and improve the reuse and recycling of materials.



<https://audiovisual.ec.europa.eu/en/video/I-195844>

Making Europe's Buildings Remarkably Different



Decarbonisation of heating and cooling



Tackling energy poverty and worst-performing buildings



Renovation of public buildings and social infrastructure such as schools, hospitals and administrative buildings



A set of policy measures, funding tools and technical assistance instruments to break down of existing barriers throughout the renovation chain – from the conception of a project to its funding and completion

Fast and Accessible Renovation for Better Buildings



Stronger regulations, standards and information on the energy performance of buildings, for example:

- A phased introduction of mandatory minimum energy performance standards for existing buildings
- Updated rules for Energy Performance Certificates
- Possible extension of building renovation requirements for the public sector



Accessible and well-targeted funding, for example:

- 'Renovate' and 'Power Up' Flagships in the Recovery and Resilience Facility under NextGenerationEU
- Simplified rules for combining different funding streams
- Multiple incentives for private financing

Sustainable Products, Services and Assistance



Increasing capacity to prepare and implement renovation projects:

- from technical assistance to national and local authorities through training and skills development for workers in **new green jobs**



Expanding the market for **sustainable construction products and services**, for example:

- integration of new sustainable materials and nature-based solutions
- revised legislation on marketing of construction products
- material reuse and recycling platforms, and recovery targets

Districts approaches uniting people and communities



Developing **neighborhood-based approaches** for local communities to integrate renewable and digital solutions and create zero-energy districts, where consumers become prosumers selling energy to the grid



The strategy also includes an **Affordable Housing Initiative** for 100 districts



New European Bauhaus – Matching Style with Sustainability

“The New Bauhaus is about bringing the European Green Deal closer to people's minds and homes. And making tangible the comfort and attractiveness of sustainable living” – President von der Leyen



What?

an interdisciplinary project
a forum for discussion
a space for art and culture
an experimentation lab
an accelerator
a hub for global networks and experts
a contact point for citizens interested in the topic



Who?

Architects
Artists
Students
Scientists
Engineers
designers and others who wish to contribute



When?

First wave: 2021 onwards - For example five Bauhaus projects, all focused on sustainability, art and culture

Second wave 2023 - Bauhaus projects and network in and outside Europe:

- Platform and creative spaces
- Bauhaus knowledge hub
 - identifying technologies and materials
 - using big data and artificial intelligence
 - engaging with stakeholders and citizens

Thank you

Gaspard Demur: Team Leader : Long-Term Renovation Strategies and Recovery

Contact: Gaspard.demur@ec.europa.eu



SESSION 1

Long Term Renovation Strategy Flanders Region, Belgium

Roel Vermeiren, Renovation Strategy advisor, Vlaams Energie,
Flanders





Pathways to 2050
Deep-dive into policy strategies to boost building renovation

Long Term Renovation Strategy

Flanders Region
Belgium

FLEMISH BUILDING STOCK

13.522 km²
population > 6,5 million – 485 / km²
> 2,6 million buildings



RESIDENTIAL

3 million dwellings in 2,3 million buildings
= 13,7% of total energy use

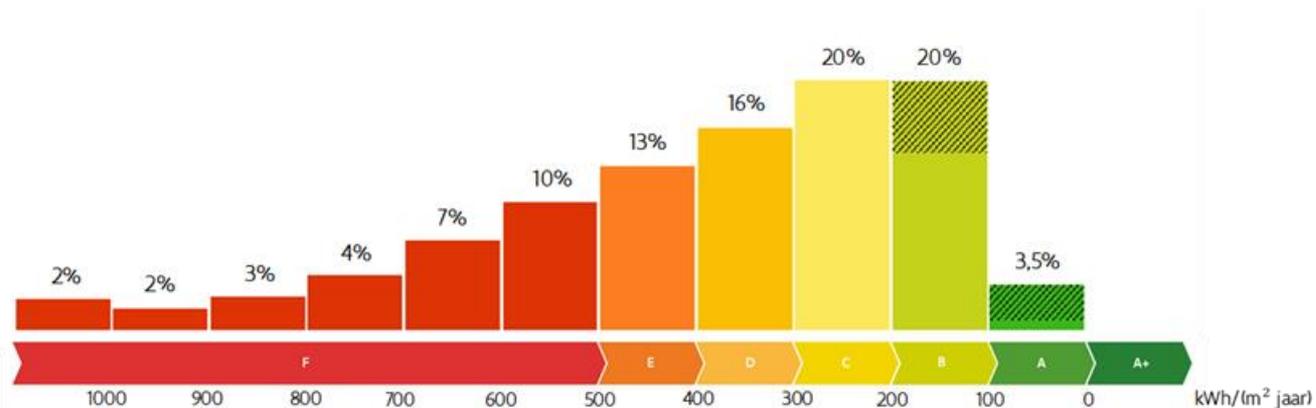
Population grows older (share of + 65)



Vlaanderen
is energie

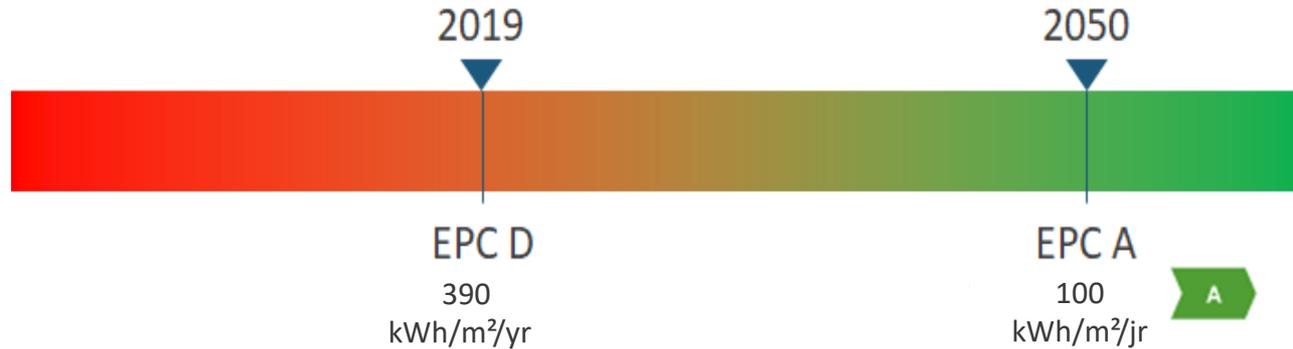
Housing stock

Terraced	Semi-detached	Detached	Apartments	Total
652 055	587 359	898 501	848 992	2 986 907
22%	20%	30%	28%	100%



Goals 2050

Highly energy-efficient and sustainably heated **homes**



Tertiary building stock: carbon neutral
heating, hot water,
cooling, lighting



Key points residential buildings

- ▶ Implement new **incentives for deep renovation** in the context of transaction moments (purchase, heritage, rental):
 - Label premium and zero-interest renovation credit
 - Property tax reduction (deep renovation, extension to renovation without a permit in preparation)
- ▶ **Unburdening and guidance** (integrated energy houses –information points (OSS), renovation coaches, translate strategy to a local level)
- ▶ Further development **housing passport (since 2019 available for free for owners)**
- ▶ Further development Energy Performance Certificate **EPC+** as an advice tool for renovation of homes aligned with the long-term goal 2050. (EPC= obligatory by sales/rent)

Key points residential buildings

- ▶ **Make heating more sustainable** (decision tree heating, city heating, replacement ban fuel oil boiler, ...).
- ▶ Integrated **win-win approach with the 'asbestos-safe 2040'** (asbestos certificate, incentive measures).
- ▶ Sufficient **attention for other effects** of renovation (increase comfort, added value home,...) to also encourage renovation besides key moments
 - Research added value low-energy homes
 - Integration of home renovation & energy grants (medio 2022)
 - BENOvate campaign

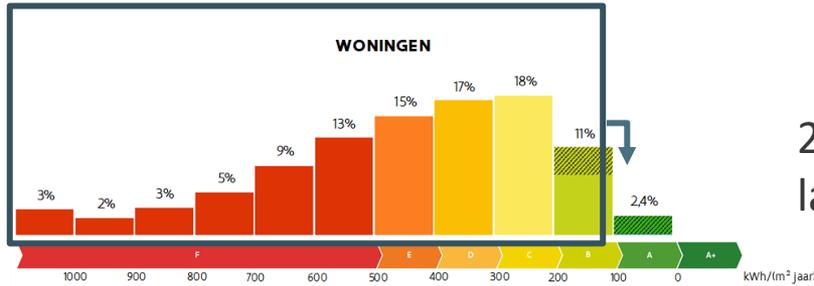
Key points non-residential buildings

- ▶ Further concretize **long term goal carbon neutrality**.
- ▶ Implement **obligation to renovate** within 5 years after purchase of large tertiary buildings.
- ▶ Develop **building passport** to the example of the Flemish woningpas (Housing passport).
- ▶ **EPC obligation large non-residential buildings** (before 2025) + obliged minimal energy prestatation label from 2030.

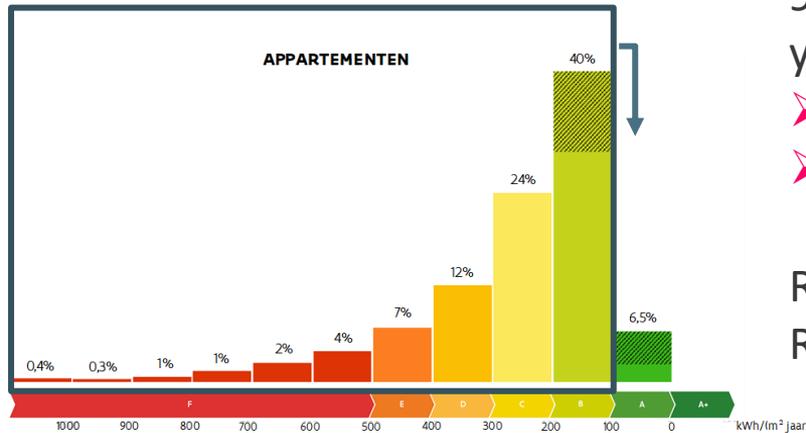
Key points non-residential buildings

- ▶ **Exemplary function government buildings.** From 2028 minimal energy performance label. Government buildings of the Flemish government must realize a yearly energy saving goal of 2,5% on primary energy use from 2021.
- ▶ Integrated win-win approach with the **'asbestos-safe goal'** and the **'asbestos-safe-commitment'** for public buildings by respectively 2034 and 2040 (exemplary function).

Goal 2050 homes: in figures



2020: 3,5 % of all homes = label A (2021: 4,6%)



96,5% to renovate in 30 years

- 3% towards label A /year
- 100.000

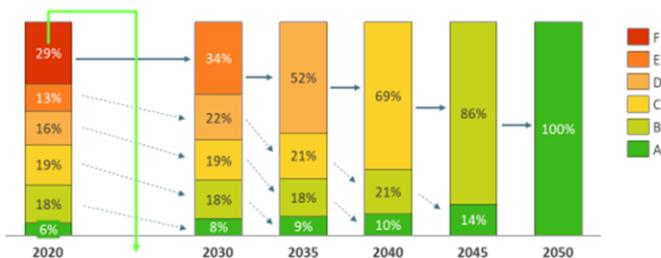
Renovation in phases: 
Renovation rate

□ Gebouwd voor 2006 ▨ Gebouwd na 2006 (EPB-plichtig)



Vlaanderen
is energie

Strategic options



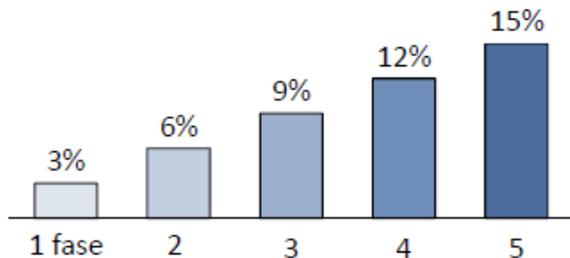
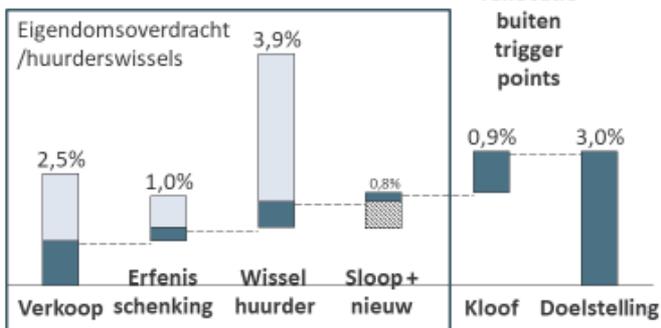
Phasing out worst performing



Use trigger points

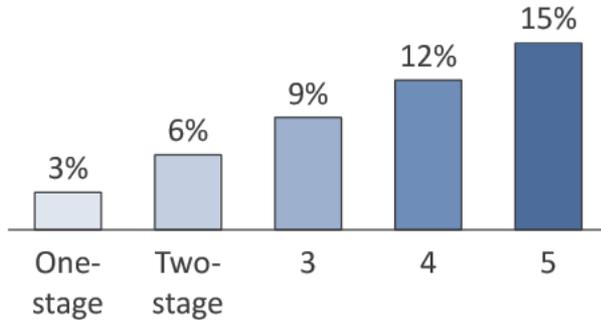


Go for deeper renovations



Renovation rate: 3 or 15%?

Needed 'renovation rate' varies with the depth of the renovation carried out towards label A



1% = 30.000

3% = 90.000/year

15% = 450.000/year

Capacity construction sector also determines options

Trigger points potential

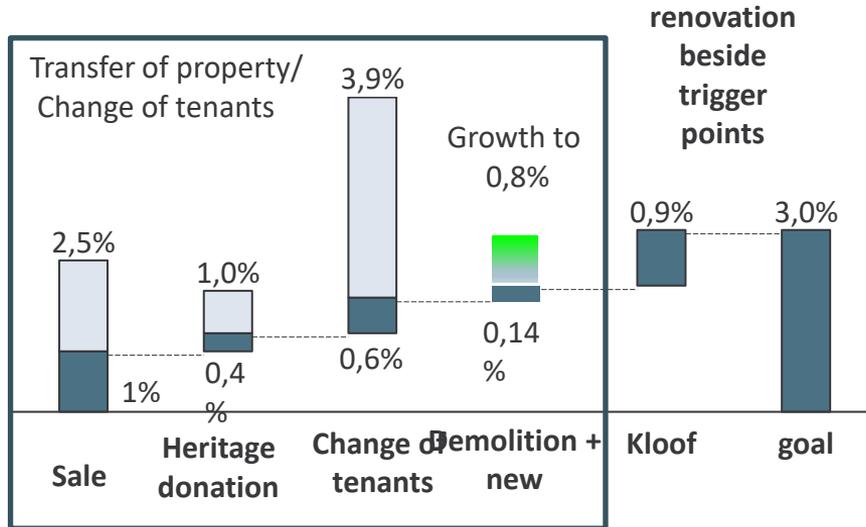
= **Natural moments** in life course residential building on which owners often are more likely to choose for thorough renovation.

Especially the **change of tenant or owner and a (highly increasing number of) demolition followed by conversion** offer great potential for deep renovation.

Making the most of this stable potential would get us going very well.

Key moments	% of all homes/y	Number/y
Sale (1 X per 30 jaar)	2.5%	75.000
Other transfers (heritage, donation)	1.0%	30.000
Change of tenant (every 5 years)	3.9 %	110.000
Vacancy (estimation)	Does not apply	50.000
Renovation with permit	0.6%	18.000
Deep renovation	0.1%	3.000
Demolition and conversion	0,14%	4.000

Trigger points potential



Targeted policy measures necessary to realise full potential

Incentives package for new owners < 5 years

- Zero-interest loan
- Increased energy label premium
- (property tax reduction)

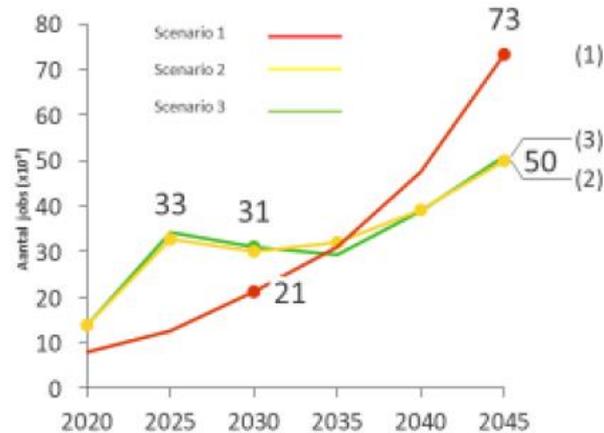
Investments and jobs

Estimated at more than €200 billion

- €150 billion for residential buildings
- €57 billion for non-residential buildings

10 jobs per million euro investments

- Short-term growth up to > 30.000
- Challenge!



New policy instruments

‘started’

- Integrated premium for home renovation 2022
- Revolving fund with zero-interest loan with delayed payback (max 20 years) for poor owners
- Tender for 20 renovation coaches (Spring 2021)
- Incentives for renovation after transfer of property
 - Zero-interest renovation credit
 - Increased premium based on energy label
 - Property tax discount for reaching label A
 - Premium Renovation master plan apartments
 - Public - private fund for long-term co-ownership loans
- Measures for non-residential buildings

Zero interest loan for new buyers

Zero interest loans issued by private banks, on top of regular loan, max 20 years

- Interest of additional loan is payed back as a grant, each year
- Amounts aligned with investment needs LTRS goals

New owner after purchase, donation or inheritance in full ownership	House label E of F			Apartement label E, F of D	
	label C	label B	label A	label B	label A
Energy label to be proven after 5 years	label C	label B	label A	label B	label A
Maximum loan amount (in €)	30.000	45.000	60.000	30.000	45.000

EPC label grant for all owners

EPC-Label grant

- On top of existing grants for energy savings measures
- Renovation of worst labels to C, B or A

EPC label before for the works	House label E of F			Appartement label E, F of D	
Energy label to be proven after 5 years	label C	label B	label A	label B	label A
EPC-label grant (in €)	2500	3750	5000	2500	3750

Green Deal – Renovation Wave

- ▶ December 11, 2019 publication EU **GREEN DEAL** as the EC's development strategy for a fair, wealthy, competitive and climate neutral society in 2050
- ▶ One of the initiatives from this European Green Deal is the so-called “**Renovation Wave**” which, by increasing the renovation rate, can also lower the energy bill, help reduce energy poverty and boost employment in the construction sector.
- ▶ **Relance**: €422 million additional EU/Flemish support for renovation

Thanks!

MORE INFO

Full version of Long Term Renovation Strategy (English)

- ▶ https://ec.europa.eu/energy/sites/default/files/beflanders_ltrs_2020_en.pdf

Roel.vermeiren@vlaanderen.be



SESSION 1

The Spanish Long-term Renovation Strategy and the Recovery, Transformation and Resilience Plan

Javier Martin, Residential and Land Managing Director,
Ministry of Transport, Mobility and Urban Agenda, Spain





The Spanish Long-term Renovation Strategy, and the Recovery, Transformation and Resilience Plan

April 2021



Long-term renewal strategy: Enabling condition for receiving European funds.

Clause	Description	Austria	Belgium-Brussels	Belgium-Flanders	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Luxembourg	Netherlands	Spain	Sweden	Average
1a	Overview of the national building stock	2	2	4	3	4	4	3	4	4	3	3	3	5	3	3.4
1b	Cost-effective approaches to renovation, including trigger points	1	2	4	3	2	4	2	3	4	3	2	3	4	2	2.8
1c	Policies and actions to stimulate cost-effective deep renovation	2	4	4	3	4	3	1	2	3	4	4	4	5	3	3.3
1d	Policies to target worst performing segments, split-incentives, market failures, alleviation of energy poverty	2	3	4	3	1	3	1	3	3	3	4	3	4	3	2.9
1e	Policies and actions to target all public buildings	3	3	4	2	2	2	1	2	3	2	3	4	4	2	2.6
1f	Smart technologies: well-connected communities; skills education	3	2	3	3	3	3	1	3	2	3	3	3	3	3	2.6
1g	Expected energy savings and wider benefits	2	0	2	2	2	2	2	2	2	2	2	2	5	2	2.1
2	Roadmap with measures, progress indicators, and indicative milestones	3	2	4	1	1	0		5	3	2	2	4	4	3	2.5
3	Mechanisms for mobilising investments	2	3	3	3	2	3	1	3	3	2	3	3	4	3	2.7
5	Consultation	2	0	1	2	0	2	2	4	3	2	2	4	3	3	2.1
6	Implementation details of latest LTRS	0	0	3	0	0	4	0	5	0	1	0	0	5	3	1.5
	Aggregate score	2	1.9	3.3	2.2	1.9	2.7	1.5	3.3	2.7	2.5	2.5	3	4.2	2.6	

0 missing 1 very superficial 2 incomplete 3 adequate 4 good 5 exemplary

ERESEE 2014

ERESEE 2017

ERESEE 2020

BELGIUM

The **Flemish** strategy was well written, following the structure of Article 2a. Most sections achieved a score of 4, and the strategy was only let down by the absence of a public consultation on the final LTRS (though previous consultation took place within the context of the "Renovation Pact").

DENMARK

had strong sections on the building stock, cost-effective renovation options and progress with implementing the 2017 strategy.

The consultation process in **THE NETHERLANDS** was highly collaborative, building on a long-standing approach to engage the public in national climate and energy policy.

SPAIN

delivered the best overall strategy, receiving a high score (4 or 5) against most clauses. Generally, the level of detail provided was excellent. Of particular note is the treatment of energy savings and wider benefits, and a detailed exposition of progress with implementing the 2017 strategy.

ORTES.MOVILIDAD
URBANA





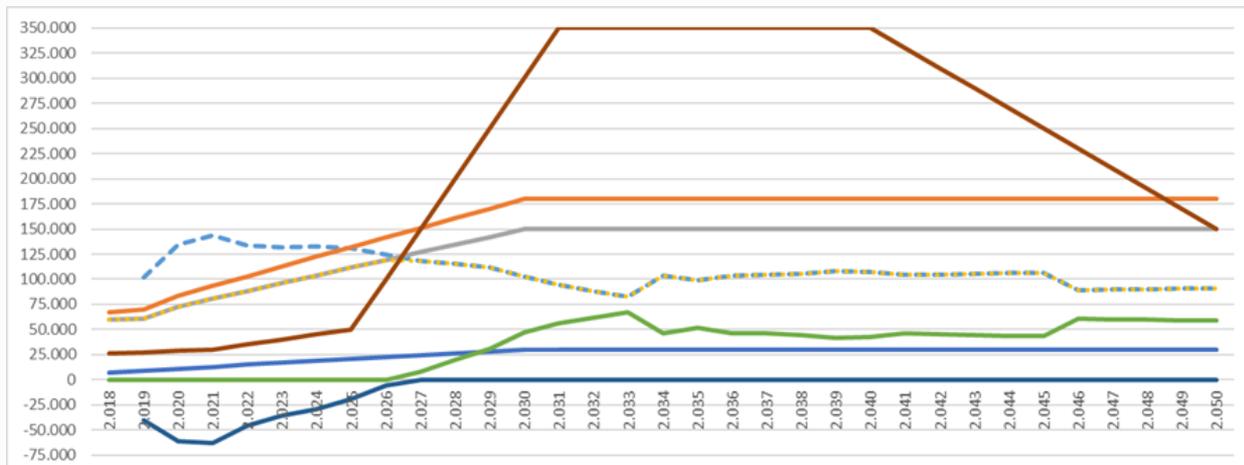
Target: Housing to renovate PNIEC

Starting point

25,000 renovated homes/year

Goal: 2030

300,000 renovated homes/year



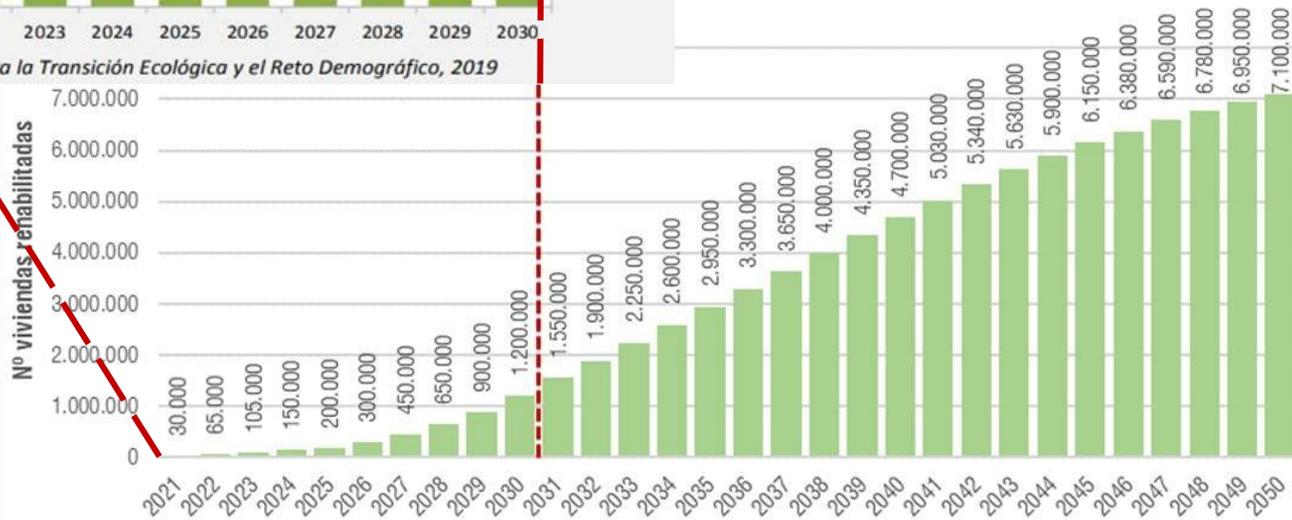
Accumulated goal of homes to be renovated



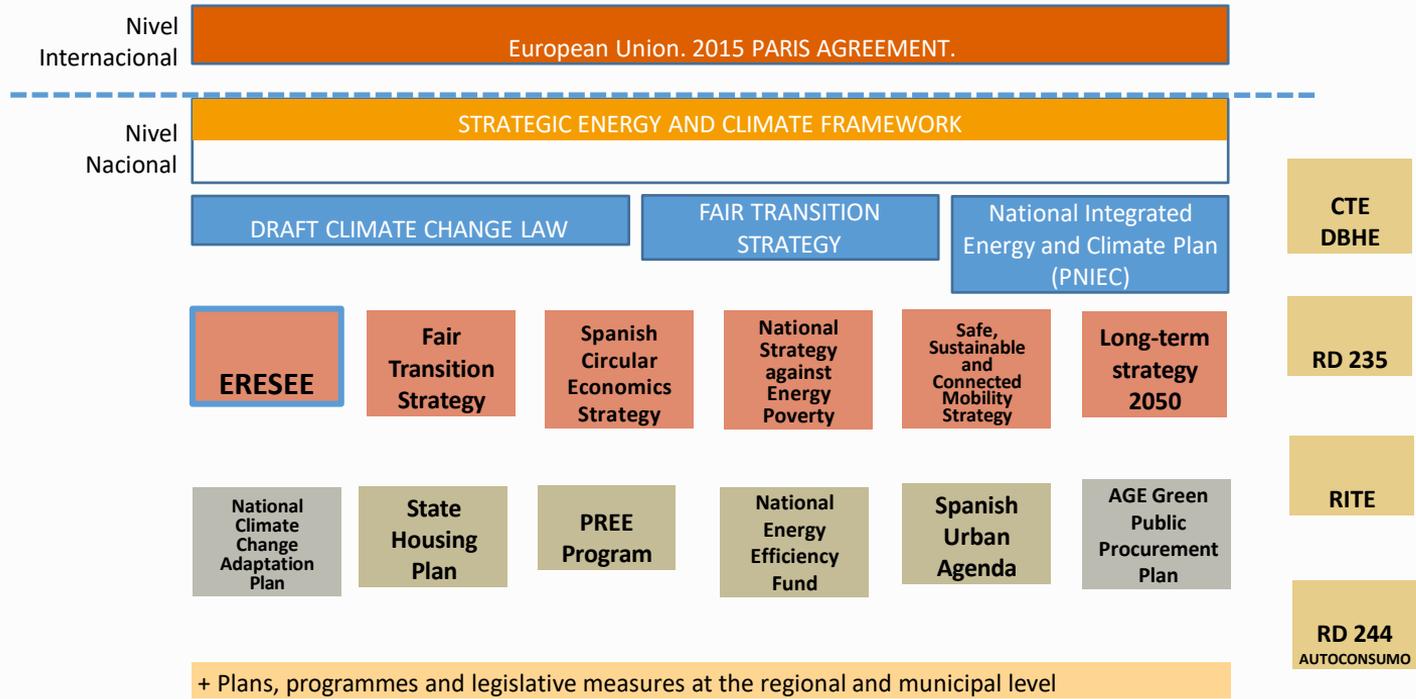
Figura 3.5. Previsión indicativa anual de viviendas rehabilitadas energéticamente 2021-2030



Fuente: Ministerio para la Transición Ecológica y el Reto Demográfico, 2019



Strategic Framework for Energy and Climate.



Y sigue ...

ERESEE Context: Goals Set in the PNIEC

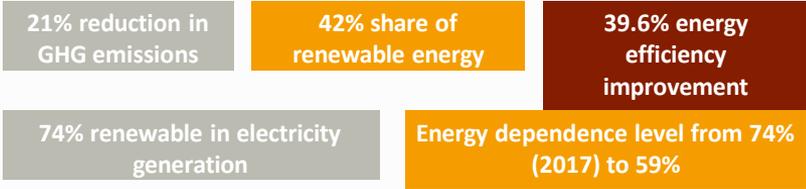


Cop21 (2015) Paris Agreement

Limit global warming below 2°C

Integrated national energy and climate plan PNIEC

2030



ERESEE CTE

2020

2050

Decarbonized building park

DIRECTIVE (EU) 2018/844

Long Term Strategy for a Modern, Competitive and Climate-Neutral Spanish Economy

ERESEE 2020. public participation. October 2019



PUBLIC PARTICIPATION
ON
October 2019

Development of thematic discussion days involving representatives from the various sectors concerned

October 11
ENERGY VECTORS

18 October
FINANCING AND
BUSINESS
MODELS

24 October
MUNICIPALITIES
MANAGEMENT

30 October
TRAINING
AND
PROFICIENCY

December
2019
Conclusion



Interministerial Group



[s/eresee-2020/](https://eresee-2020/)





1 Complejidad de la problemática que afecta al parque español
Complex park

2 Factores relacionados con la climatología
Climate factors

3 Consideraciones sobre la disponibilidad de financiación por parte de los hogares
Financing

4 Consumidores vulnerables y pobreza energética
Energy poverty

5 Factores relacionados con la estructura de la propiedad
Ownership structure

6 Escasa predisposición a realizar obras en los elementos comunes de los
Common Works?

7 Diversidad de las climáticas
Climate diversity

8 Ausencia de planes territoriales
Strategic plans?

9 Potencial de la energías renovables
Renewable potential

10 Mejora en las reglas de contabilización de los contratos de rendimiento
Accounting rules

11 Retos arquitectónicos y urbanísticos
Urban challenges

12 Necesidad de abordar estos retos desde una perspectiva integrada.
Integrated perspective

Regulation of ERESEE 2020 and content.



What's new:

Evaluation and monitoring

Specific objective: to achieve a decarbonized building park in 2050.
Intermediate targets for 2030 and 2040

Policies and actions aimed at all public buildings.

It must address issues such as energy poverty, financing and tax incentives.

Consideration of other positive impacts, such as those that have an impact on health.

A public consultation of the strategy should be done

It should include an analysis of the macroeconomic impact of rehabilitation scenarios



ERESEE content



- Diagnosis
- Goals and scenarios
- Implementation



Diagnosis

Residential and

tertiary park Energy

consumption

- Park rehabilitation evolution
- Follow-up to previous strategies and measures

**ERESEE 2020. diagnosis:
Follow-up of previous strategy
and measures. ERESEE 2017Axes**



Coordination

1

Eje estructurante:
Coordinación sectorial,
vertical y horizontal

Information and society

2

Eje información y
sociedad

Technical, profesional and business

3

Eje técnico, profesional
y empresarial

Regulation

4

Eje de desarrollo
normativo y medidas
administrativas

Finance

5

Eje de financiación

Public renovation

6

Seguimiento
renovación del parque
público

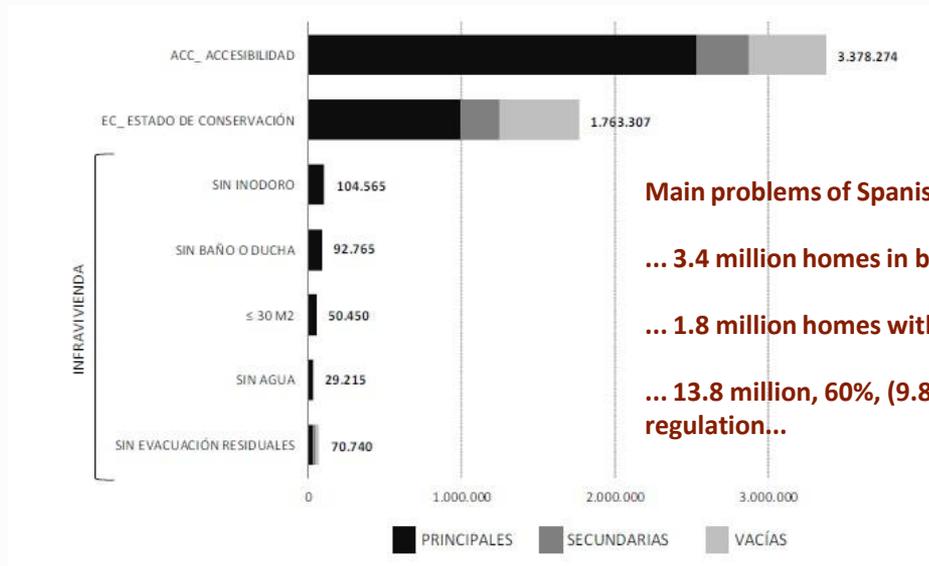
Panoramic view of the Spanish residential stock



The Spanish, residential and tertiary stock has many deficiencies...

25.7 million homes (2019):

19.3 million principals and 6.4 million secondary and empty



Main problems of Spanish housing:

... 3.4 million homes in buildings of more than 4 floors without elevator..

... 1.8 million homes with conservation problems...

... 13.8 million, 60%, (9.8 main) prior to the first energy efficiency regulation...

Source: MITMA from the 2011 Census

Building stock deficiencies



Las vergüenzas de los pisos españoles quedan al descubierto

El confinamiento ha puesto en evidencia la falta de terrazas, espacios flexibles, luz natural y ventilación de millones de casas



LA CRISIS DEL CORONAVIRUS >

Más de dos meses confinados en “infraviviendas”

Muchos madrileños llevan más de 60 días soportando ruido, oscuridad y hacinamiento en pisos que son herencia de la especulación urbanística

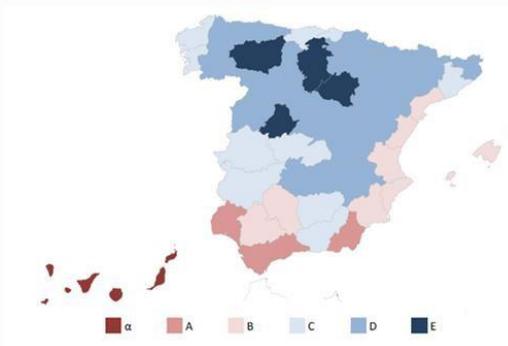


RESIDENTIAL BUILDING. CURRENT SITUATION

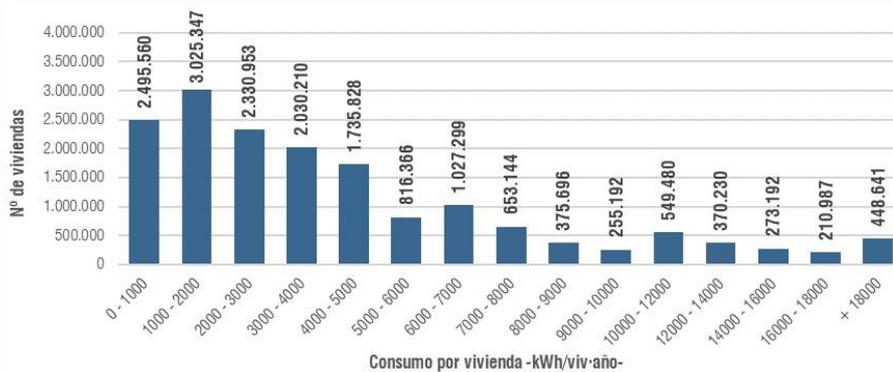
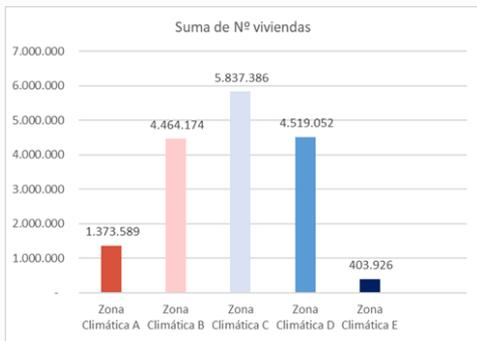


Diversity in consumption from one climate zone to another, assuming differences of up to 5 times between one zone and another ...

Distribution of the built stock



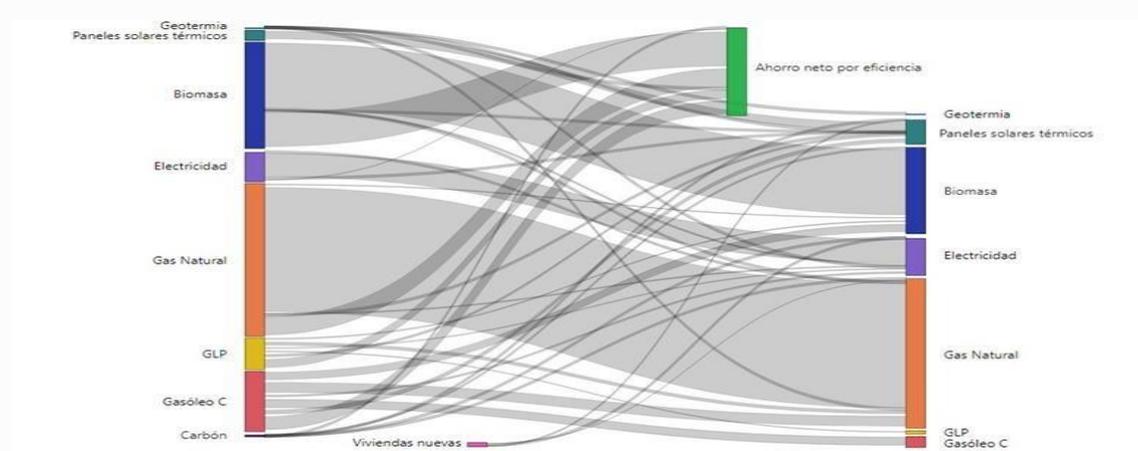
	Suma de Nº viviendas	%	Suma de Consumo por caso -KWh/caso-año-	%	POR VIVIENDA KWh/año
Zona Climática A	1.373.589	8,3	3.178.158.585	4,1	2.313,8
Zona Climática B	4.464.174	26,9	12.540.374.734	16,1	2.809,1
Zona Climática C	5.837.386	35,2	27.194.364.262	34,9	4.658,7
Zona Climática D	4.519.052	27,2	30.406.247.636	39,0	6.728,5
Zona Climática E	403.926	2,4	4.647.018.904	6,0	11.504,6
Total general	16.598.127	100,0	77.966.164.120	100,0	4.697,3



OPTIMIZATION OF ERESEE 2020 GOALS



Optimizing interventions on facilities

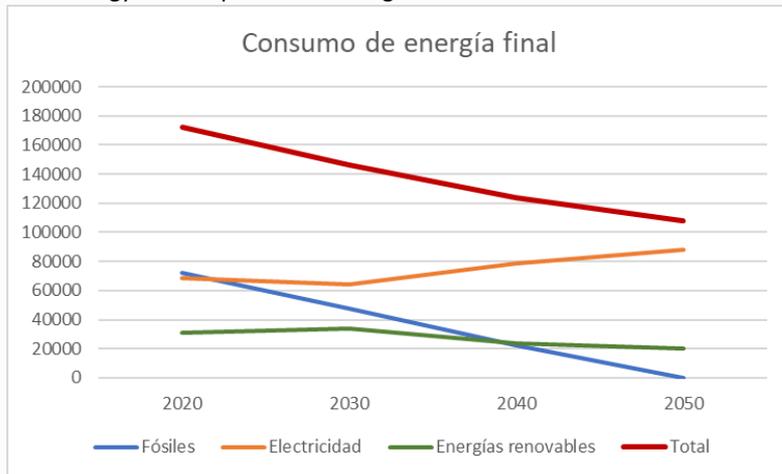


- In the period 2020-2030 the fundamental objectives are:
 - ✓ Substitution of coal as an energy source in the residential sector and the practical elimination of LPG and Diesel.
 - ✓ Improving efficiency in heating systems that use biomass.
 - ✓ Moderate increase in electricity
 - ✓ Significant increase in percentage terms of solar thermal energy

OBJECTIVES LTE 2050

Residential building. LT Objective Scenario 2050 (Long Term Strategy for a Modern, Competitive and Climate Neutral Spanish Economy) MITERD

Final energy consumption and savings



ERESEE:

Territorialize these objectives and attribute it to the different segments of the stock

The basic objective is the elimination of fossil fuels in the building sector by 2050.

Reduce energy consumption by 2050 in the residential sector by more than 64,000 GWh, reducing current consumption by more than 30%, with the total electrification practice of the system.

PNIEC 2030 OBJECTIVES

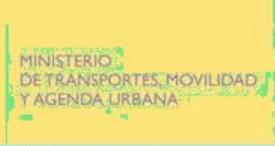


Residential building. Target Scenario PNIEC 2030 (National Integrated Energy and Climate Plan –MITERD-)



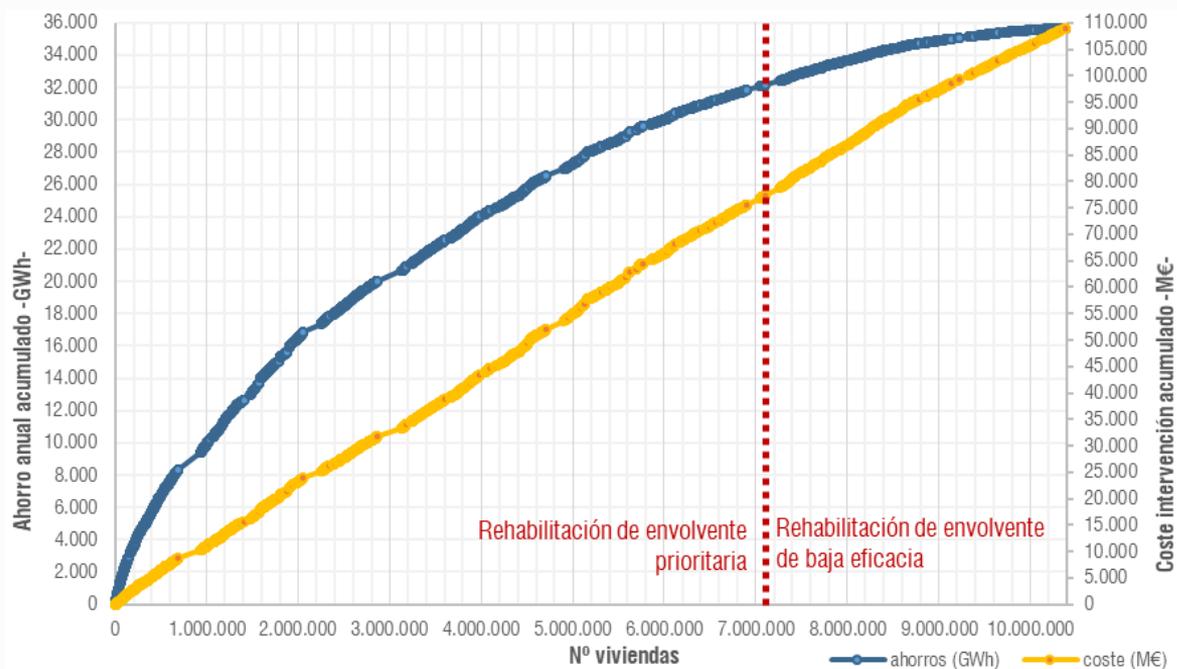
- In the period 2020-2030 the fundamental objectives are:
 - ✓ The renovation of the envelope of 1.2 million homes, with a cumulative saving of final energy during the period of almost 800 ktep and an estimated total investment of 10,223 million euros.
 - ✓ Improving the efficiency of more than 3.5 million air conditioning and ACS facilities (1 million centralized facilities and 2.65 million individual facilities), with a cumulative final energy saving of nearly 4,000 ktep and an estimated total investment of more than 12,208 million euros

OPTIMIZATION OF ERESEE 2020 GOALS



Optimizing performances on the envelope

Envelope



OPTIMIZATION OF ERESEE 2020 GOALS



Territorial optimization of the actions on the envelope.

Tabla 6. Distribución del paquete "Rehabilitación de envoltente prioritaria 2021-2030" por clúster y CCAA

	Andalucía	Aragón	Asturias, Principado de	Baleares, Illes	Cantabria	Castilla - La Mancha	Castilla y León	Cataluña	Comunidad Valenciana	Extremadura	Galicia	Madrid, Comunidad de	Murcia, Región de	Navarra, Comunidad Foral de	País Vasco	Rioja, La	TOTAL
Uu <1900	2.296	937	793	1.120	725	1.055	1.300	3.957	2.322	905	3.041	240	330	476	810	223	20.530
Uu 01-40	5.694	1.076	1.250	1.951	684	1.646	2.063	5.135	3.933	1.776	4.280	353	983	493	845	202	32.364
Uu 41-60	16.850	1.260	1.106	2.456	1.014	2.094	4.235	6.720	7.419	2.754	5.041	991	3.071	570	836	285	56.702
Uu 61-80	34.824	1.916	1.614	4.895	1.090	3.137	8.425	16.700	13.206	3.149	11.235	6.409	6.312	901	927	281	115.021
Uu 81-07	37.434	5.252	2.214	3.092	2.055	7.327	23.810	38.619	12.482	7.474	8.851	25.386	5.027	3.034	2.849	833	185.739
Cc <1900	786	203	62	231	86	135	195	1.301	386	149	92	239	36	145	737	64	4.847
Cc 01-40	1.427	193	96	623	98	278	257	2.157	1.069	187	282	838	244	149	664	47	8.609
Cc 41-60	4.226	696	765	1.686	414	1.372	565	5.416	2.913	771	983	3.453	1.055	576	1.487	123	26.501
Cc 61-80	6.109	1.835	636	1.516	346	3.976	1.898	13.946	5.141	1.686	3.411	7.492	1.881	497	1.436	240	52.046
Cc 81-07	3.455	2.213	976	0	320	7.142	5.065	15.127	0	2.930	960	13.898	0	1.271	1.580	988	55.923
Bb <1900	291	111	40	129	138	12	131	2.771	652	10	70	2.741	6	253	1.697	42	9.094
Bb 01-40	822	319	96	263	186	54	257	5.722	1.653	19	290	6.732	62	327	3.061	139	20.002
Bb 41-60	3.487	2.652	1.570	1.639	1.670	906	1.213	15.360	4.577	536	1.615	24.357	837	1.164	11.247	515	73.345
Bb 61-80	31.857	17.782	13.816	6.821	4.619	10.523	12.356	90.285	39.892	3.757	15.950	95.384	6.127	5.579	31.003	2.551	388.302
Bb 81-07	2.873	9.382	7.806	0	0	11.699	16.114	21.934	0	3.320	5.296	57.586	0	5.066	6.183	3.795	151.054
TOTAL	152.431	45.827	32.840	26.422	13.445	51.356	77.884	245.150	95.645	29.423	61.397	246.099	25.971	20.501	65.362	10.326	1.200.079

OPTIMIZATION OF ERESEE 2020 GOALS

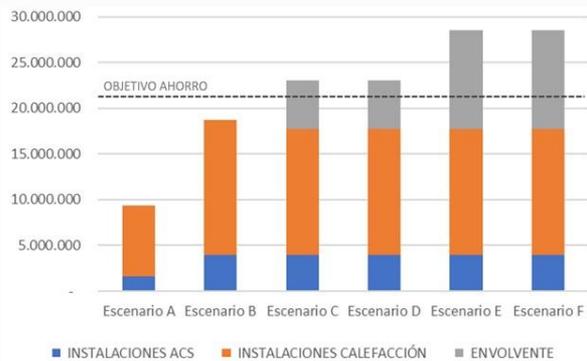


Design and selection of scenarios

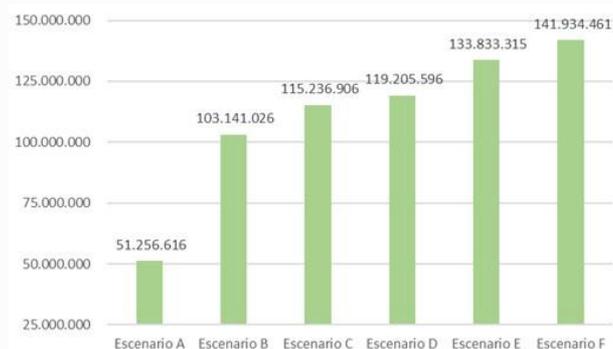


- A- Trend**
- B- Facilities only**
- C- Envelope + Facilities (Base)**
- D- Envelope + Facilities optimization enveloping path**
- E- Envelope + Facilities optimization homes to be rehabilitated**
- F- Envelope + Facilities D+E optimizations**

Energy Results. Total savings by 2030



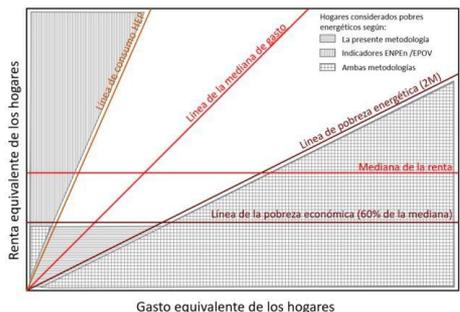
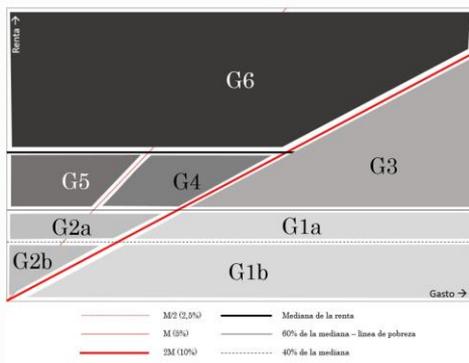
Energy Results. Annual savings accumulated by 2030



MICRO AND MACRO ANALYSIS OF FUNDING



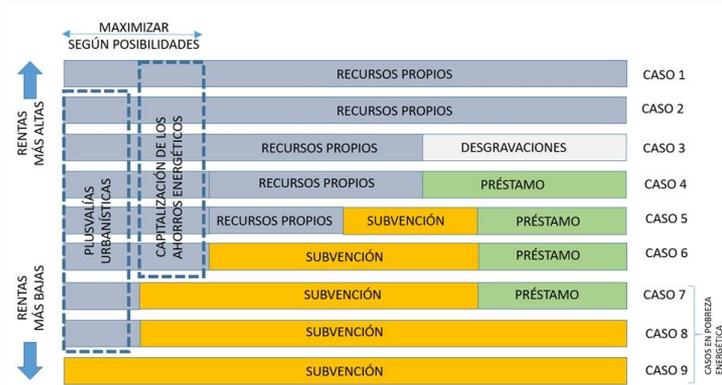
Micro analysis from the point of view of the citizen. Envelope performances. Variety of situations. Need for flexibility and tailor-made design of households



GRUPOS	ESTATAL ⁽¹⁾	
	Hogares	%
G1A	593.519	3,39%
G1B	636.355	3,64%
G2A	1.400.740	8,01%
G2B	564.526	3,23%
G3	1.115.873	6,38%
G4	2.717.005	15,54%
G5	1.774.819	10,15%
G6	8.682.855	49,66%
Total	17.485.692	100%

GRUPOS	ESTATAL ⁽¹⁾	
	Hogares	%
G1+G2+G3	4.311.013	24,65%

(1) Sin Islas Canarias, Ceuta y Melilla



MICRO AND MACRO ANALYSIS OF FUNDING



Micro analysis from the point of view of the citizen. Envelope performances. Analysis of the real potential of the capitalization of energy savings in Spain.

Figura 15. Distribución de viviendas según porcentaje de cobertura y coste de intervención | Opción 1. 15 años

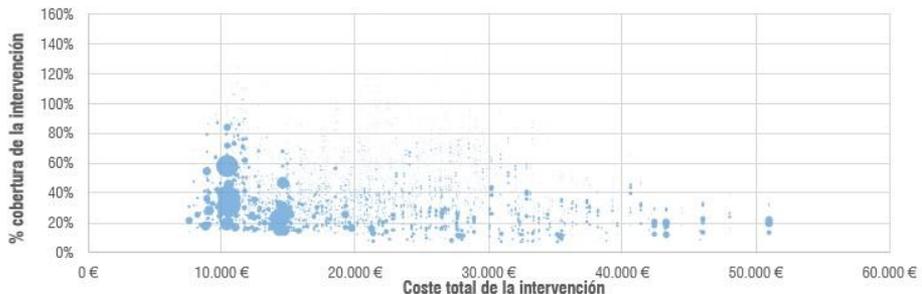
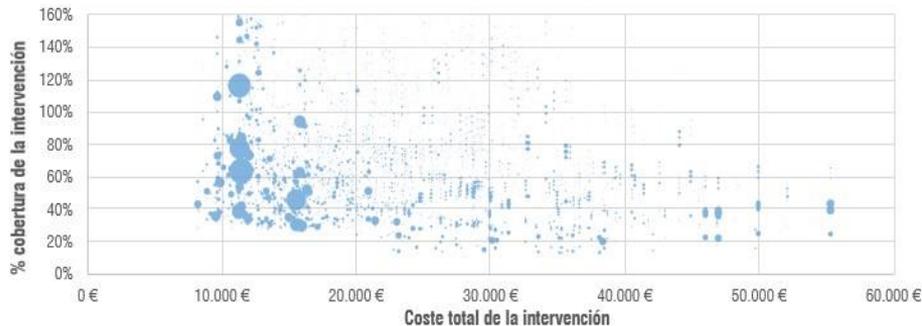


Figura 18. Distribución de viviendas según porcentaje de cobertura y coste de intervención | Opción 4. 30 años



MICRO AND MACRO ANALYSIS OF FUNDING



Micro analysis from the point of view of the citizen. Envelope performances.

Mixed funding schemes with public aid, energy savings, etc.

Figura 19. Distribución de viviendas según porcentaje de cobertura y coste de intervención | Opción 1. 15 años

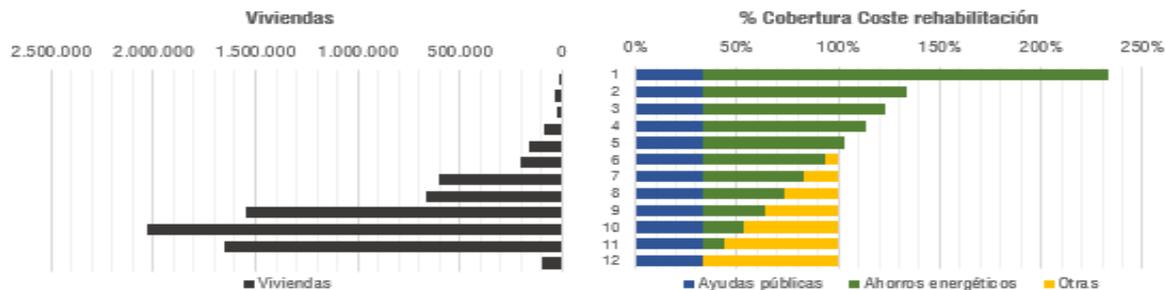
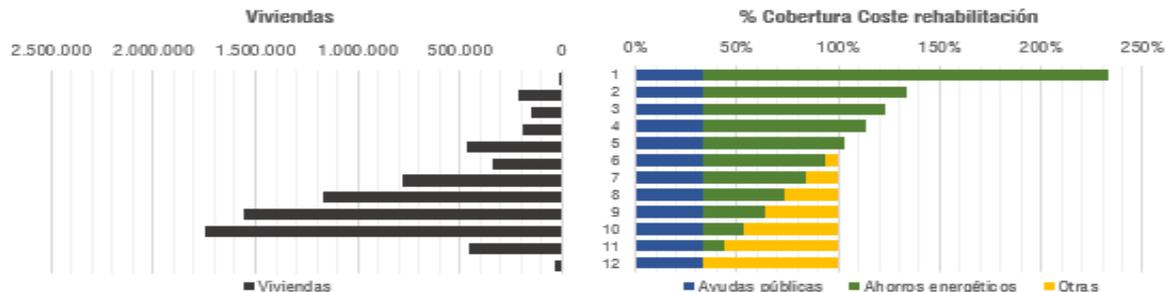


Figura 20. Distribución de viviendas según porcentaje de cobertura y coste de intervención | Opción 2. 20 años

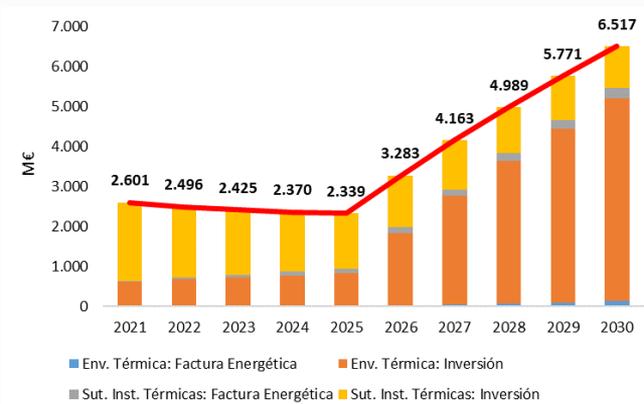


MICRO AND MACRO ANALYSIS OF FUNDING

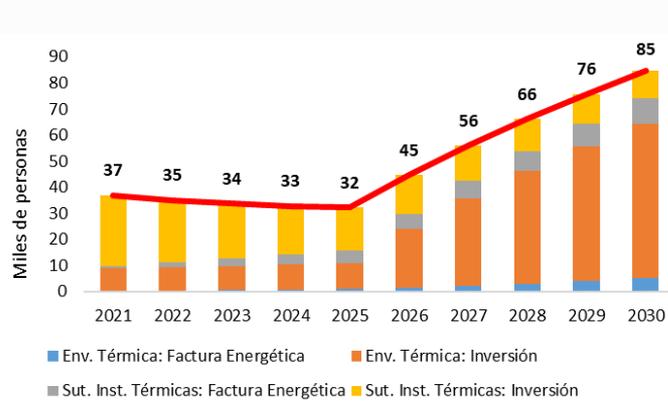


Macroeconomic analysis:
Impacts on GDP, employment, public administration accounts, household energy bills, etc.

Variación en el PIB (M€) en el periodo 2021-2030.



Variación en el empleo (miles de personas) 2021-2030.



MICRO AND MACRO ANALYSIS OF FUNDING

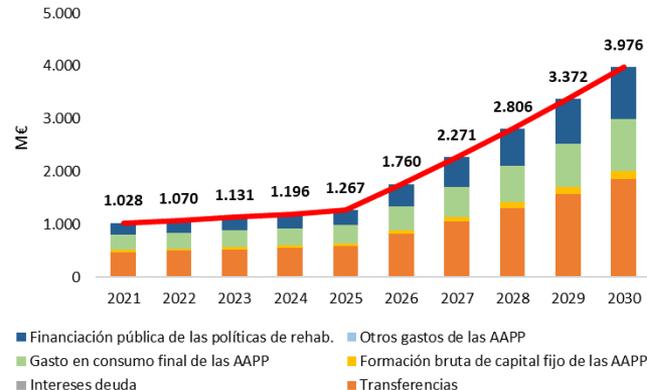


Macroeconomic analysis (2):

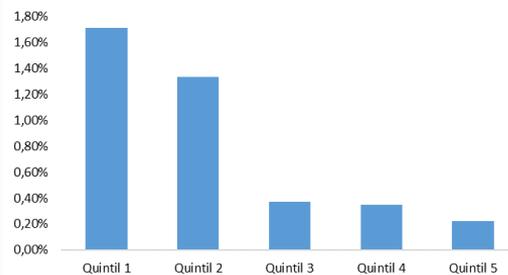
Impact on public accounts 2021-2030 (revenue).



Impact on public accounts 2021-2030 (expenses).



Change in disposable income of households by quintiles of rent by 2030



11 AXLES AND MEASURES

ERESEE 2020



Coordination

1

impulso de la
coordinación
sectorial

Regulation

2

Desarrollo
normativo y
medidas
administrativas

Public stock

3

Rehabilitación
parque de las
AAPP y otras
medidas
ejemplarizantes

Public finance

4

medidas de
financiación
pública

Private finance

5

fomento de la
financiación
privada

Energy poverty

6

lucha contra la
pobreza
energética

Energy model

7

nuevo modelo
energético en la
edificación

Demand

8

Activación y
agregación de la
demanda de
rehabilitación
energética

Offer

9

mejora de la
calidad de la
oferta

Info & Society

10

información y
sociedad

Follow-up

11

estadísticas,
indicadores y
seguimiento

RENOVATION WAVE

European
Commission

Renovation Wave

The European
Green Deal

October 2020
#EUGreenDeal

Lines of action and purposes contained in the Commission's strategy called **Renovation Wave**:

Gradual introduction of mandatory minimum energy efficiency standards for **existing buildings**,

Updating the standards for the certification of energy efficiency, and an extension of rehabilitation requirements for public sector buildings, so that the Commission intends to extend the annual renewal obligation established for central administrations, at all levels of administration.

Ensure **accessible and well-targeted funding**, with simplified rules to combine different funding flows and multiple incentives for private financing

RENOVATION WAVE

European
Commission

Renovation Wave

The European
Green Deal

October 2020

#EUGreenDeal

Increase capacity to prepare and implement rehabilitation projects, from technical assistance to national and local authorities to **training and skills development** for workers in new green jobs

Develop neighborhood-based approaches and a broader view than the building, donate local communities integrate renewable solutions, enhance digitization, create zero-energy districts

The Commission has simultaneously published with this strategy a **Recommendation for Member States to address energy poverty**, support human health and well-being and reduce their energy bills



- The framework of energy and climate policy in Spain is determined by its membership of the European Union, which, in turn, is conditioned by a global context.
- Within this context, the **Renovation Wave** stands out, an opportunity to improve the quality of life and the habitability of the housing stock, betting on a comprehensive approach that improves the energy efficiency of buildings and the integration of renewable energy sources; creating jobs in new sectors of activity, helping the recovery of the economy as a whole due to the countercyclical nature of investments.



REFORM LEVERS

1. Urban and rural agenda, the fight against rural depopulation and agriculture) development

Project 1: Action plan to ensure sustainable, safe and connected mobility in urban and metropolitan areas

Project 2: Housing refurbishment and urban renewal plan

Project 3: Transformation and digitization of the supply chain of the agri-food and fisheries system

2. Resilient infrastructures and ecosystems

Project 4: Conservation and restoration of marine and terrestrial ecosystems and their biodiversity

Project 5: Preservation of the coast and water resources

Project 6: Sustainable, safe and connected mobility

3. A just and inclusive energy transition

Project 7: Massive deployment of the pool of renewable sources aimed at developing renewable electrical power

Project 8: Electrical infrastructure, promotion of smart networks and deployment of energy storage

Project 9: Roadmap for renewable hydrogen and its sectorial integration

Project 10: A Just Transition Strategy

4. An Administration for the 21st century

Project 11: Modernisation of public administrations, which includes the following main lines of action

5. Modernisation and digitization of the industrial fabric and SMEs, recovery of the tourism sector and promotion of Spain as an entrepreneurial nation

Project 12: Spain 2030 Industrial Policy

Project 13: Fostering the growth of SMEs through: (i) a plan for the digitalization of SMEs

Project 14: Plan of modernisation and competitiveness of the tourism sector

Project 15: Digital Connectivity, cybersecurity and deployment of 5G

REFORM LEVERS

6. Pledge for science and innovation and strengthening the capabilities of the national health system

Project 16: National Strategy for Artificial Intelligence

Project 17: Institutional reform and strengthening of the capacities of the national system of science, technology and innovation

Project 18: Renewal and widening of the capabilities of the national health system

7. Education and knowledge, lifelong learning and capacity building

Project 19: National Plan for Digital Skills

Project 20: Strategic Plan for Vocational Training

Project 21: Modernisation and digitalization of the education system, including a strong push for early childhood education (0-3 years)

8. The new care economy and employment policies

Project 22: Emergency Plan for the care economy and the strengthening of gender equality and social inclusion policies

Project 23: New public policies for a dynamic, resilient and inclusive labour market

9. Promotion of the culture and sports industries

Project 24: Revaluation of the cultural sector

Project 25: Spain Audiovisual Hub

Project 26: Development of the sport sector

10. Modernisation of the tax system for inclusive and sustainable growth

Project 27: Law on measures to prevent and combat tax evasion

Project 28: Adaptation of the tax system to the reality of the 21st century.

Project 29: Improving the effectiveness of public spending.

Project 30: Sustainability of the public pension system under the Toledo Pact

Component 2 – Implementation of the Spanish Urban Agenda: urban renewal and building renovation plan

MAIN GOALS

- Promote the implementation of the **Spanish Urban Agenda** and, specifically, the **energy renovation activity with an integral vision**, as a key element in the fulfillment of the European and national commitments in the field of energy, climate and digitization and in the reactivation of the sector of construction and real estate.
- In order to achieve the energy efficiency objectives of reducing emissions, this program will allow to **increase the scale in the number of renovation actions**.
- This plan has **enormous potential**, both due to the age and conservation conditions of the building park, as well as its ability to create jobs.

COMPONENT CONTENT

In line with the UE guidelines, this component consists not only of **investment or aid lines**, but also includes various structural **reforms**.

Both reforms and investments are associated with a series of milestones or dates that measure their degree of progress. The Commission will assess that we have met these milestones within the established deadlines and, based on this, it will authorize the promised money disbursements.

6 REFORMS

6 INVESTMENTS



Component 2 – Implementation of the Spanish Urban Agenda: urban renewal and building renovation plan

6 REFORMS

C2.R1. Implementation of the Spanish Urban Agenda

C2.R2. Long-term Strategy for Energy Renovation in the Building Sector in Spain (ERESEE) and its action plan

C2.R3. Housing Law

C2.R4. Law of Architecture and Quality of the Built Environment

C2.R5. Renovation Offices (“one-stop-shop”)

C2.R6. Improvement of the financing of renovation actions

6 INVESTMENTS

C2.I1. Renovation program for economic and social recovery in residential areas

C2.I2. Construction of social homes for rent in efficient buildings

C2.I3. Building energy renovation program (PREE)

C2.I4. Energy transition program and demographic challenge

C2.I5. Sustainable and digital renovation program for public buildings

C2.I6. Aid program for the development of pilot projects of local action plans of the Spanish Urban Agenda

Component 2 – Implementation of the Spanish Urban Agenda: urban renewal and building renovation plan

6 REFORMS

C2.R1. Implementation of the Spanish Urban Agenda

The Spanish Urban Agenda constitutes a strategic document that seeks to achieve sustainability in urban development policies. The implementation of the AUE is approached from two perspectives: i) The implementation of the actions included in its action plan for the AGE and ii) The implementation of the local action plans of the AUE.

C2.R2. Long-term Strategy for Energy Renovation in the Building Sector in Spain (ERESEE) and its action plan

This Strategy responds to compliance with the European Directive to support the renovation of its national parks of residential and non-residential buildings, both public and private, and decarbonized before 2050, with almost zero energy consumption.

C2.R3. Housing Law

The future State Law for the Right to Housing constitutes the State's response to its obligation, within the framework of its constitutional powers, to protect the right to access and enjoy decent and adequate housing.



Component 2 – Implementation of the Spanish Urban Agenda: urban renewal and building renovation plan

6 REFORMS

C2.R4. Law of Architecture and Quality of the Built Environment

It seeks to declare the quality of Architecture and the built environment as a good of general interest to improve people's quality of life, promote the social rooting of architecture, favor the sustainable development of the territory and urban centers, contribute to development economic and social and protect and safeguard the cultural and natural heritage.

C2.R5. Renovation Offices ("one-stop-shop")

Boost to the Renovation Offices that will serve as a "one-stop-shop" to facilitate the management of aid, financing and taxation, accompanying the entire renovation process.

C2.R6. Improvement of the financing of renovation actions

Measures aimed at:

- Encourage the application of public-private collaboration formulas that serve to facilitate the financing of investments, incorporating, where appropriate, increases in urban use.
- Promote "turnkey" models that allow managing both public and private financing
- Implementing ICO guarantee lines to guarantee credits for renovation
- Modify the regulatory framework of the Horizontal Property Law to strengthen legal security for the granting of loans to communities of owners.

Component 2 – Implementation of the Spanish Urban Agenda: urban renewal and building renovation plan

6 INVESTMENTS

C2.I1. Renovation program for economic and social recovery in residential areas

▶ MITMA

C2.I2. Construction of social homes for rent in efficient buildings

▶ MITMA

C2.I3. Building energy renovation program (PREE)

▶ MITERD

C2.I4. Energy transition program and demographic challenge

▶ MITERD

C2.I5. Sustainable and digital renovation program for public buildings

▶ MITMA

C2.I6. Aid program for the development of pilot projects of local action plans of the Spanish Urban Agenda

▶ MITMA

TOTAL: 6.320 M€



C2.1.1. Renovation program for economic and social recovery in residential areas

NEIGHBOURHOODS

This investment includes **3 different lines of action** that are detailed below:

A

Program of actions at the neighbourhood level

- Large-scale urban regeneration and renewal operations, in neighbourhoods or areas delimited according to their income level, with a **comprehensive and integrated renovation approach**:
 - a) External Renovation.
 - b) Use of renewable energies in heating, air conditioning, refrigeration installations, etc.
 - c) Electricity generation technologies using renewable sources in the building.
 - d) Improvement of the energy efficiency of common areas
 - e) Infrastructures associated with electric mobility.
 - f) Digitization actions
 - e) Improvement of the accessibility of the building.
 - f) Conservation: removal of asbestos
- These actions will be accompanied by others for the **integrated transformation of the urban environment** (lighting, pedestrianisation, rehabilitation of parks, sustainable drainage systems, etc.).
- **Public-private partnership** will be promoted, which will make it possible to partially finance the investments through urban development projects.

RECOVERY, TRANSFORMATION AND RESILIENCE PLAN



C2.1.1. Renovation program for economic and social recovery in residential areas

BARRIOS

REHABILITACION URBANA EN ZARAGOZA: HACIA NUEVOS MODELOS DE GESTION

ESTUDIOS PREVIOS PARA LA REHABILITACIÓN INTEGRAL Y RENOVACIÓN URBANA DEL CONJUNTO URBANO DE INTERÉS ALFEREZ ROJAS

ESENARIO 1 MODELO ACTUAL

Rehabilitación Integral de Viviendas

TOTAL COSTES DE LA OPERACIÓN	100%
APORTACION ADMINISTRACIÓN	80%
APORTACION VECINOS	20%

Edificabilidad

0,93 m²/m²

ESENARIO 2 MODELO PROPUESTO

Rehabilitación Integral de Viviendas con Ampliación del Número de Viviendas y capitalización de ahorros energéticos

TOTAL COSTES DE LA OPERACIÓN	100%
APORTACION ADMINISTRACIÓN	40% - 30%
APORTACION VECINOS	20% - 15%
RETORNO AHORROS ENERGETICOS	11% - 12%
RETORNO AMPLIACION DE VIVIENDAS	29% - 43%

1,15 m²/m²





C2.I1. Renovation program for economic and social recovery in residential areas

BUILDINGS

B Comprehensive Building renovation program

- Aid programs for the comprehensive renovation of buildings, including, as in the previous case, the improvement of energy efficiency, renewable energies, the promotion of conservation, the improvement of the safety of use and digitization in homes .
- Actions on complete buildings will be prioritized, although in addition the renovation of certain building elements such as windows will be supported.
- Public-private collaboration mechanisms for the management of energy savings and the potential inclusion of additional urban uses. For example, through "turnkey" projects in collaboration with the private sector that promote and facilitate the management, execution and financing of projects.
- To favor the planning of the renovation in phases, a Program to promote the "Existing Building Book" and digitization will be organized.

C Creation of a favourable environment for the activity

c.1

Taxation framework

Fiscal measures will promote energy renovation and achieve the strategic goals:

- **Deduction in personal income tax (IRPF)** of the amounts invested in renovation works: It will allow to promote the renovation activity linked to a energy efficiency improvements.

c.2

Financing framework

- Encourage the application of public-private collaboration formulas that serve to facilitate the financing of investments, incorporating, where appropriate, increases in urban use.
- Promote "turnkey" models that in collaboration with the private sector promote and facilitate the management, execution and financing of projects, in which the applicants can be both owners and neighborhood communities as well as companies and professionals.
- Implementing ICO financing lines to guarantee credits for renovation
- Modify the regulatory framework of the Horizontal Property Law to strengthen legal security for the granting of loans to multifamily residential buildings.

RECOVERY, TRANSFORMATION AND RESILIENCE PLAN



C2.1.1. Renovation program for economic and social recovery in residential areas

BUILDINGS

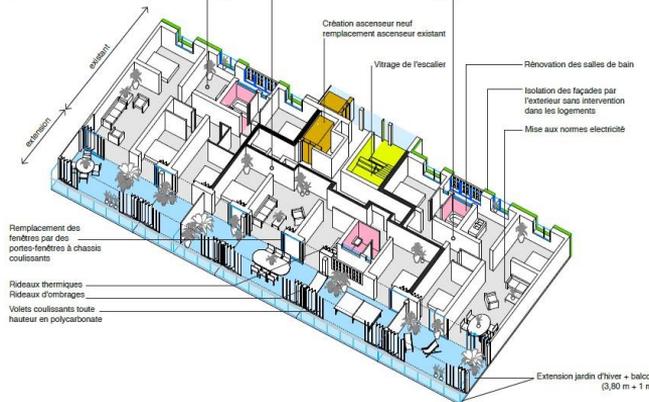


T5	existant	transformé	surface créée	T3a	existant	transformé	surface créée	T4	existant	transformé	surface créée
surface habitable	81,00 m ²	86,00 m ²	+5,00 m ²	surface habitable	56,50 m ²	59,00 m ²	+3,50 m ²	surface habitable	67,00 m ²	73,00 m ²	+6,00 m ²
jardin d'hiver	26,00 m ²	26,00 m ²	+26,00 m ²	jardin d'hiver	44,00 m ²	44,00 m ²	+44,00 m ²	jardin d'hiver	18,00 m ²	18,00 m ²	+18,00 m ²
surface utilisable	87,40 m ²	122,50 m ²	+35,10 m ²	surface utilisable	58,50 m ²	119,10 m ²	+80,60 m ²	surface utilisable	73,40 m ²	98,70 m ²	+25,30 m ²
balcon	4,30 m ²	8,40 m ²	+4,10 m ²	balcon	-	14,00 m ²	+14,00 m ²	balcon	4,30 m ²	5,60 m ²	+1,30 m ²

Transformation of three buildings in Bordeaux

Architects: **Lacaton&Vassal**

530 renovated homes + 8 new homes
 44,210 m² + 23,500 m² of extensions
 (41.6 m² of average extension per dwelling)
 Cost: 28.4 M





RECOVERY, TRANSFORMATION AND RESILIENCE PLAN



C2.12. Social rental housing construction program in energy-efficient buildings

The investment aims to substantially increase the supply of affordable rental housing, favoring the application of public-private mechanisms, for the construction of socially rented housing in energy-efficient buildings on publicly owned or privately owned land.

MITERD

C2.13. Building energy renovation program (PREE)

As an “advance” of the previous investment, in this case specifically in the field of improving energy efficiency, this program, already in operation, consists of promoting the energy renovation of existing residential buildings and other uses, through saving actions and energy efficiency and the incorporation of renewable energies, which reduce final energy consumption and carbon dioxide emissions.

MITERD

C2.14. Energy transition program and demographic challenge

- Aid program for public and private low-carbon economy projects in municipalities with less than 5,000 inhabitants, which is part of the framework defined by the National Strategy for Demographic Challenge.
- The Plan shares the global objectives of the Strategy but focuses on promoting green investments, improving the energy efficiency of buildings, equipment and public infrastructures, generating and consuming renewable energies in general and, in particular, of the self-consumption and local energy communities, guaranteeing the participation of small municipalities in the deployment of the infrastructure for charging and boosting the electric vehicle.



C2.15. Sustainable and digital rehabilitation program for PUBLIC BUILDINGS

IS IT NECESSARY?

- High % of public building presents important energy deficiencies
- Spanish strategies (national climate plan and long term renovation strategy) extend to regions & municipalities the mandatory annual 3%
- In the Spanish Public Administration, public buildings are been already renovated but there is not a unique plan.

WHICH IS THE GOAL?

- Unique action plan establishing unique criteria and monitoring.
- It is boosted thanks to the Recovery Facility, but under a more ambitious goal, looking at 2050.
- A step further

WHAT IS PLANNED?

C2.14. Regions and municipalities
2 coordinated programs for the sustainable and digital renovation of public buildings of:

- **C11. Central Administration.**

Many public building stock was built before 1979 (1st isolation regulation in our country)

Determined commitment to move from theory to practice

Work is being done on technical and strategic definition of the plan

C2.15. Sustainable and digital rehabilitation program for PUBLIC BUILDINGS

Renovation under **INTEGRAL APPROACH**, in addition to the main target (energy savings)



Public buildings:

- Educational
- Health
- Assistential
- Administrative
- Others

PASSIVE SOLUTION

Solar control, facade insulation system, etc

SALUBRITY

Asbestos, air quality, etc

CONSERVATION

Financial
SUSTAINABILITY
Space optimization

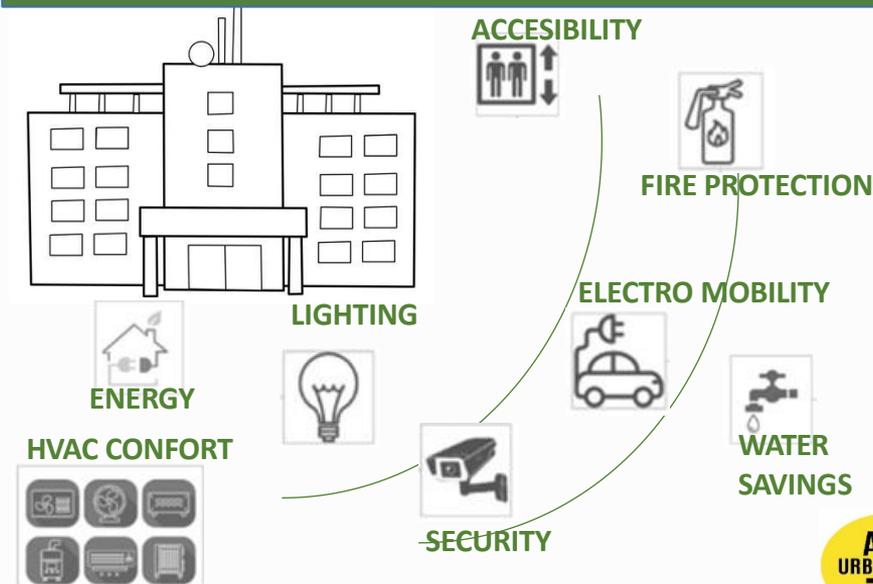
QUALITY AND INNOVATION of constructive systems

SCOPE OF RENOVATIONS



DIGITIZATION -

RENOVATION REQUIREMENTS





C2.16. Development of PILOT PROJECTS of local action plans of the SPANISH URBAN AGENDA



Spanish Urban Agenda (AUE):

- strategic and non-regulatory document to **incorporate sustainability into the field of urban development policies.**
 - **working method** to guide all stakeholders
-
- A **National Urban Policy** that needs to be implemented by **Local Administration**
 - **Required by the Urban Agenda for the European Union and the New Leipzig Charter.**
 - **More than 30 pilot projects** have identified by the Ministry for the Spanish Urban Agenda between Municipalities and Provinces as **Action plans (cities strategies)** for the Agenda
 - Municipalities having a pilot project will be **considered positively to apply investment** in the specific projects of the recovery fund.

<https://www.aue.gob.es/en>





Thank you





SESSION 1

Q&A





SESSION 2

Implementing strategies to accelerate efficient retrofits and decarbonize the building sector in Canadian provinces and territories





SESSION 2

Tracking provincial policies and performance on energy efficiency: Efficiency Canada's annual Scorecard & policy database

James Gaede, Senior Research Associate, Efficiency Canada, Lead Author of the Provincial Efficiency Scorecard





Tracking provincial policies and performance on energy efficiency

Efficiency Canada's annual Scorecard & policy database

April 19, 2021



Purpose

What is the Scorecard?

- Transparent, evidence-based assessment of provincial energy efficiency frameworks
- Tracks outcome and policy metrics, updated annually

Objectives

- Benchmark and share best practices
- Promote friendly competition among provinces



What's Included?

Energy Efficiency Programs 40

Program savings	18
Program spending	10
Equity and inclusion programs	4
Energy savings targets	8

Enabling Policies 17

Financing and market creation	6
Research and development	3
Training and professionalization	4
Grid modernization	4

Buildings 19

Building codes and code compliance	12
Energy rating and disclosure	4
Appliance and equipment market transformation	3

Transportation 17

Personal vehicle transportation	8
Transport electrification infrastructure	7
Active transportation	2

Industry 7

Support for energy management	4
Energy management systems	3



Canada's Energy Efficiency Policy Database

The companion database for Efficiency Canada's provincial energy efficiency policy scorecard.



VIEW BY PROVINCE/TERRITORY

VIEW BY POLICY AREA

Policy Areas



Energy Efficiency Programs

VIEW AREA



Enabling Policies

VIEW ALL



Buildings

VIEW AREA



Transportation

VIEW AREA



Industry

VIEW AREA

Policy Database

Companion to Scorecard

- Contains range of policy info
- Compare, contrast, inform
- View by policy area or province
- Available at:

<https://database.energycanada.org>



Provincial Scores

Rank	Province	Programs (40 pts)	Enabling (17 pts)	Buildings (19 pts)	Transport (17 pts)	Industry (7 pts)	TOTAL (100 pts)
1 (-)	British Columbia	10	12	16	14	6	58
2 (-)	Quebec	11	11	7	17	6	52
3 (+1)	Nova Scotia	20	9	10	5	6	49
4 (-1)	Ontario	13	11	11	6	5	45
5 (+2)	Prince Edward Island	21	4	5	7	1	37
6 (-1)	Manitoba	10	4	5	4	6	29
7 (+1)	New Brunswick	8	7	2	6	4	27
8 (-2)	Alberta	3	6	6	5	6	24
9 (+1)	Newfoundland and Labrador	7	4	4	2	1	17
10 (-1)	Saskatchewan	2	4	5	2	5	17

* Scores rounded to nearest whole number. Totals might not sum due to rounding.



First tier (50-59pts)



British Columbia
(58pts)

"A Winning Policy Model"

- Building code & compliance
- Efficient, low-carbon heating

Strengths

Opportunities

- Financing
- Building energy ratings



Quebec
(52pts)

"Efficiency to power industry & electrification"

- Transport electrification
- Industrial energy management

- Energy poverty
- Electricity savings



Buildings

Buildings account for:

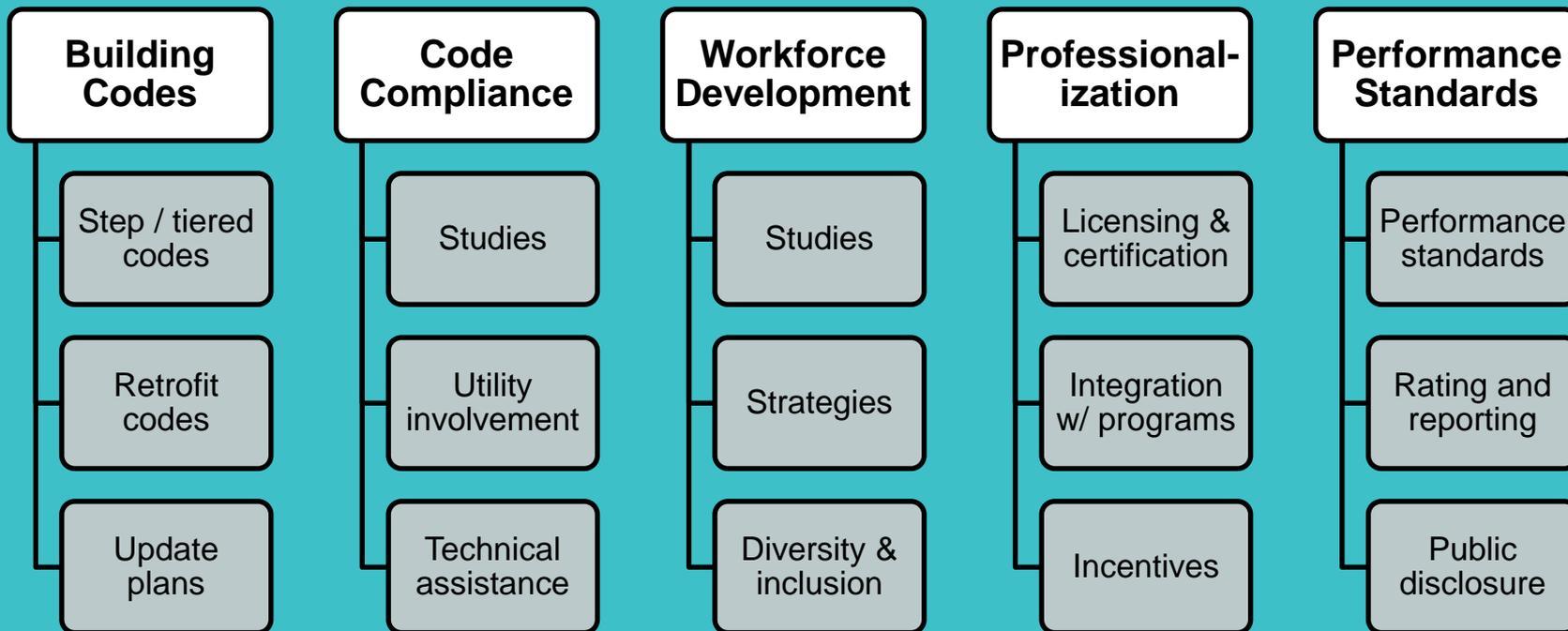
- 17% of Canada's GHG emissions
- 28% of potential energy savings by 2050
(IEA/NRCAN)

'Energy efficiency case'

- Stringent building codes, new and existing
- Performance standards & labelling
- Deep retrofits, heat pumps, passive heating/cooling



Buildings (Scorecard 2021)



An innovative approach to retrofits

With ambitious approach, Canada could retrofit 100% of existing buildings over 15 years for \$40b / yr

Facilitating innovation in materials, policy and implementation is key, and will facilitate electrification in other areas

Requires a bold, inspirational 'Mission', with clear direction, ambitious but realistic targets, cross-sector in nature, open to bottom-up solutions



QUESTIONS?

James Gaede, Ph.D (Senior Research Associate)

james.gaede@efficiencycanada.org





SESSION 2

Strategies and initiatives from British Columbia

Katherine Muncaster, Director, Energy Efficiency Branch,
British Columbia Ministry of Energy, Mines and Low Carbon
Innovation





British Columbia's Clean Buildings Strategy

Katherine Muncaster

Director, Energy Efficiency Branch

B.C. Ministry of Energy, Mines and Low Carbon Innovation

Canada-EU Workshop on Energy Efficiency

April 20, 2021



B.C.'s Climate Action Compared to Other Jurisdictions

		British Columbia	Alberta	California	Ontario	Québec
Carbon pricing system	Carbon tax or cap and trade system	✓	✓	✓	✓	✓
Clean electrical grid	Greater than 90% from renewable sources	✓				✓
ZEV standard	Requires increased sales of zero-emission vehicles	✓		✓		✓
Low carbon fuel standard	Requires a decrease in the carbon intensity of fuels	✓		✓		
Public sector leadership	Requires all public sector organizations to reduce, report and offset emissions	✓				



Provincial GHG Targets

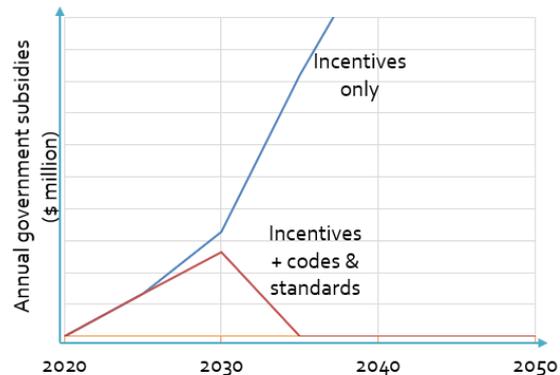
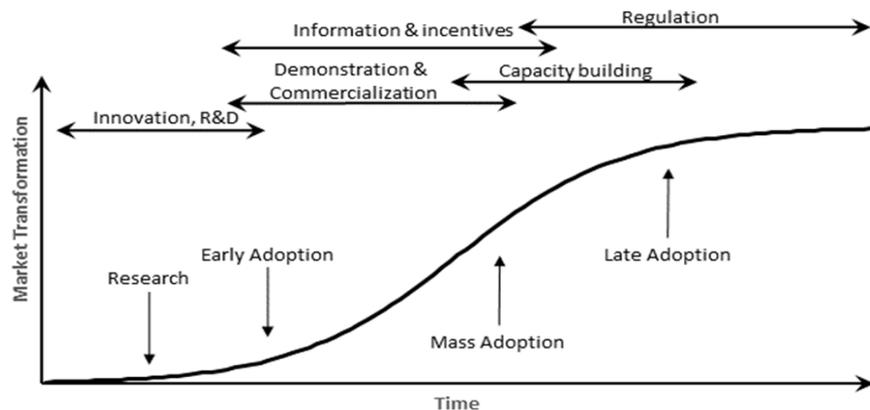


- BC legislated GHG reduction targets (from 2007 baseline):
 - 40% by 2030
 - 60% by 2040
 - 80% by 2050 (soon to be net-zero)
- NEW: 2030 sectoral target for buildings and communities set at 59% to 64%



Key Pillars

1. Research, development and demonstration
2. Energy information
3. Financial incentives
4. Industry training
5. Codes and standards





Research and Demonstration



Building Innovation Fund

- Funding streams for research, commercialization and demonstration
- Helps reduce cost and improve functionality
- More economic benefits for BC
- Two intakes to date, two more budgeted
- Example recipients:
 - A northern BC builder designing prefabricated Passive House building assemblies
 - A demonstration program for deep retrofits in social housing
 - Retrofit decision assistance tool for commercial building owners

High Performance Window Certification Program

- Incentives to manufacturers to design, test and certify new high performance window products to ENERGY STAR Most Efficient designation *or* Passive House Institute Certifiable Component criteria

Energy Labelling



- Fall 2020 commitment to mandatory energy labelling at time of sale for homes

26 First Blvd,
Ottawa, ON, K1H 0R1

ENERGUIDE

Date Collected: May 9, 2016
File Number: 1234567890
Home evaluated by: MCE Energy Solutions

85% This Home
Energy Rating

40 kWh/year
Best energy performance

90 kWh/year
Average energy performance

Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Level 7
Level 8
Level 9
Level 10
Level 11
Level 12

Breakdown of Rated Annual Energy Consumption:

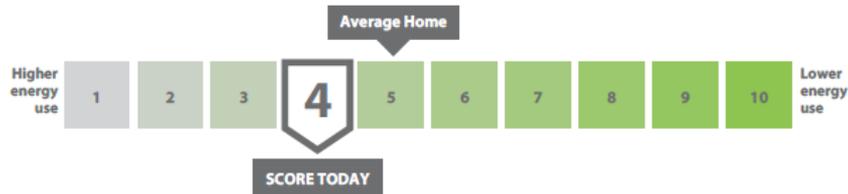
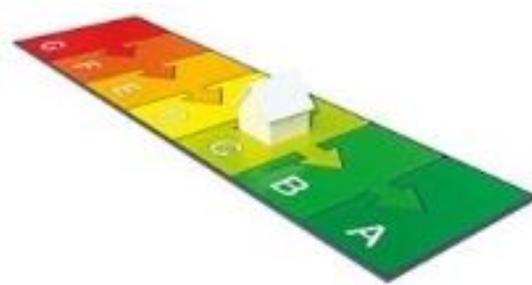
Category	Value	Percentage
A. Space Heating	54	51%
B. Space Cooling	37	36%
C. Water Heating	0	0%
D. Ventilation	0	0%
E. Light & Appliances	0	0%
F. Other Losses	0	0%

Rated Energy Intensity: 0.48 kWh/m²/year
Rated Greenhouse Gas Emissions: 3.9 tonnes/year

Visit nrcan.gc.ca/myenergyguide

Canada

THIS HOME'S CARBON FOOTPRINT:



New vs Existing Buildings



- New buildings are key for 2050 target – slow to impact total GHGs
 - Deep reductions in energy use are feasible
 - Fuel switching is complementary
- Existing buildings are key for 2030 and 2050 target
 - Fuel switching is a priority
 - Energy efficiency (building envelope) is complementary

New Buildings



Large, complex buildings (Part 3)



Low-rise buildings (Part 9)

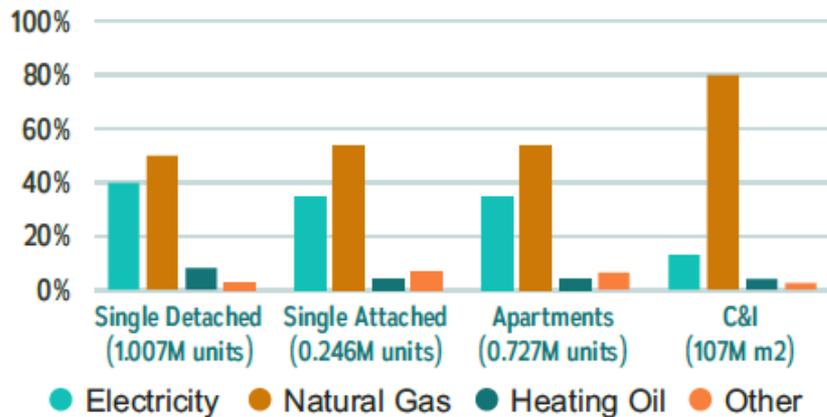


- **Step Code:** Voluntary adoption by municipalities (majority of population now covered)
- Better Homes New Construction program offers incentives for higher steps, and for heat pumps
- Coming soon: optional GHG requirements
- Regulatory commitment for BC Building Code (base code):
 - Following along the Steps
 - Achieve Net-Zero Energy-Ready (80% reduction) by 2032

Existing Buildings

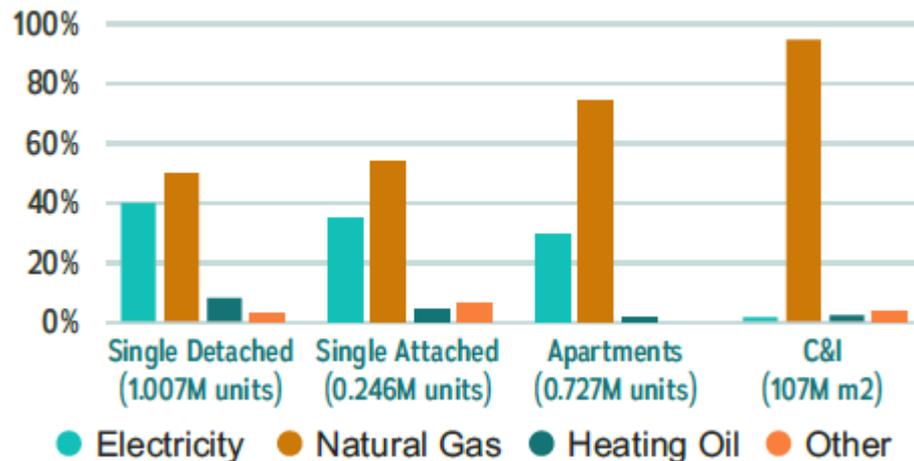


Energy used for primary space heating in BC by building type



Source: Integral Group 2021, Building Electrification Roadmap

Energy used for domestic hot water in BC by building type



Source: Integral Group 2021, Building Electrification Roadmap



- By 2030, 70,000 homes and 10 million m² of commercial buildings will be retrofitted to use clean electricity in space heating

Better Homes and Better Buildings Programs



Better Homes

- Rebates for clean fuel-switching and energy efficiency in fossil-fuel heated homes and buildings
- Partnering with 21 local governments who provide top-up funding
- Integrated with utility offers single website
- Served by the BC Energy Coach

Better Buildings

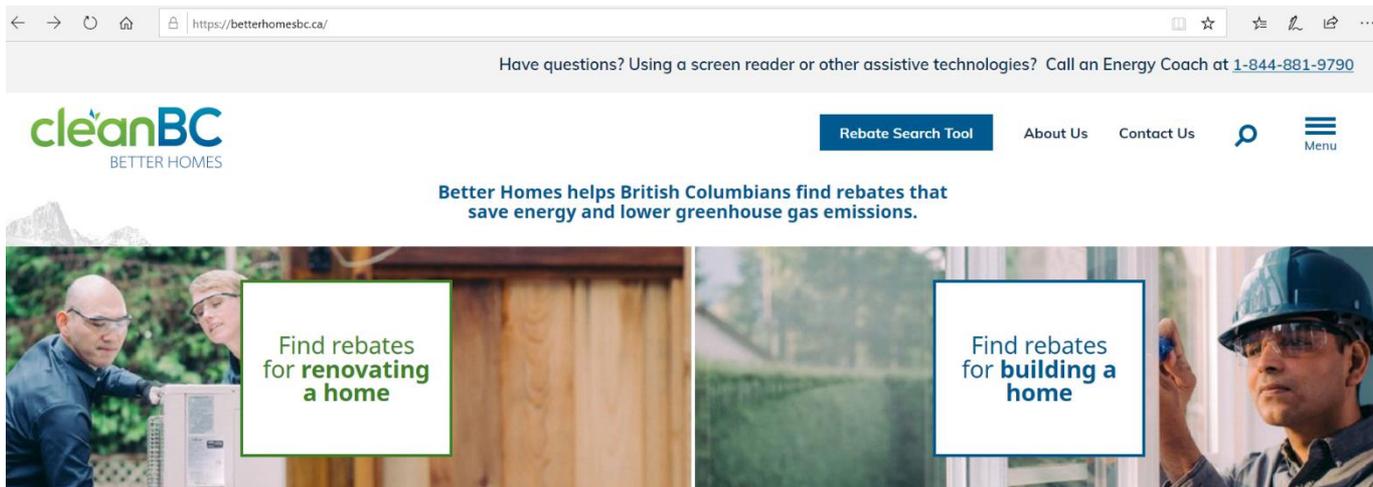
- Energy study funding and \$/t incentives for commercial and institutional buildings
- Prescriptive incentives and coach for smaller buildings

HOME HEATING REBATES				
UPGRADE CATEGORY	UPGRADE TYPE	TECHNICAL DETAILS	SPONSOR	REBATE
SWITCH FROM NATURAL GAS, PROPANE OR OIL TO ELECTRICITY	MINI-SPLIT HEAT PUMP OR MULTI-SPLIT HEAT PUMP	HIGHEST EFFICIENCY VARIABLE SPEED HSPF≥9.30, SEER≥16	cleanBC	\$3,000 & up to \$2,000*
	CENTRAL DUCTED "TIER 2" HEAT PUMP	HIGHEST EFFICIENCY VARIABLE SPEED HSPF≥9.30, SEER≥16	cleanBC	\$3,000 & up to \$2,000*
	CENTRAL DUCTED "TIER 1" HEAT PUMP	HIGH EFFICIENCY HSPF≥8.50, SEER≥15	cleanBC	\$1,200 & up to \$2,000*
	AIR-TO-WATER HYDRONICS HEAT PUMP SYSTEM	OBTAIN PRE-APPROVAL FROM BetterHomesBC@gov.bc.ca	cleanBC	\$3,000 & up to \$2,000*
	COMBINED SPACE AND HOT WATER HEAT PUMP	OBTAIN PRE-APPROVAL FROM BetterHomesBC@gov.bc.ca	cleanBC	\$1,000 - \$4,300 & up to \$2,000*
UPGRADE YOUR ELECTRIC HEATING	MINI-SPLIT HEAT PUMP	HIGHEST EFFICIENCY VARIABLE SPEED HSPF≥10.00, SEER≥18	BC Hydro Power smart	\$1,000
	MULTI-SPLIT HEAT PUMP	HIGHEST EFFICIENCY VARIABLE SPEED HSPF≥9.30, SEER≥16	BC Hydro Power smart	\$1,000
	CENTRAL DUCTED "TIER 2" HEAT PUMP	HIGHEST EFFICIENCY VARIABLE SPEED HSPF≥9.30, SEER≥16	BC Hydro Power smart	\$2,000
	MINI-SPLIT HEAT PUMP	HIGHEST EFFICIENCY VARIABLE SPEED HSPF≥10.00, SEER≥18	FORSTIS BC Energy of mind ELECTRIC SERVICE AREA	\$1,200
	MULTI-SPLIT HEAT PUMP	HIGHEST EFFICIENCY VARIABLE SPEED HSPF≥9.30, SEER≥16	FORSTIS BC Energy of mind ELECTRIC SERVICE AREA	\$2,000
	CENTRAL DUCTED "TIER 2" HEAT PUMP	HIGHEST EFFICIENCY VARIABLE SPEED HSPF≥9.30, SEER≥16	FORSTIS BC Energy of mind ELECTRIC SERVICE AREA	\$2,000
	CENTRAL DUCTED "TIER 1" HEAT PUMP	HIGH EFFICIENCY HSPF≥8.50, SEER≥15	FORSTIS BC Energy of mind ELECTRIC SERVICE AREA	\$1,200
UPGRADE YOUR NATURAL GAS HEATING	NATURAL GAS FURNACE	HIGH EFFICIENCY ≥97% AFUE	cleanBC FORSTIS BC Energy of mind	\$700
	NATURAL GAS FURNACE	HIGH EFFICIENCY 95-96.9% AFUE	FORSTIS BC Energy of mind	\$500
	NATURAL GAS BOILER	HIGH EFFICIENCY ≥94% AFUE	FORSTIS BC Energy of mind	\$1,000
	NATURAL GAS COMBINATION HEATING AND HOT WATER SYSTEM	ENERGY STAR or P9 Certified	FORSTIS BC Energy of mind	\$1,500

Tools



Energy Coach and Decision Assistance Platform



Browser address bar: <https://betterhomesbc.ca/>

Have questions? Using a screen reader or other assistive technologies? Call an Energy Coach at 1-844-881-9790

cleanBC
BETTER HOMES

Rebate Search Tool About Us Contact Us Menu

Better Homes helps British Columbians find rebates that save energy and lower greenhouse gas emissions.

Find rebates for renovating a home

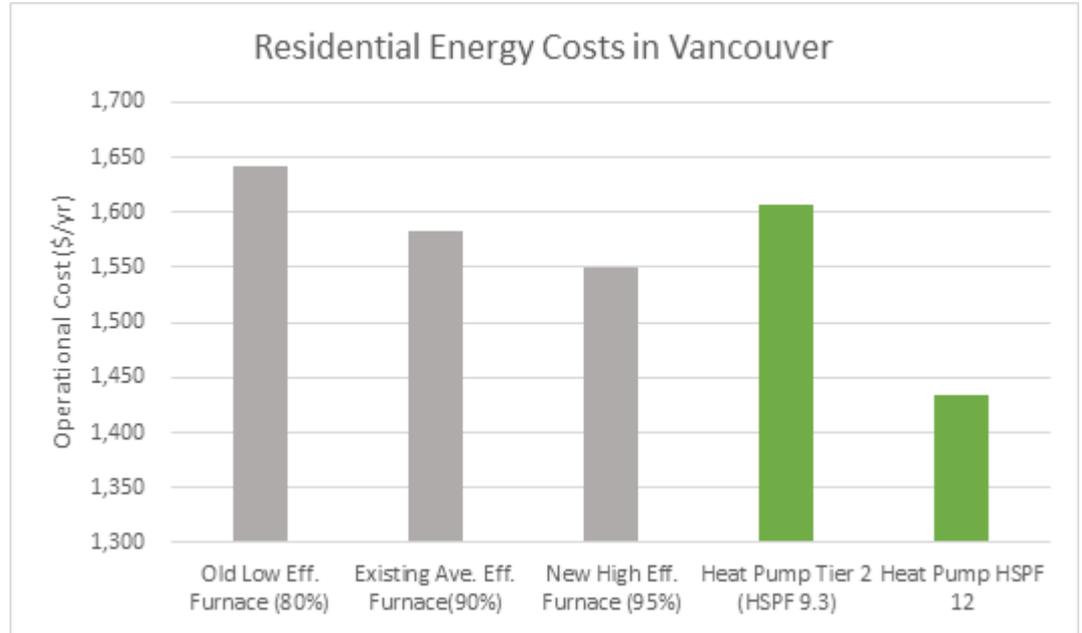
Find rebates for building a home

Not sure where to start? Follow our step-by-step guide

Challenges & Opportunities



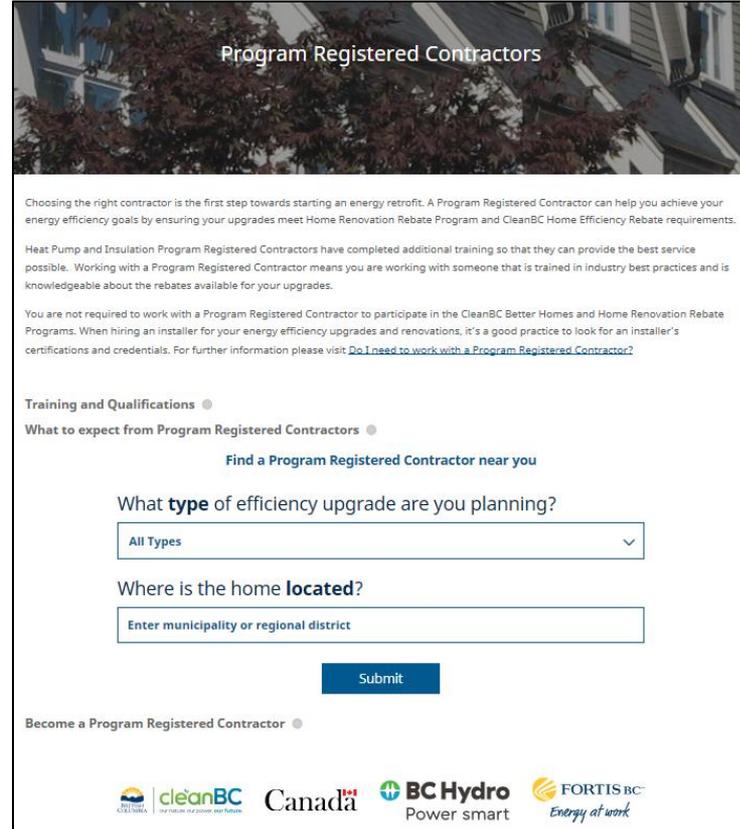
- **Challenge:** Heat pump fuel-switching program participation slow to ramp-up
- **Barriers:** low consumer awareness; lack of contractor familiarity; low cost of natural gas relative to electricity
- **Opportunity:** consumer and contractor engagement
- **Opportunity:** higher efficiency heat pumps



Relative Costs of NG Furnaces to Electric Heat Pumps Based on Efficiency



- Developing best practice installation training & certification for retrofit trades
- Building a network of qualified retrofit contractors
- Subsidizing key courses (tuition and time)
- Use of registered contractors will be mandatory for access to incentives



Program Registered Contractors

Choosing the right contractor is the first step towards starting an energy retrofit. A Program Registered Contractor can help you achieve your energy efficiency goals by ensuring your upgrades meet Home Renovation Rebate Program and CleanBC Home Efficiency Rebate requirements.

Heat Pump and Insulation Program Registered Contractors have completed additional training so that they can provide the best service possible. Working with a Program Registered Contractor means you are working with someone that is trained in industry best practices and is knowledgeable about the rebates available for your upgrades.

You are not required to work with a Program Registered Contractor to participate in the CleanBC Better Homes and Home Renovation Rebate Programs. When hiring an installer for your energy efficiency upgrades and renovations, it's a good practice to look for an installer's certifications and credentials. For further information please visit [Do I need to work with a Program Registered Contractor?](#)

Training and Qualifications

What to expect from Program Registered Contractors

Find a Program Registered Contractor near you

What **type** of efficiency upgrade are you planning?

All Types

Where is the home **located**?

Enter municipality or regional district

Submit

Become a Program Registered Contractor

Future Commitments



- **BC Building Code – Existing Buildings**
 - New standards for building upgrades developed by 2024
- **Energy Efficiency Standards Regulations**
 - New energy efficiency standards for space heaters, water heaters and residential windows between 2022-25
 - Aspiration goal from Energy Mines and Ministers' Conference: COP>1 by 2035 (heat pump technology)



Questions?

katherine.muncaster@gov.bc.ca



SESSION 2

Q&A





SESSION 2

Closing remarks

Gaspard Demur, Team Leader for National Renovation Strategies and Recovery, DG Energy, European Commission





**Stay tuned for our upcoming
webinar: Supporting local
action**

May 2021 (Date TBD)

www.bpie.eu

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