GTR'S 2012 REPORT

A NATIONAL PERSPECTIVE ON SPAIN'S BUILDING SECTOR

ACTION PLAN FOR A NEW HOUSING SECTOR

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Rehabilitation Working Group 2012 “GTR”

Grupo de Trabajo sobre Rehabilitación

REHABILITATION WORKING GROUP GTR

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ACTION PLAN FOR A NEW HOUSING SECTOR

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GTR 2012, Expert Advisory Panel

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Francisco Zuloaga	*European Climate Foundation (ECF)*

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Moving Forward

The GTR has made significant progress in 2012

- GTR I was successfully launched at Conama on November 30th 2011

5th CONAMAlocal
Re-formulating cities together
From 29 November to 1 December, 2011

- Positively received by major news outlets:

LA RAZÓN · EL PAÍS · EL MUNDO · Alimarket Información económica sectorial · adn · ABC.es · EL CORREO

GTR I →

- General Public ✓
- Media ✓
- Interest Groups ✓
- Political Leadership ✓
- Public Service ✓

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Moving Forward

GTR I

has gained momentum among Spanish policy makers and private sector

GTR II

It is an update which has furthered the model and its conclusions

2,000+ "downloads"

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The need for a New sector

the New Housing Sector in Spain should address the following challenges:

Provide adequate, good quality and accessible housing services to residents

Attain it with a strong reduction of the country's environmental footprint

Generate a viable economic activity (capable of creating jobs

These objectives have to be contemplated in a medium 2020 / 30 and long term 2050 spectrum

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New European Energy Policy

2002 EPBD

Legislative Platform

2012 EED

Opportunity

Employment Growth

Improve energy security

Reduce GHG emissions

Through

Incorporation of energy efficiency + renovation

In the Construction Sector

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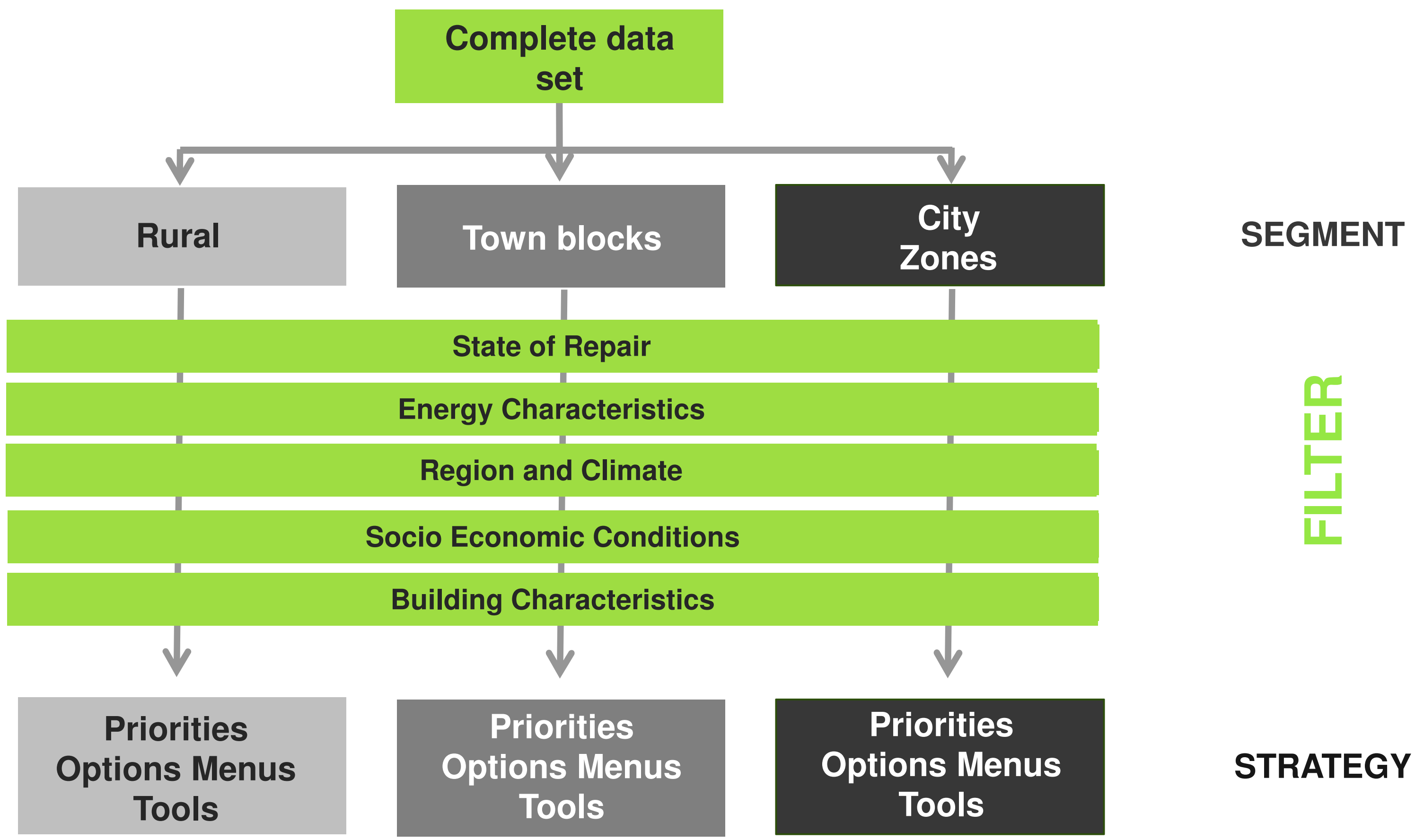
Proposed Methodology



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"HOTSPOTS"

"hotspots" A, C y G	"hotspots" D, E, H, I	"hotspots" B, F, J
Single family homes located in rural areas	*Blocks of apartments in small to medium urban town centers*	*Multi-family buildings mainly built in large urban areas*

- **Make up 15 millon housing units (74% of units built before 2001)**
- **Of which 10,5 millon are primary homes (75% of primary homes built before 2001)**

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Intervention Menus

Intervention 'Menus' → Provide intervention packages for energy rehabilitation

"Hotspots"

- A
- B
- C
- D, E, F
- G
- H
- I, J

Diferents menus' potential 'Market' → Definition of strategies to implement them

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"HOTSPOTS"

Throughout 2012 the GTR has deepened its own estimates for renovation prices

Detailing a specific estimate for each ***hotspot***

- Based on the use of different fuels,
- Optimizing a cost-effective solution

To obtain significant reductions of energy consumption.

	GTR 2011		GTR 2012	
	Cost	Reduction	Cost	Reduction
Hotspot A	25,586 €	80.0%	24,696 €	82.0%
Hotspot B	12,510 €	80.0%	18,003 €	81.1%
Hotspot C	25,586 €	80.0%	26,230 €	79.6%
Hotspot D	12,510 €	80.0%	14,916 €	81.8%
Hotspot E	12,510 €	80.0%	14,916 €	81.8%
Hotspot F	12,510 €	80.0%	14,916 €	81.8%
Hotspot G	25,586 €	80.0%	25,275 €	78.3%
Hotspot H	17,985 €	80.0%	18,453 €	78.3%
Hotspot I	12,510 €	80.0%	14,524 €	75.6%
Hotspot J	12,510 €	80.0%	14,524 €	75.6%

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Intervention Menus

Elements that determine consumption		CURRENT DATA				REHABILITATION DATA								
						2. DEMAND					3. VENTILATION		4. INSTALLATIONS	
		Characteristics				Characteristics								
		Values	Units	W/K m2 Home surface	kWh/m2 Home surface per year	Values	Units	W/K m2 Home surface	Heterogeneity coefficient	kWh/m2 Home surface per year	Heat recovery savings(%)	W/K m2 Home surface	Savings Actions (%)	W/K m2 Home surface
Losses – Transmission	walls	1.9	W/m2 K	1,64	57,5	0.4	W/m2 K	0,38	1,20	16,1				
	windows	5.7	W/m2 K	0,77	27,0	1.7	W/m2 K	0,23		8,0				
	roof	1.8	W/m2 K	0,27	44,4	0.3	W/m2 K	0,19		6,8				
	floors	2.5	W/m2 K	0,87	30,6	0.4	W/m2 K	0,14		5,0				
				4,55	159,4			0,95		35,9		35,9		
Ventilation		1	renov hora	0,86	30,1	1	renov hora	0,86		30,1	56,9	12,95		
Total				5,41	189,5			1,81		66,0		48,9		48,9
Ganancias	Appliances	9	kWh/m2 (1)			5,6	kWh/m2 (2)							
	Radiators	Not considered				Not considered								
Heating Demand (losses + gains)					189,5					66,0		48,9		48,9
Consumption Heating					180,5					60,4		43,3	25,0	32,47
% Consumption heating - after each action					100					33,5		24,0		18,0
% Reduction in Consumption - after each action					0					66,5		76,0		82,0

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Sensitivity Analysis

The variables with greatest impact on renovation are:

Energy Prices	Current levels + future projections
Renovation Costs	Up-front subsidies (net investments required by homeowners)
GHG	Value generated by reductions
Financing	Availability and its specific terms and condition

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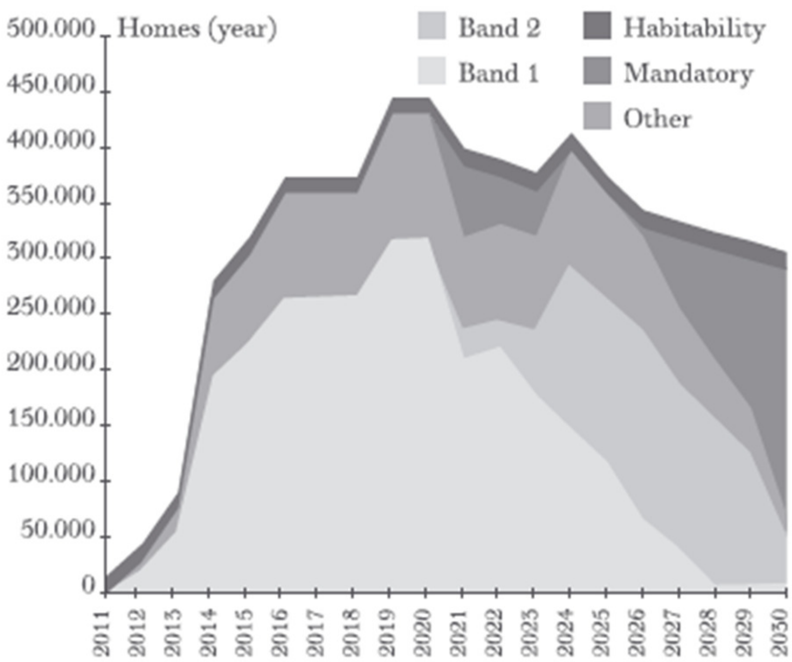
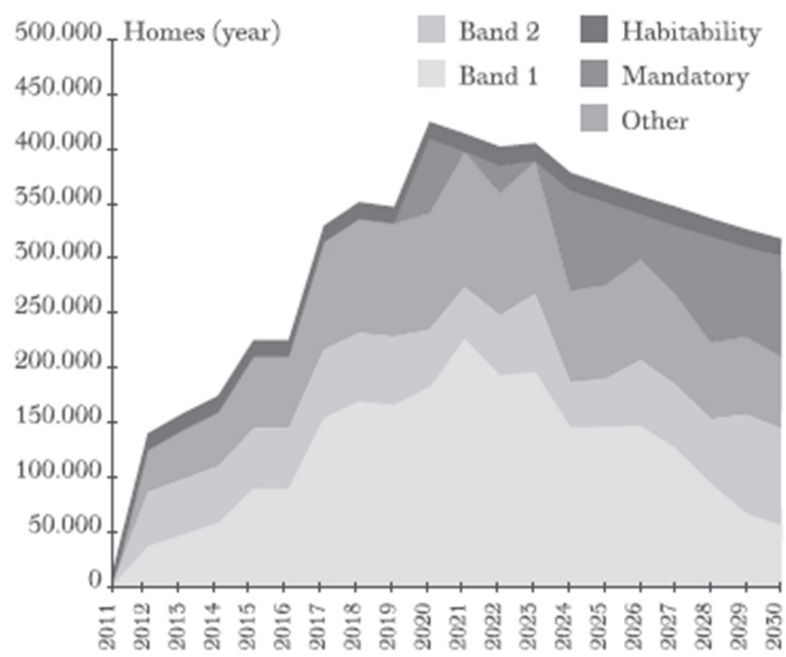
Sensitivity Analysis
2011 – 2012 Progression

Original GTR 2011 Plan → **GTR 2012 Base Case**





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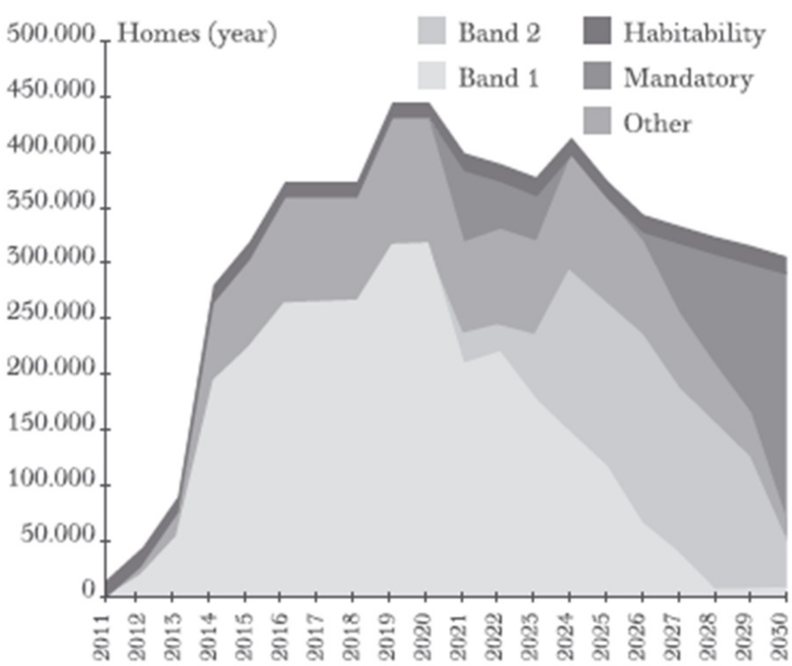
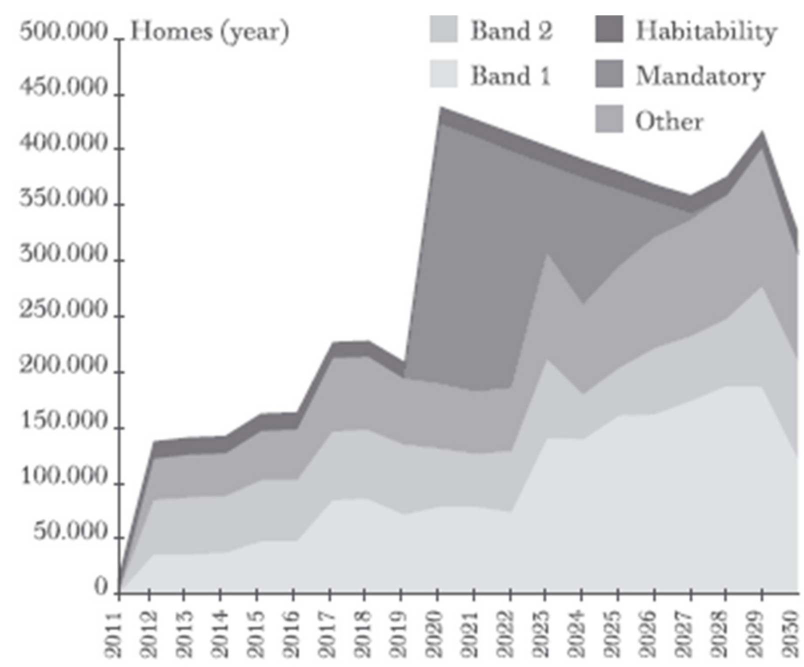
Energy Prices

Original GTR 2011 Plan



GTR 2012 with "Low" Gas Evolution



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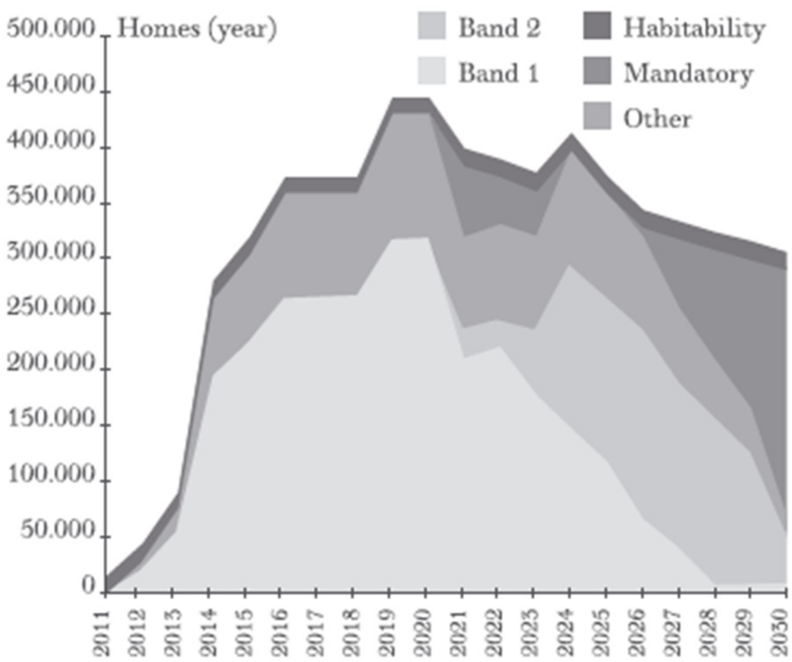
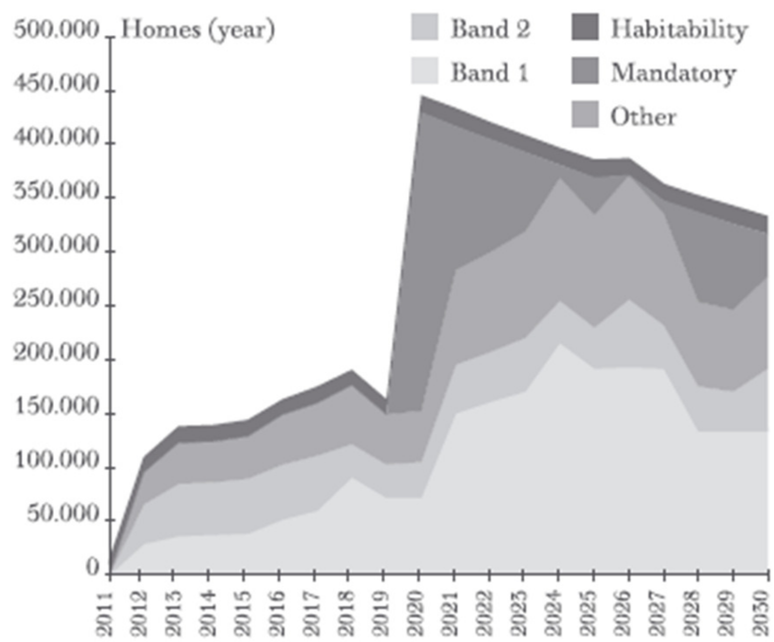
Sensitivity Analysis

Without subsidies

Original GTR 2011 Plan



GTR 2012 without subsidies



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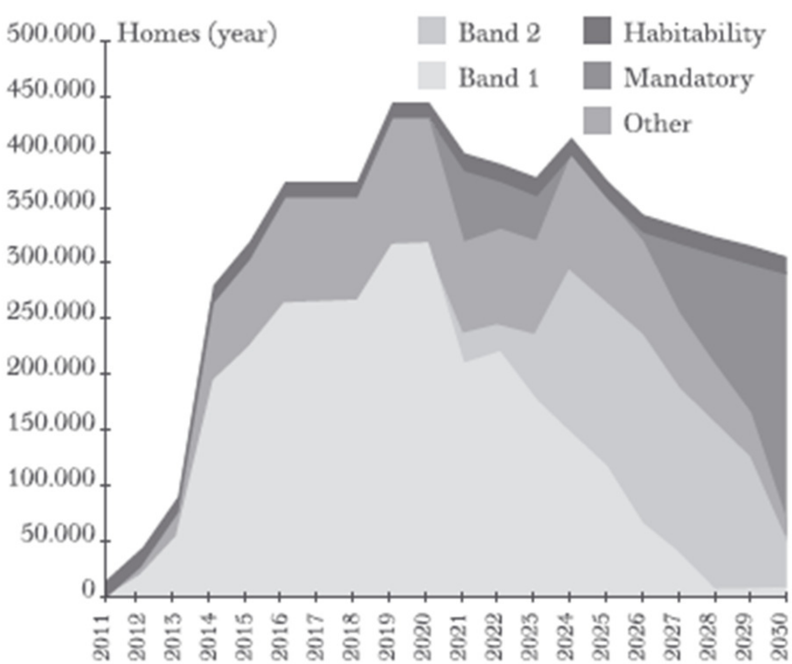
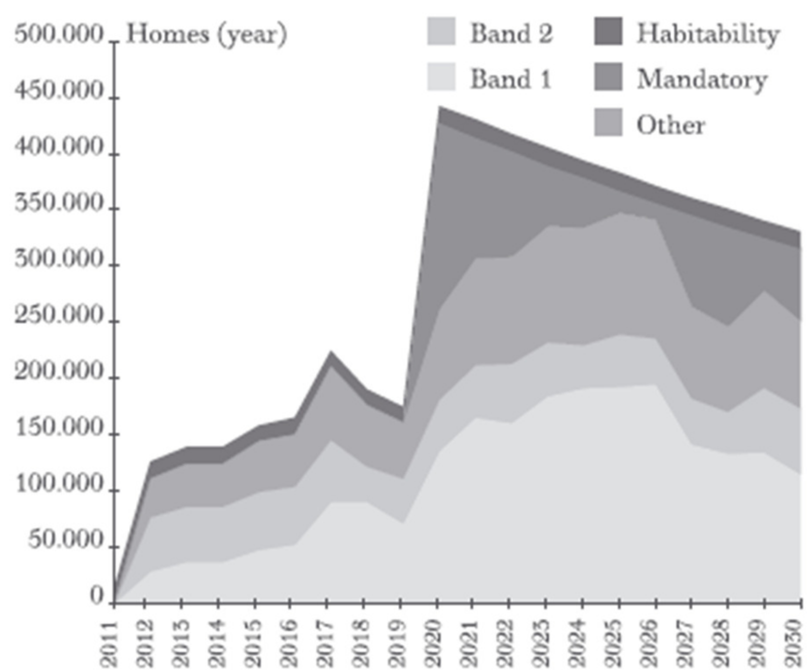
Sensitivity Analysis

Without the price of CO2 (15%)

Original GTR 2011 Plan

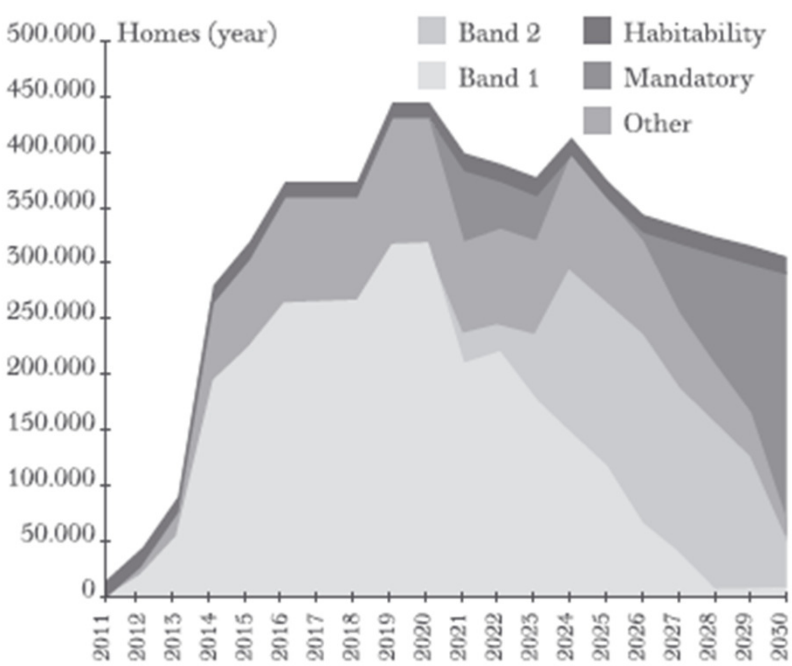


GTR 2012 without CO2 value

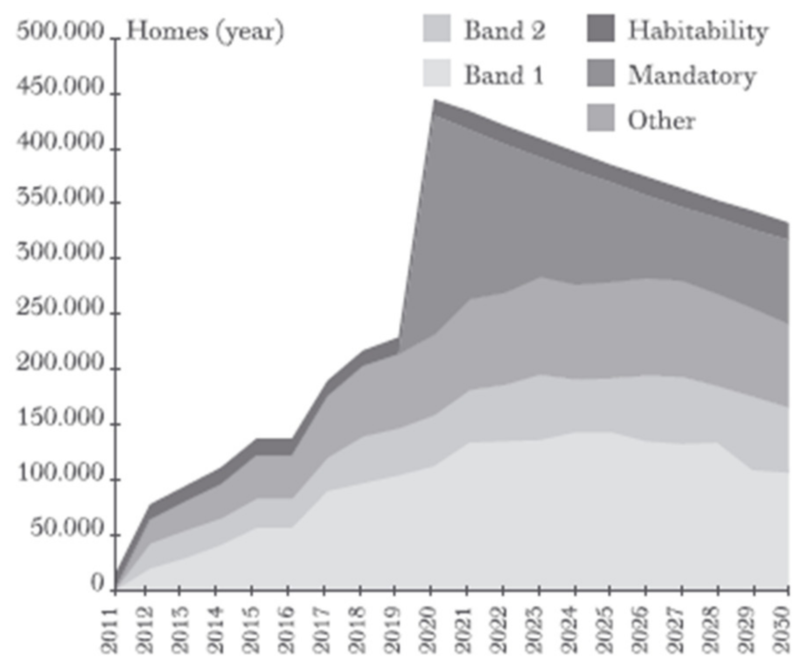


Sensitivity Analysis
Constrained Finance (half)

Original GTR 2011 Plan



GTR 2012 with Constrained Finance



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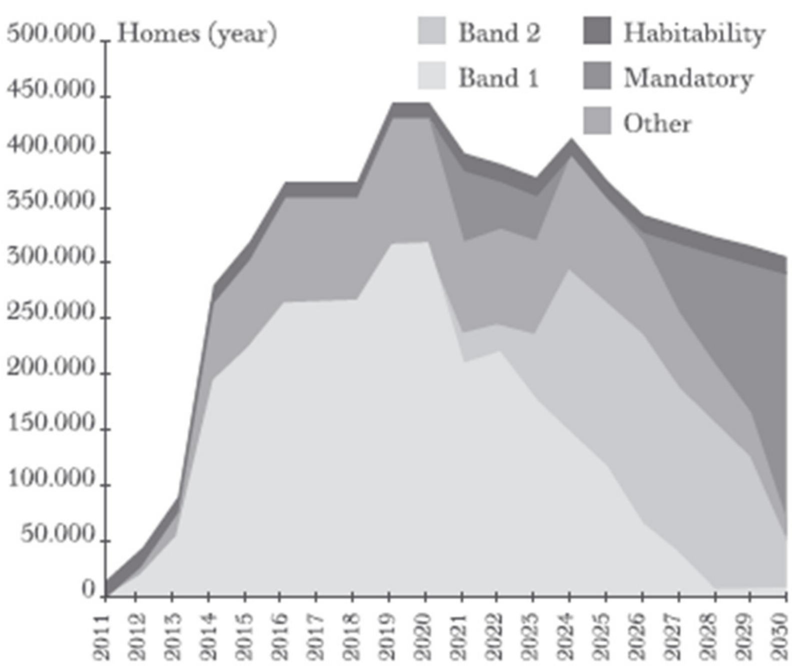
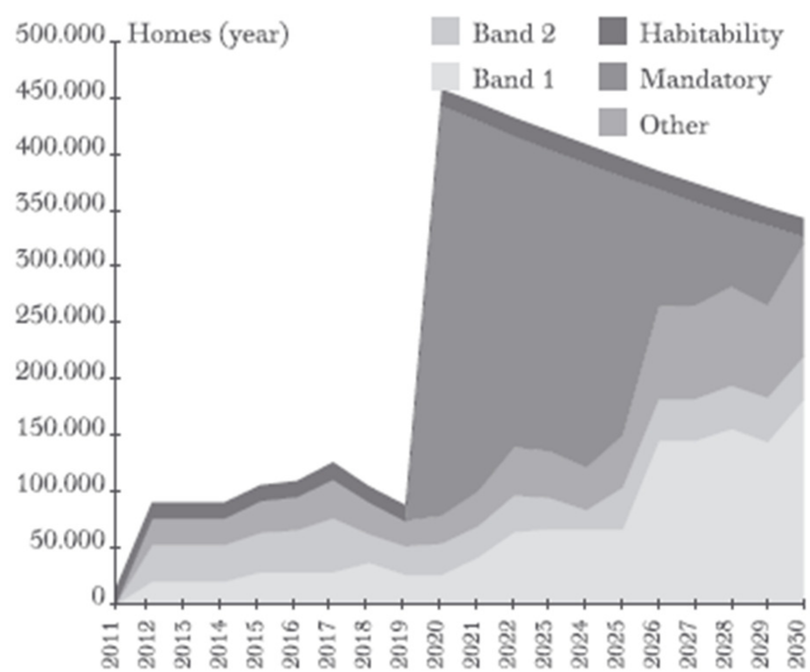
Sensitivity Analysis
Financing with 8,5% cost (of 5%)

Original GTR 2011 Plan



GTR 2012 with 8.5% Cost Finance



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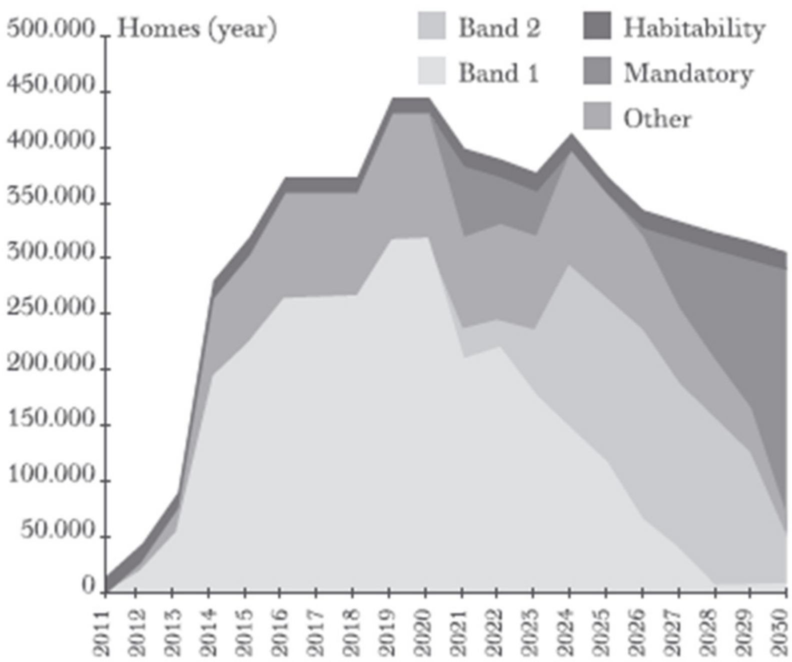
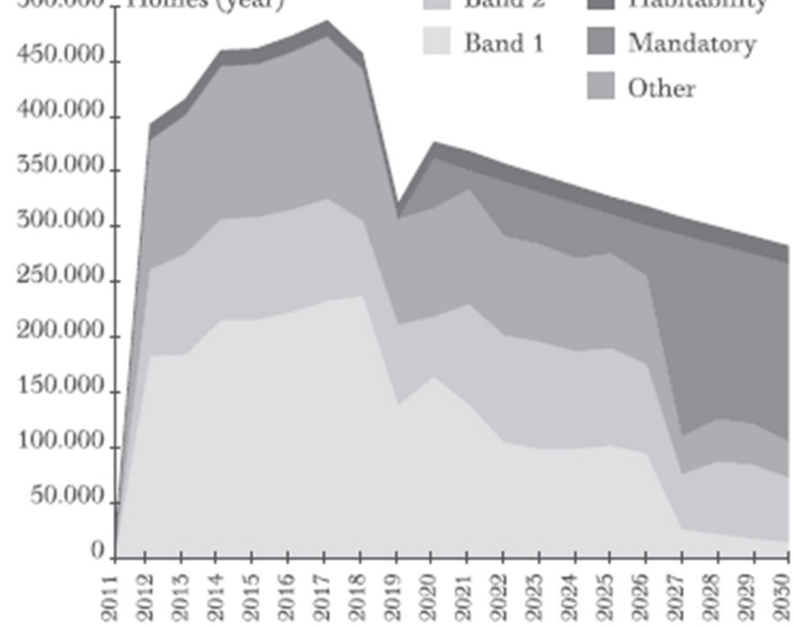
Sensitivity Analysis

Financing at 30 years (of 20 years)

Original GTR 2011 Plan



GTR 2012 with 30 years Finance



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Sensitivity Analysis

In order to boost the rehabilitation sector at a national scale within the next 2-3 years,

the Spanish Government will have to resolve the initial “cost gap” of 25%

And provide homeowners some value in regards to the reduction of CO2 emmissions avoided thanks to renovation.

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Tertiary Buildings – "Sector Strategies"

65% of Spanish non-industrial energy supplied to buildings goes to the residential sector and 35% to the nonresidential or tertiary sector.

the **GTR** hopes to expand its reach and resources to make progress in this area in **2013**.

Sector	Number	Priority Focus (Intervention 'menu')
Hospitals	350 Public 350 Private	Use and management, lighting, cogeneration, insulation, solar water heating and intelligent controls.
Universities	50 Public 27 Private 236 Campuses	Use and Management / Education, lighting, insulation, cogeneration, "District Heating" and HVAC, intelligent controls.
Hotels	8,300	Lighting & Intelligent Controls, HVAC / Boilers, Insulation and Solar (PV ACS).
Retirement Homes	950 Public 2,850 Private	Lighting, Insulation and Solar (PV ACS).
Shopping Centers	510	Cogeneration, tri-generation, intelligent systems and renewable energy.
Sport Centers	5,000+	Lighting, Insulation and Solar (PV ACS).
Offices (public administration)	2,000+	Education, procedures, lighting, insulation and smart controls.
Offices (large buildings)	2,000+	Education, procedures, lighting, insulation and smart controls.
SMEs	3,000,000	Awareness, lighting, insulation and controls.

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Bultzatu 2025

Roadmap for Sustainable Buildings in the Basque Country:

CAPV 2025 Residential Sector Performance indicators.	Trend Development	2025 Target
Average Annual Investment	731	1.328
Jobs Created (per year)	5.957	10.818
Yearly Energy on Bill Savings Trend (MM€ / ?)		49 (8,4%)
Yearly Tax Revenue (MM€)	89	161

CAPV 2025 Residential Sector Performance indicators.	2010	2020 Target
Energy Consumption (tep)	625.500	605.108
Reduction of Energy Consumption, baseline scenario (%) (3E2020 target = 8,7%)	30.400	8,7%
Energy Generation, Renewable sources (tep) (3E2020 target = 43.600 tep)	4,9%	41.258
Generación renovable sobre Renewables Generation, Energy Consumption, (3E2020 target = 6,9%)	865.069	6,9%
CO_2 Emissions (CO_2 Tons)		821,849
Reduction of CO_2 Emissions, baseline scenario (%)		9,6%

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Roadmap for Sustainable Buildings in the Basque Country:

Shares with GTR

- The same vision
- An organized action plan
- Goals centered around boosting the economy of the region in a profitable manner

- Fostering the long term creation of employment
- Improving energy efficiency
- Reducing CO2 emissions

Reach of Plan of Action

	2020	2030	2050
Number of homes reformed	2.200.000	5.700.000	10.000.000
Aggregate investment in housing (€ mm)	64.000 €	160.000 €	260.000 €
Accumulated Energy Savings And CO2 from 2012 (€ mm)	11.000 €	81.000 €	390.000 €
%Reduc. Residential homes (inc. Other measures)	24%	49%	82%
Jobs created (period average)	130.000	170.000	120.000

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Sources of finance for home renovation

Rehabilitation Budget

Total $$ Invested in Spanish Buildings

PV of Energy Savings

CO2 Value

Upgrade Budget

Sources:

- Government
- Building Owner
- Building Occupier
- Financing Institutions
- Energy Service Companies

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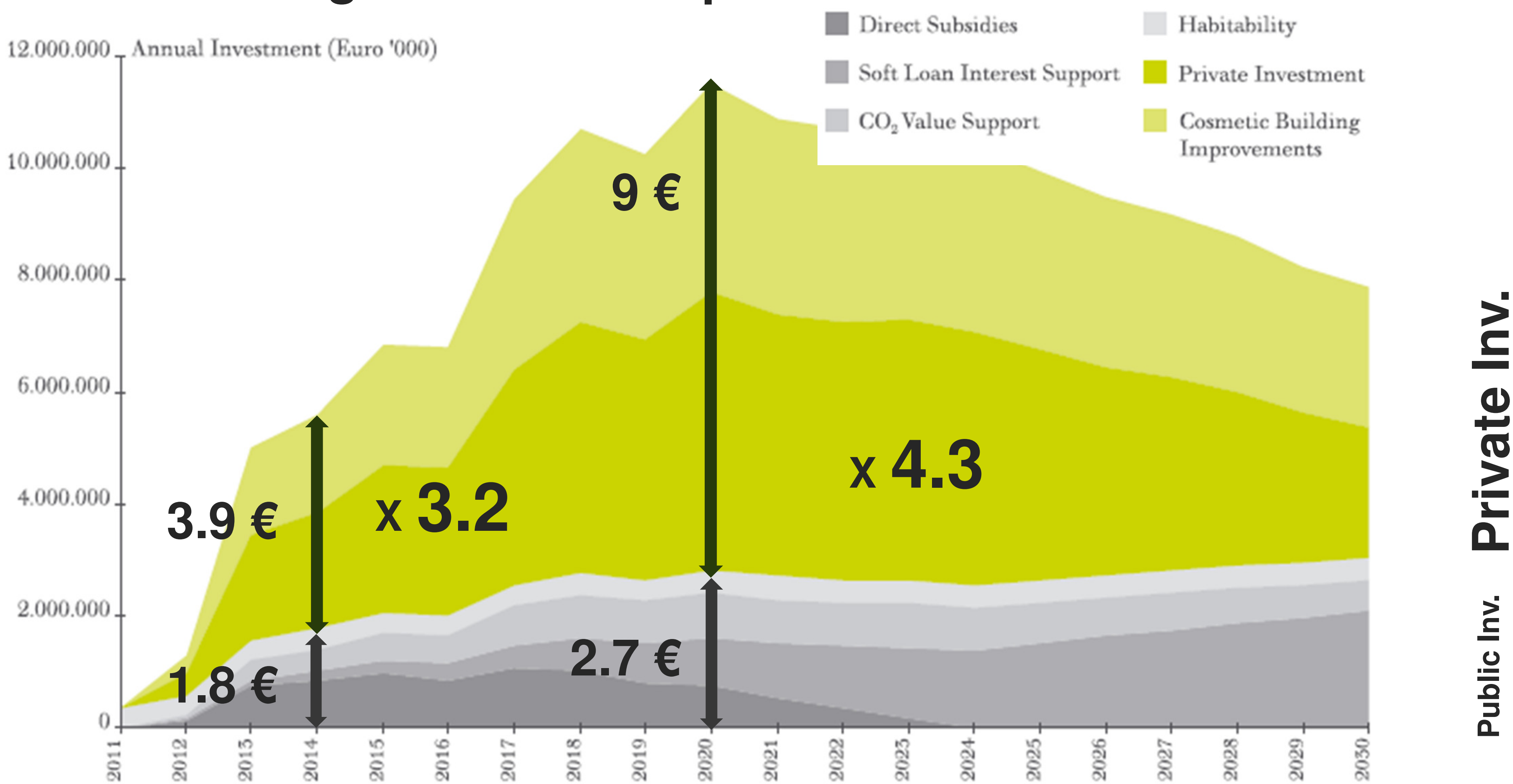
Investment Magnitude. Public private model



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Phases of the Plan

2012-2014
Policy Design and
Launch Phase

2014-2020
Roll-out and
Scale-up

2020-2030
Steady-State

2030-2050
Mandatory Energy
Performance

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Necessary Conditions

For the NHS to be a viable sector:

Political Leadership and Institutional Coordination	+	Legislative and operational framework	+	Engagement and Coordination of public and private resources

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Necessary Conditions

For the NHS to be an economically viable sector:

✓**Financing** at a reasonably reduced cost within an adequate term

✓A clear system of **value assessment** of **CO_2 emissions** savings

✓An **initial ups-front state subsidy** (or equivalent tax reduction) of 25% of the investment costs

✓Policies that promote, in the appropriate sections of the population, the **obligation** of carrying out energy renovation of primary homes.

✓A **new legislative framework** that addresses the specifics of renovation and of the the **necessary legal guarantees**

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Thank you

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