

**A NATIONAL  
PERSPECTIVE  
ON SPAIN'S  
BUILDINGS SECTOR  
A ROADMAP  
FOR A NEW  
HOUSING SECTOR**



**Lanzamiento  
del Informe  
Conama Local 5 ,  
Victoria-Gasteiz**

# Agenda

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<b>1. Introduction</b>	<b>2</b>
2. A National Perspective on Spain's Buildings Sector	6
3. The GTR Action Plan for the Launch of a New Housing Sector in Spain	19

# Introduction

## WORKING GROUP FOR REHABILITATION GTR

Coordinado por:



<b>Valentín Alfaya</b>	Director of Quality and Environment at Grupo Ferrovial.
<b>Luis Álvarez-Ude</b>	CEO of Green Building Council España.
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<b>Peter Sweatman</b>	CEO of Climate Strategy & Partners.
<b>Alicia Torrego</b>	Director of Fundación Conama.

# Introduction

## WORKING GROUP FOR REHABILITATION GTR

Coordinated by:



### Co-authors of this Report:

**Albert Cuchí**      Universitat Politècnica de Catalunya. Barcelona Tech.

**Peter Sweatman**      CEO of Climate Strategy & Partners.



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# Agenda

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# A National Perspective on Spain's Buildings Sector

## 1.1 New Global Framework and European Policies

### ■ Global Change

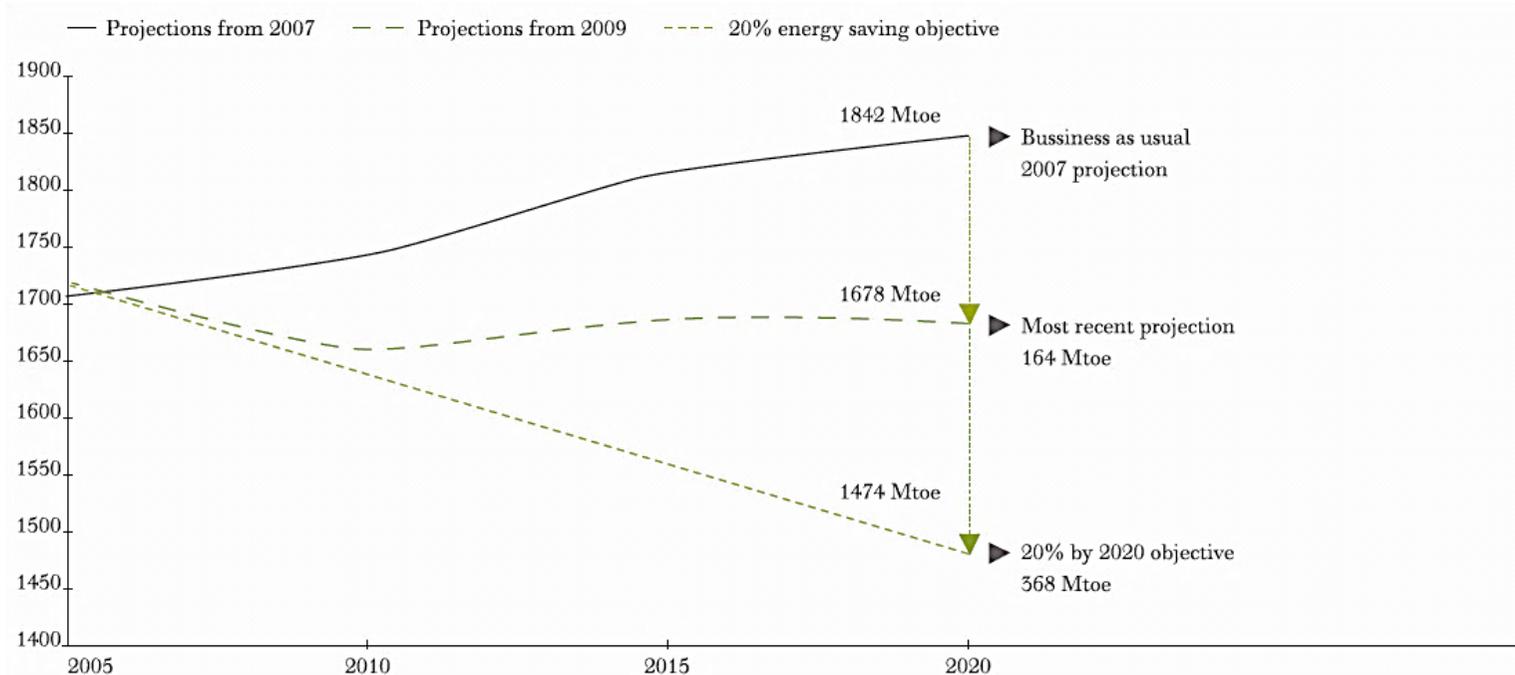
- One of the **sectors** severely **affected** by the crisis has been the **housing sector**,
- due either to a general weakening of credit standards leading to a **mortgage and housing bubble** and its subsequent collapse, (in the **USA**) or to a more **“traditional” overshooting** of construction and house prices (as in **Spain**).



# A National Perspective on Spain's Buildings Sector

## 1.1 New Global Framework and European Policies

### Primary energy consumption\* (Mtoe)



\* Gross inland consumption minus non-energy uses

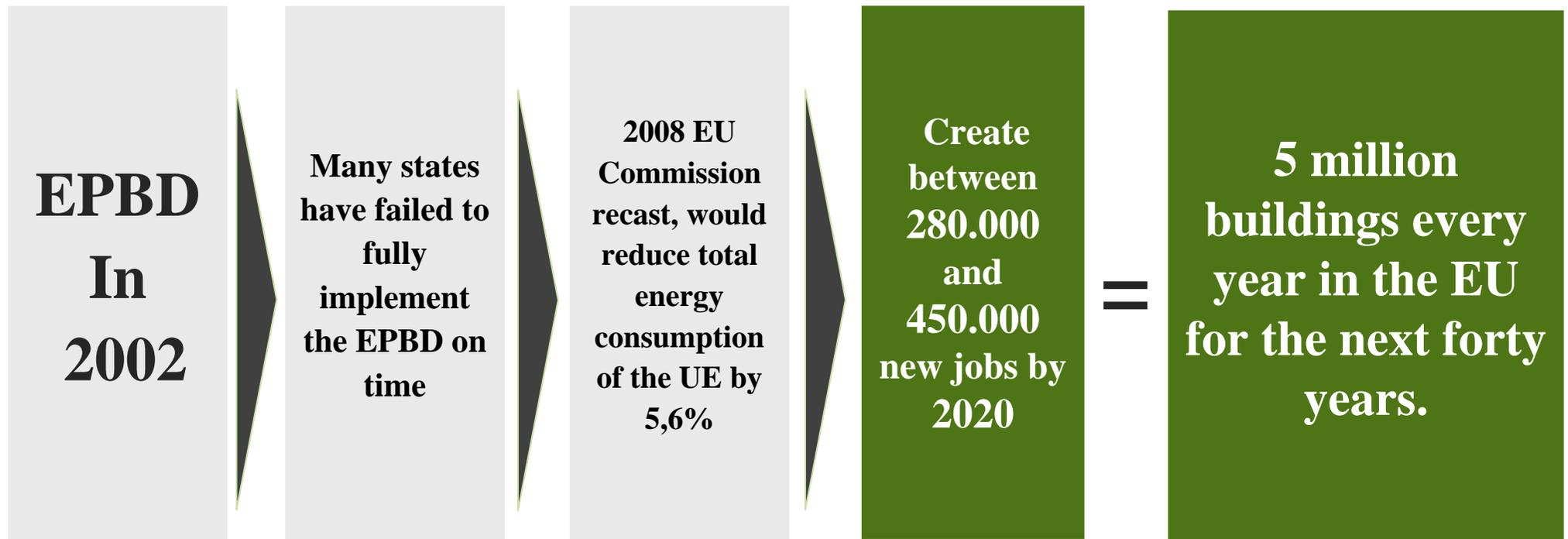
Source: European Commission. (2011) [Chart]. Energy demand stabilized but not on track to meet its target. *EU Energy 2020: A Strategy for competitive, sustainable and secure energy.*



# A National Perspective on Spain's Buildings Sector

## 1.1 New Global Framework and European Policies

### ■ European Union Context (a)



# A National Perspective on Spain's Buildings Sector

## 1.1 New Global Framework and European Policies

### ■ European Union Context (b)

- The EU Commission's proposal for a new Energy Efficiency Directive has six main lines of action:



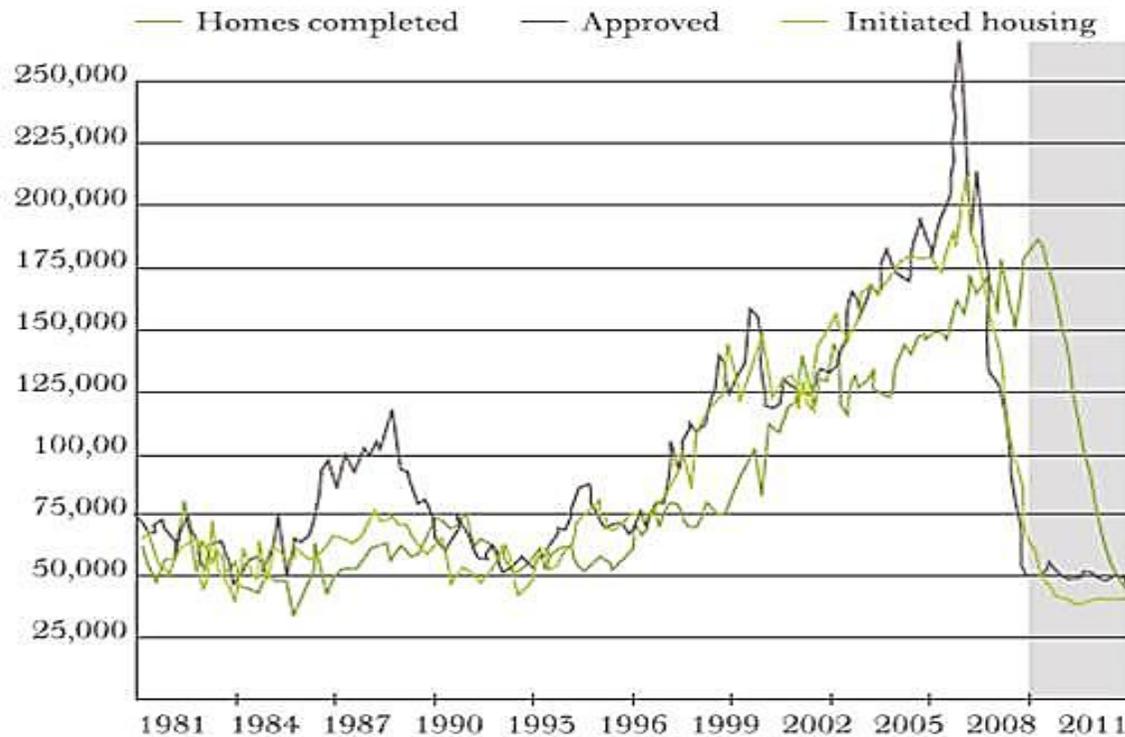
1	The legal obligation to establish <b>energy saving schemes in all Member States</b> .
2	Leadership from the Public sector, through example, by <b>renovating at least 3% of the floor area of public buildings each year from 2014</b> and purchasing exclusively high energy performance products, services and buildings.
3	To <b>improve transparency</b> for energy consumers and facilitate access to potential savings.
4	To give more <b>incentives</b> for energy efficiency for <b>SMEs</b> .
5	To achieve <b>higher efficiency</b> in electricity generation.
6	To <b>replace</b> the Services and CHP Directives <b>with</b> a single <b>consolidated Directive</b> .



# A National Perspective on Spain's Buildings Sector

## 1.2 A Strategic National Vision for the Building Sector in Spain

### Finished housing projections - Quarterly data



### Urban Settings and Buildings in Spain (a)

- In 2008 the building sector generated direct macroeconomic activity which represented over **10% of Spanish GDP** and over **12% of employment**.



# A National Perspective on Spain's Buildings Sector

## 1.2 A Strategic National Vision for the Building Sector in Spain

*Growth of floor space in large urban centers with over 500.000 inhabitants between 1987-2000*



(1) UA of Las Palmas de Gran Canaria 1990-2000

GRUPO DE TRABAJO  
SOBRE REHABILITACIÓN  
(GTR)



Source: Ministerio de Vivienda España. (2010). Crecimiento de las superficies artificiales en las grandes áreas urbanas con más de 500.000 habitantes 1987-2000 [Chart]. Reporte acerca de la situación del sector de la vivienda en España

### Urban Settings and Buildings in Spain (b)

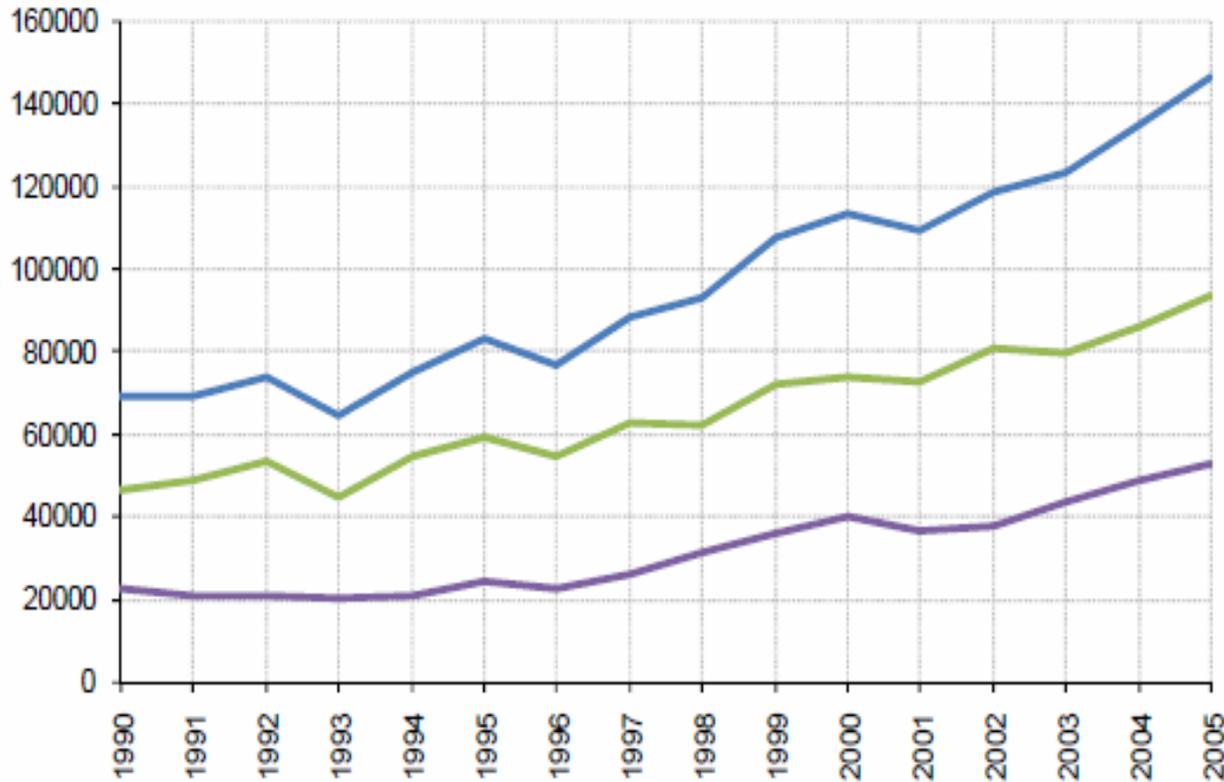
- Spain's buildings sector, until now, has been driven by the production of new buildings.



# A National Perspective on Spain's Buildings Sector

## 1.2 A Strategic National Vision for the Building Sector in Spain

*Evolution of the Emissions in the Building Sector Gg CO<sub>2</sub>*



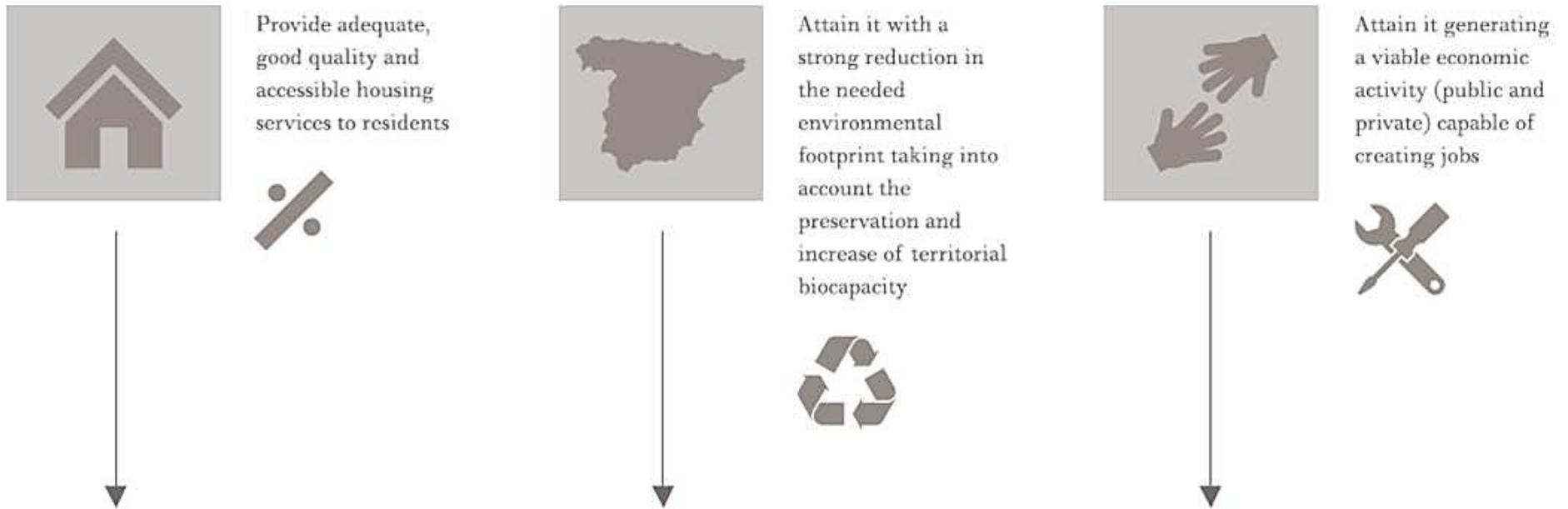
### ■ Urban Settings and Buildings in Spain (c)

— GHG emissions from energy use in Spanish buildings accounted for about **90 million tons of CO<sub>2</sub>** in 2006

# A National Perspective on Spain's Buildings Sector

## 1.2 A Strategic National Vision for the Building Sector in Spain

### *A New Housing Sector in Spain: Objectives and Indicators*



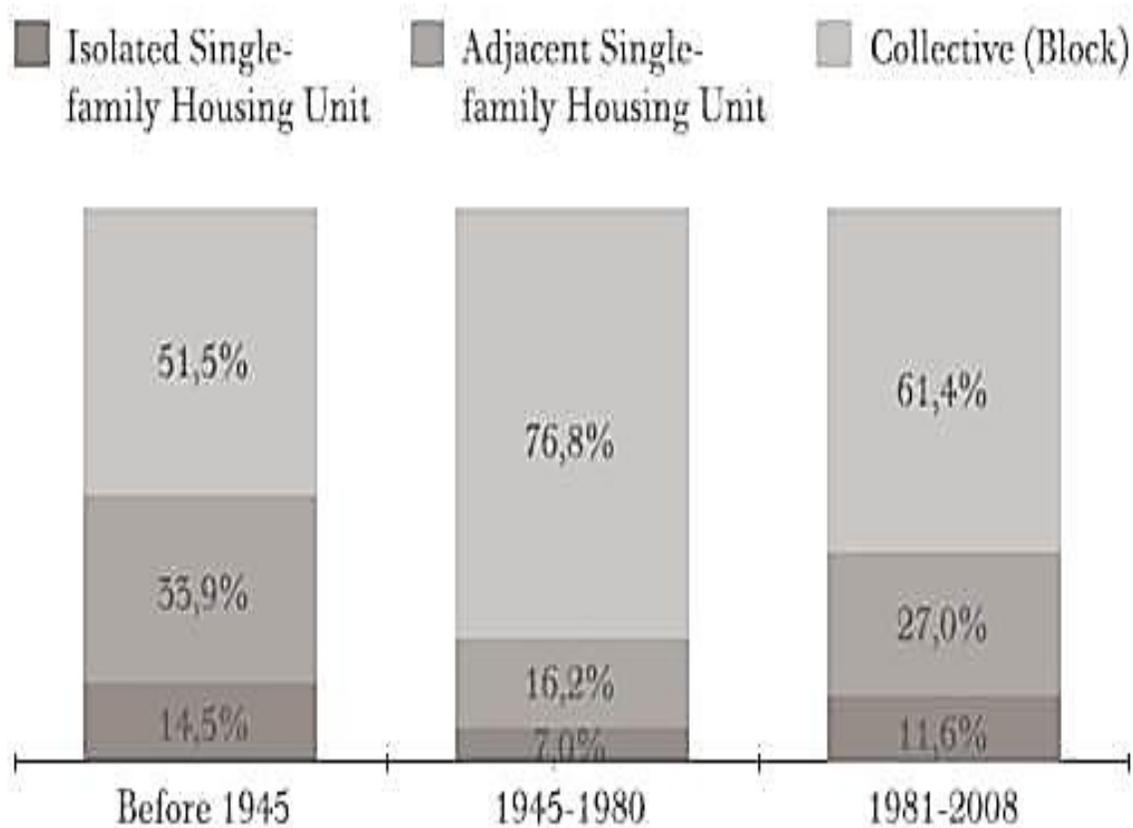
The Future - Next Exit



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

# A National Perspective on Spain's Buildings Sector

## 1.3 Housing in Spain Today



### Built Housing Stock

- Over **60%** were built **prior to 1980**.
- Nearly half of the buildings registered in the 2001 census, or over **40% of these households, are located in rural areas**.
- There are **high household** concentrations in housing blocks each with 5 or more housing units



# A National Perspective on Spain's Buildings Sector

## 1.3 Housing in Spain Today

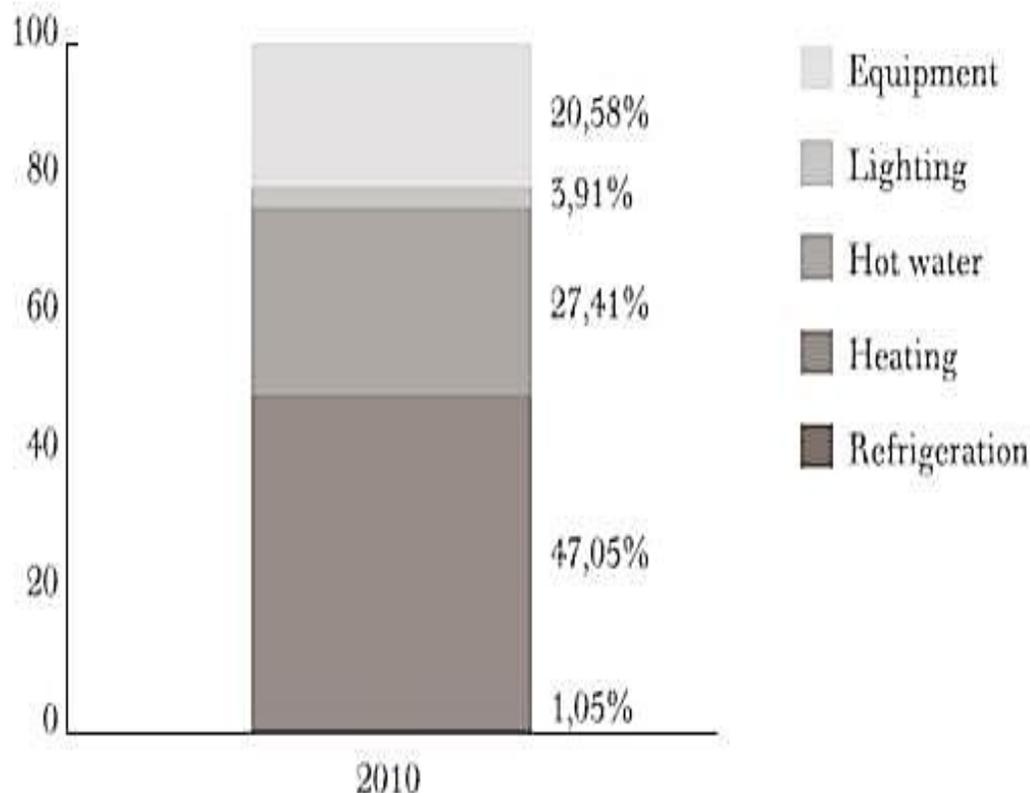


### ■ Housing Stock Occupancy

- In **2008** primary residences accounted for **65%** of the built housing stock.
- In **2009** owner-occupied property accounted for **82%** of Spain's primary housing.
- Nearly **30%** of homes are “over occupied” or occupied at “below capacity.”

# A National Perspective on Spain's Buildings Sector

## 1.3 Housing in Spain Today



### Resources Used in Habitability

- 65% of buildings' energy use is in the residential sector.
- In **2009**, total family income spent on energy was € **15 billion**.
- En **2007**, around 46% of Spanish households used electricity for energy to heat their homes.

Source: IDAE. (2011). Distribución del consumo energía final Sector Edificios DOMÉSTICO (2010) [Cuadro]. En Ministerio de Industria, Turismo y Comercio España, *Plan de Acción de Ahorro y Eficiencia Energética 2011-2020*.



# Agenda

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|----|--|-----------|
| 1. | Introduction   | 2         |
| 2. | A National Perspective on Spain's Buildings Sector                         | 6         |
| 3. | <b>The GTR Action Plan for the Launch of a New Housing Sector in Spain</b> | <b>19</b> |

# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.1 The Need for Spain's New Housing Sector

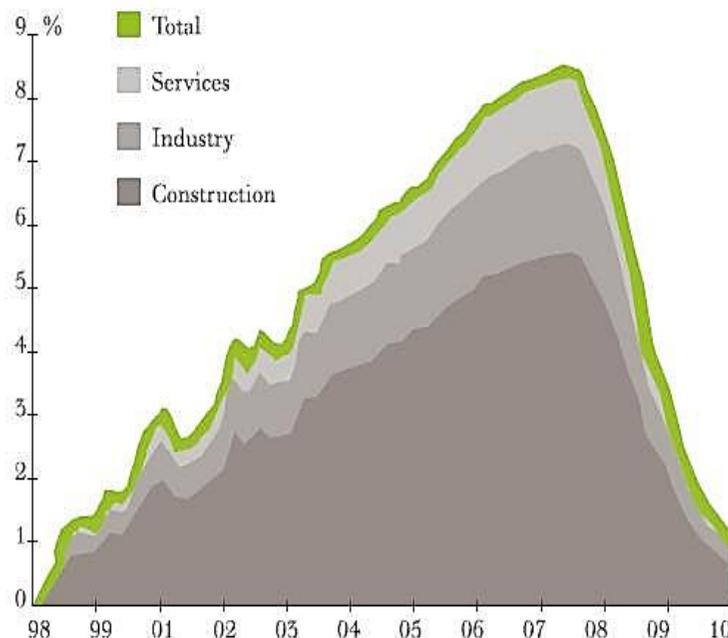
### ■ Necessary Policies of the New Housing Sector in Spain

- The change can begin when the NHS replaces the existing buildings sector as the renovation or rehabilitation of an existing building becomes the major sector activity.

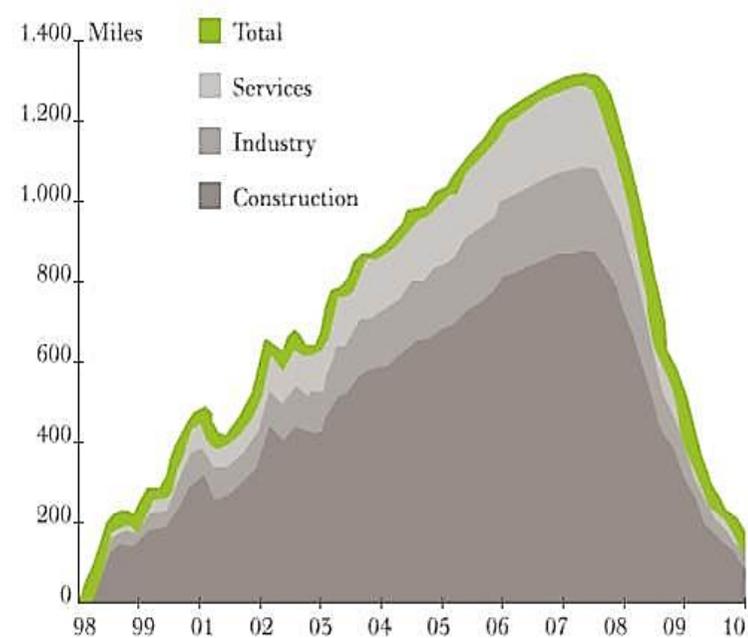


Spain has allocated over a third of its production to the construction of second homes and over 700,000 currently empty housing units..

*Cumulative growth of domestic productive and contributions by sector*



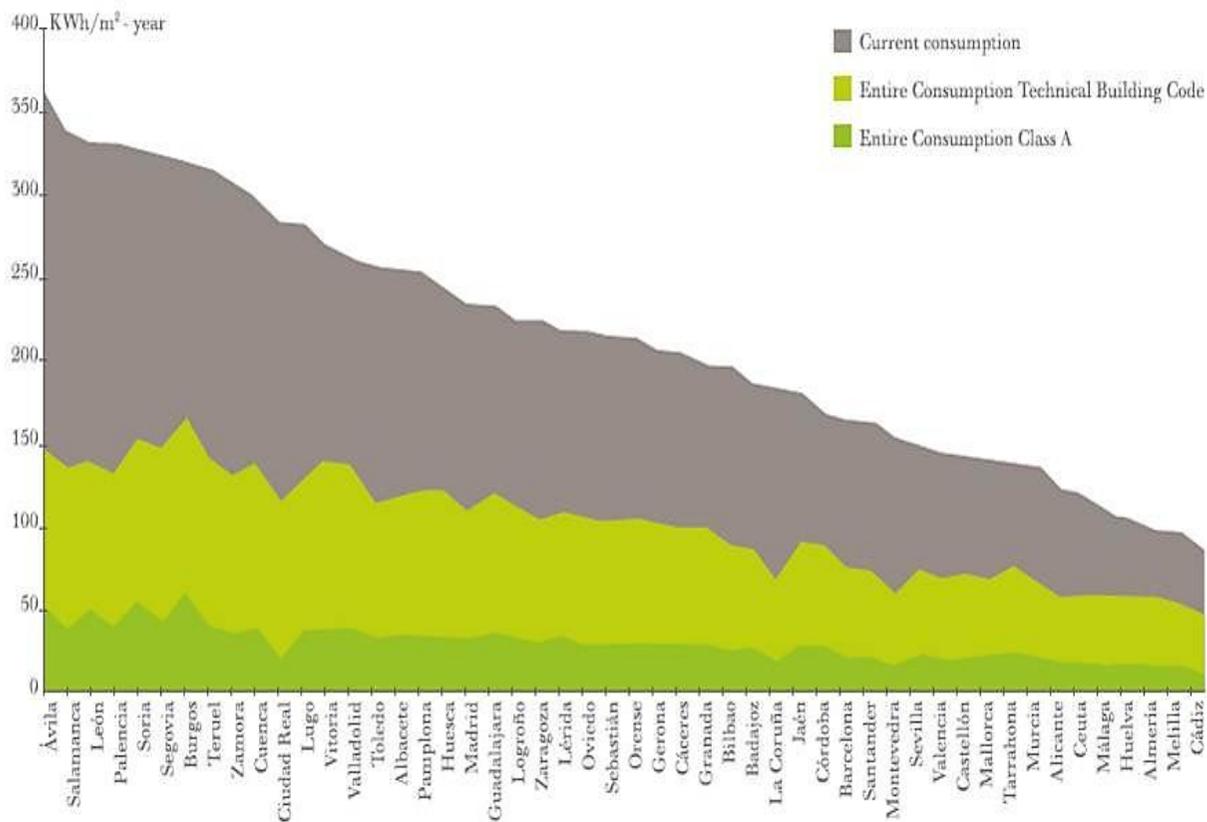
*Accumulated variation of employment in the sector (in jobs)*



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.1 The Need for Spain's New Housing Sector

### Consumption per m<sup>2</sup> of the housing stock in Spain



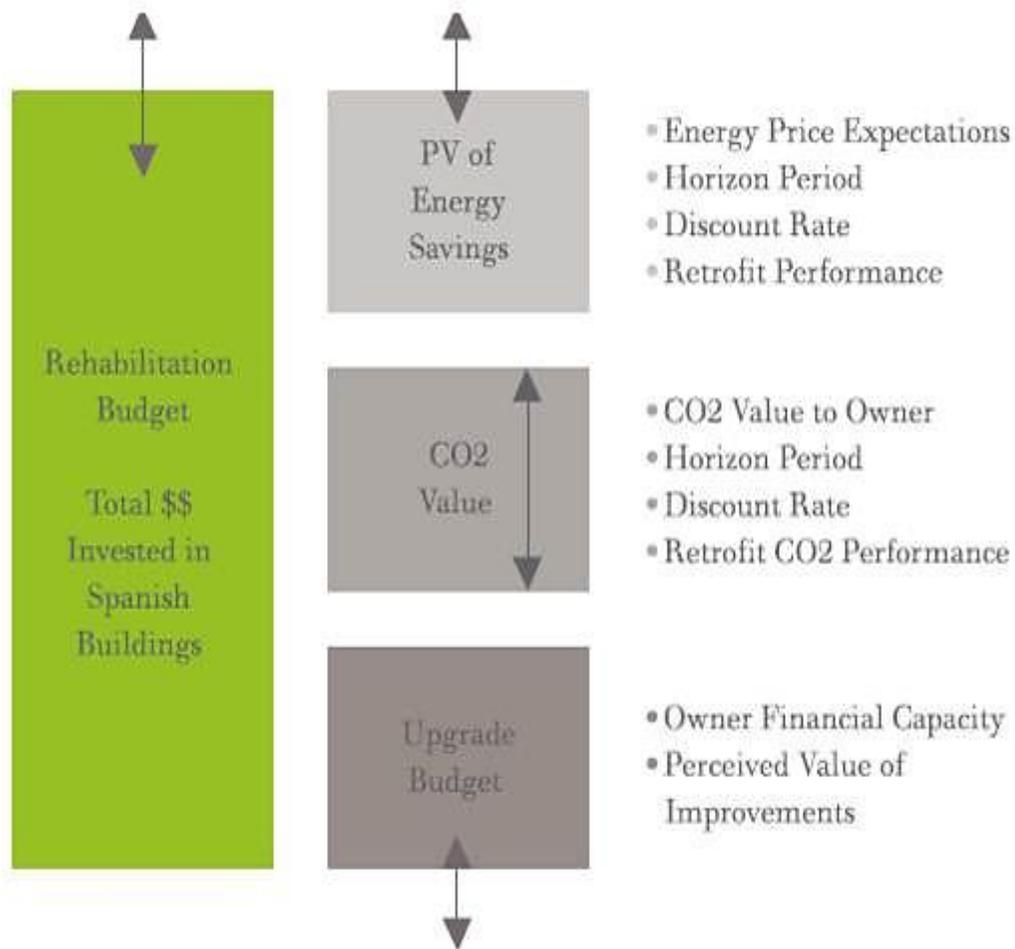
### Objectives for the New Housing Sector

- Focus on the efficient use of resources..
- Improve the habitability and technical facilities of buildings.
- Improving affordable access to housing.



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.1 The Need for Spain's New Housing Sector



### Sources of Finance for Home Renovation

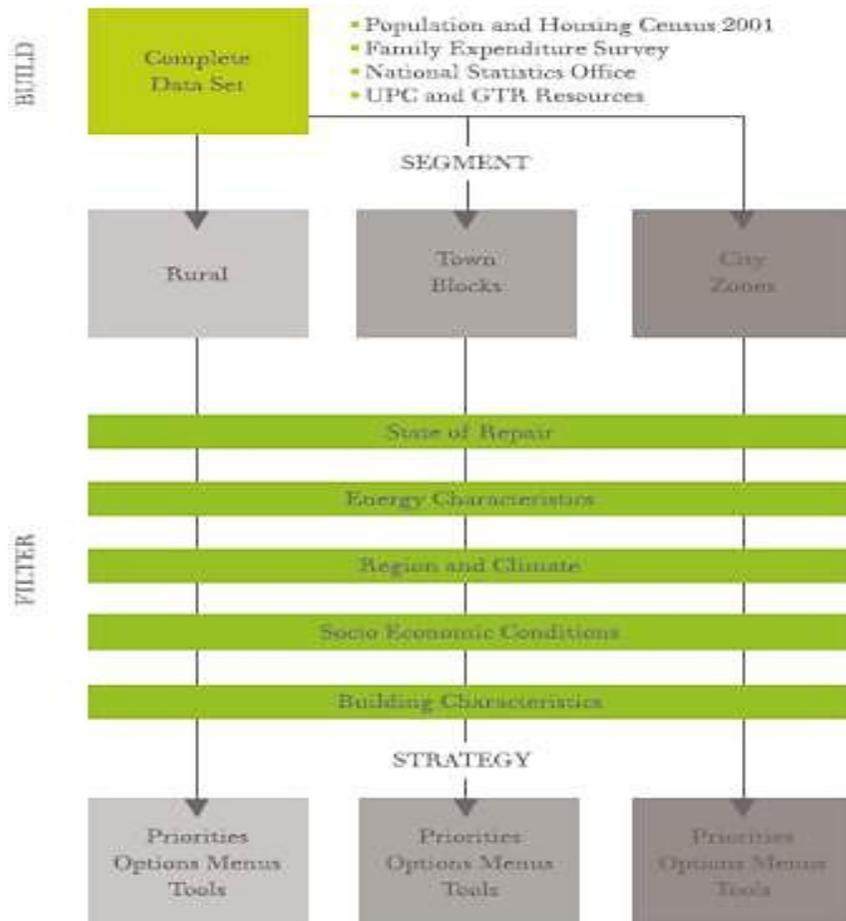
— Investment capital for Spain's home renovation will come from just six possible sources:

<b>1</b>	Government
<b>2</b>	Building Owner
<b>3</b>	Building Occupier
<b>4</b>	Bank
<b>5</b>	Renovation Contractor
<b>6</b>	Energy Supplier



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan



– Priorities of the Action Plan:

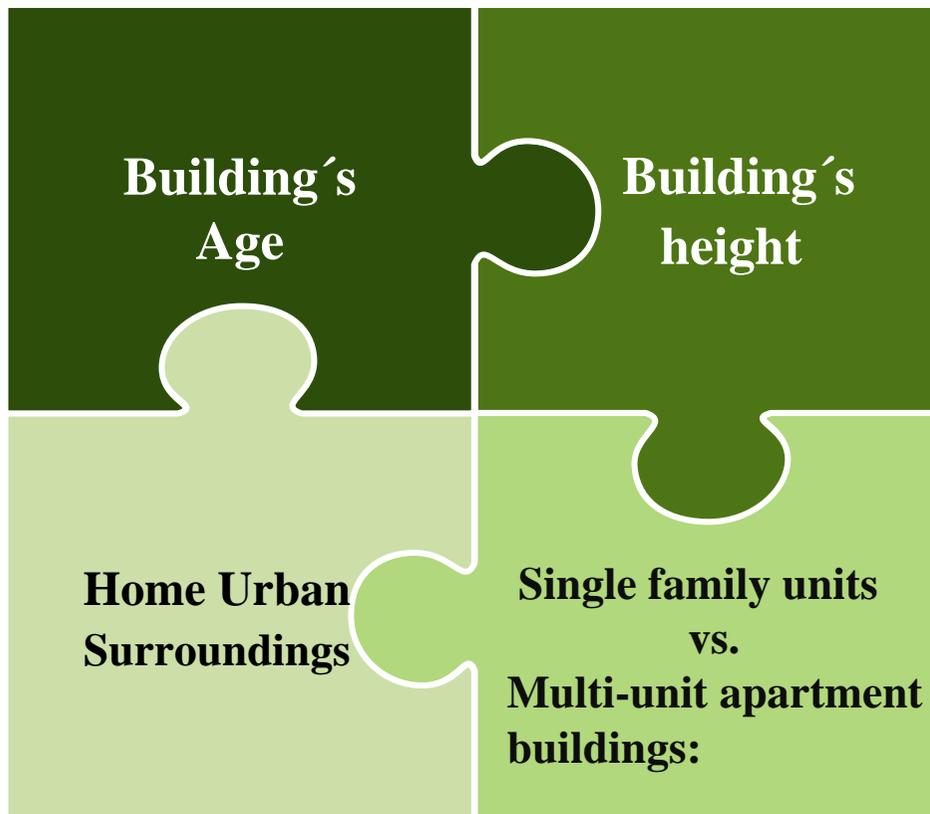
<b>1</b>	Delivery of an NHS oriented to the future
<b>2</b>	Being practical and pragmatic
<b>3</b>	Focusing first on areas that generate a tangible value
<b>4</b>	To avoid the negative impacts –environmental and social- inherent in the traditional buildings sector
<b>5</b>	Stimulate sector supply chains
<b>6</b>	Build on the knowledge and capabilities of the current buildings sector
<b>7</b>	Act in full awareness

# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan

### ■ Segmentation of the Housing Sector in Spain

– It is based on:



The following diagram shows the results of GTR's initial intersection of the data with these four characteristics to create a series of 10 "hot-spots":

The ten "**hot-spots**" identified contain

- **15 million homes** (74% of the 20 million pre-2001 built homes).
- Of which **10.5 million are primary residences** (75% of pre-2001 primary residences and 65% of the estimated primary homes existing in 2011).

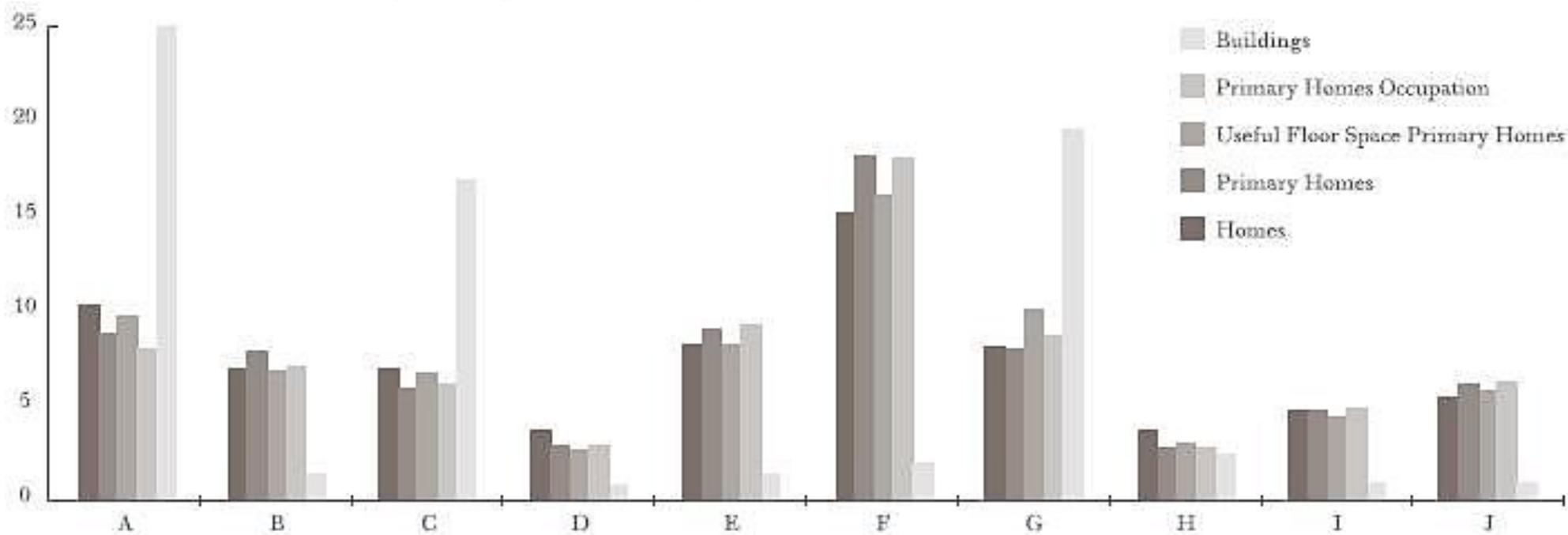


# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan

### ■ ‘Hot-spots’

- **Single-family homes** located in **rural** areas (“hotspots” A, C, G),
- **Multi-family buildings** mainly built in large urban areas (“hot-spots” B, F, J),
- The remainder of the “hot-spots” which are **blocks of apartments in small to medium urban town centers** (D, E, H, I) which are also mostly buildings **under thirty years old**.



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan

### ■ ‘Hot-spot’ Analysis

– Methodology:

<b>1</b>	Determine the “ <b>business as usual</b> ” heating requirements
<b>2</b>	Determine the energy <b>consumption</b> and <b>emissions associated</b>
<b>3</b>	Determine the energy consumption and emissions associated
<b>4</b>	Determine the <b>costs of implementing</b> home improvement
<b>5</b>	Group <b>households within the “hot-spots”</b> by energy intensity
<b>6</b>	Determine the <b>net present value of the cost savings</b> due to the interventions
<b>7</b>	Recognize ‘ <b>energy poor</b> ’ housing units
<b>8</b>	Identify housing units with <b>structural improvement needs</b>

### Constructed park. Households by average annual household net income bracket and state of the building

Unit: Homes	Good	Deficient	Bad	Ruinous	Not applicable	TOTAL
A > 40.000 €	968.314	41.535	11.058	5.996	4.858	1.031.761
B 20.000-40.000 €	6.540.556	414.898	96.238	43.1778	27.732	7.122.602
C < 20.000 €	3.683.108	357.861	80.017	27.162	16.478	4.164.626
- Sin datos	1.702.780	112.130	27.940	11.110	12.240	1.866.200
TOTAL	12.894.758	926.424	215.253	87.446	61.308	14.185.189
A > 40.000 €	6,8%	0,3%	0,1%	0,0%	0,0%	7,3%
B 20.000-40.000 €	46,1%	2,9%	0,7%	0,3%	0,2%	50,2%
C < 20.000 €	26,0%	2,5%	0,6%	0,2%	0,1%	29,4%
- Sin datos	12,0%	0,8%	0,2%	0,1%	0,1%	13,2%
TOTAL	90,9%	6,5%	1,5%	0,6%	0,4%	100%



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan

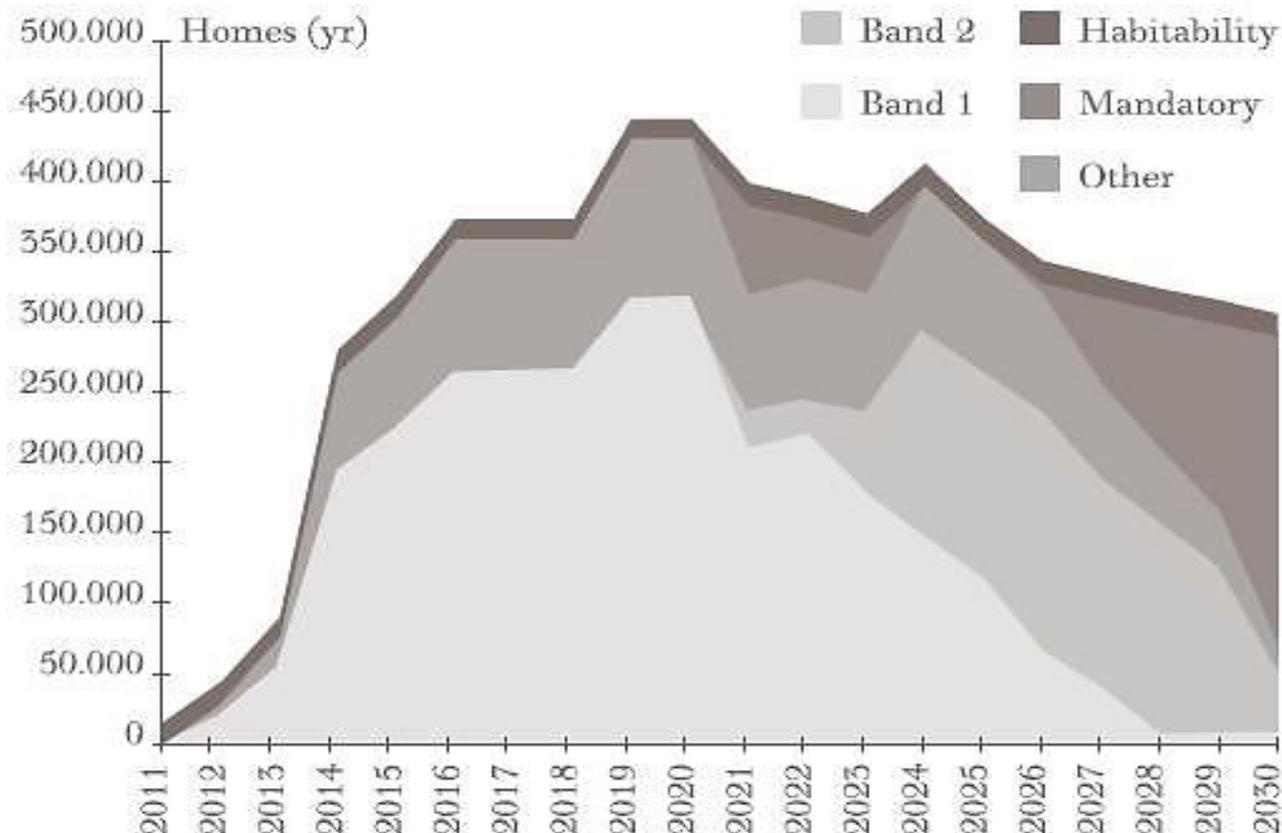
### ■ The Action Plan (a)

– GTR considera:

Depp renovation of 10 million of Spain's most energy intensive primary residences

This would entail retrofitting 75% of all primary residences built before 2001

### NHS Economic Profile

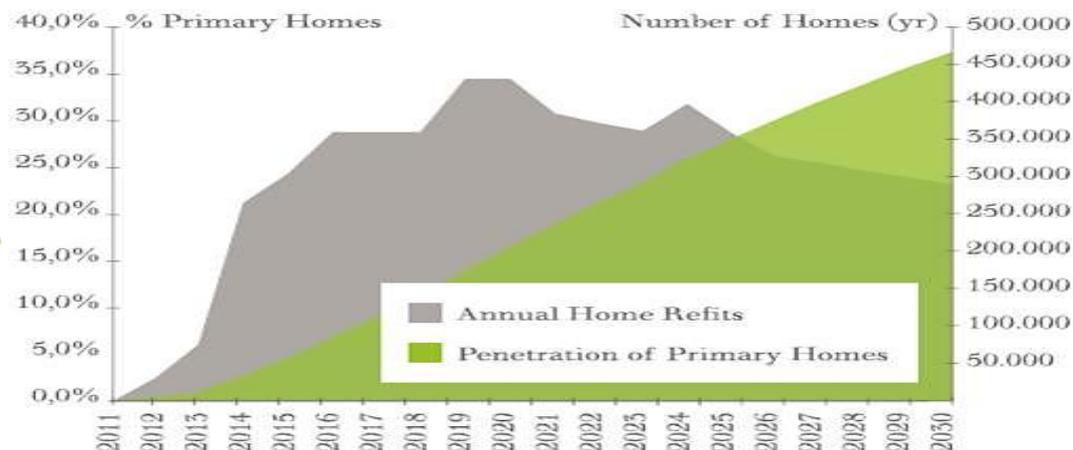


# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan

### ■ The Action Plan (b)

- Action Plan creates a home renovation market with an **aggregate value** of nearly **Euro 150 billion** by 2030.
- Alongside with the NHS sustaining long-term productive **employment for over 130-140,00 individuals** as an average.
- **Spain can reform 37%** of its most energy intensive primary housing units (those built prior to 2001) **by 2030**.
- subsequently continue retrofitting at a mandatory **3% annual rate**, equivalent to **300,000+ housing units per year until 2050**.



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan

### ■ Key Assumptions for the GTR Action Plan (a)

1	“Deep Renovation” interventions are proposed which deliver <b>80% reductions</b> in heating/ cooling energy needs combined with an additional <b>16% energy saving</b> from deploying solar thermal panels to cover <b>60%</b> of hot water needs.
2	Low Cost, Long-term <b>Financing, e.g. 5% fixed rate for 20 years</b> , distributed by ICO in <b>partnership</b> with Spanish banks.
3	<b>Declining 25%</b> up-front direct Subsidy or Income Tax deductions for up to Euro 20,000 of the investment cost of the deep renovation work to <b>“kick start”</b> the NHS.
4	“Technology Curve” of <b>-1% (pa) Nominal Cost Reductions for Deep Renovations</b> .
5	Additional Rehabilitation Spending Knock-on Effects of Deep Energy Efficiency Renovation on Cosmetic areas of 2 to 1.
6	<b>Price of domestic gas (0.055865 euros/kWh)</b> rising along the “high case” scenario taken from the BCG Study for IDAE.
7	<b>CO2 Savings</b> Assigned an Economic Value to Home Occupant <b>equal to 15%</b> of the Value of the Energy Saved.
8	GTR assumes that for <b>every Euro 1 million invested</b> in deep renovations there are <b>18 sustainable jobs</b> created in the NHS.

# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan

### ■ Complementary Policies:

– Complementary policies on other areas of energy consumption and emissions: :

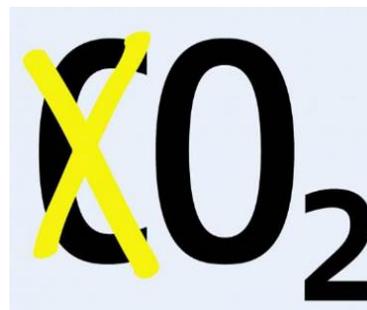
1	Improved Efficiency of Appliances
2	Smart Control systems and the reduced use of inefficient cooling systems
3	Decarbonization of Spain's Energy Mix
4	Fuel Switching for Heating and Hot-Water:

■ The successful execution of the Action Plan by the NHS, can deliver an overall household emissions reduction rate for Spain of:

30% en 2020

55% en 2030

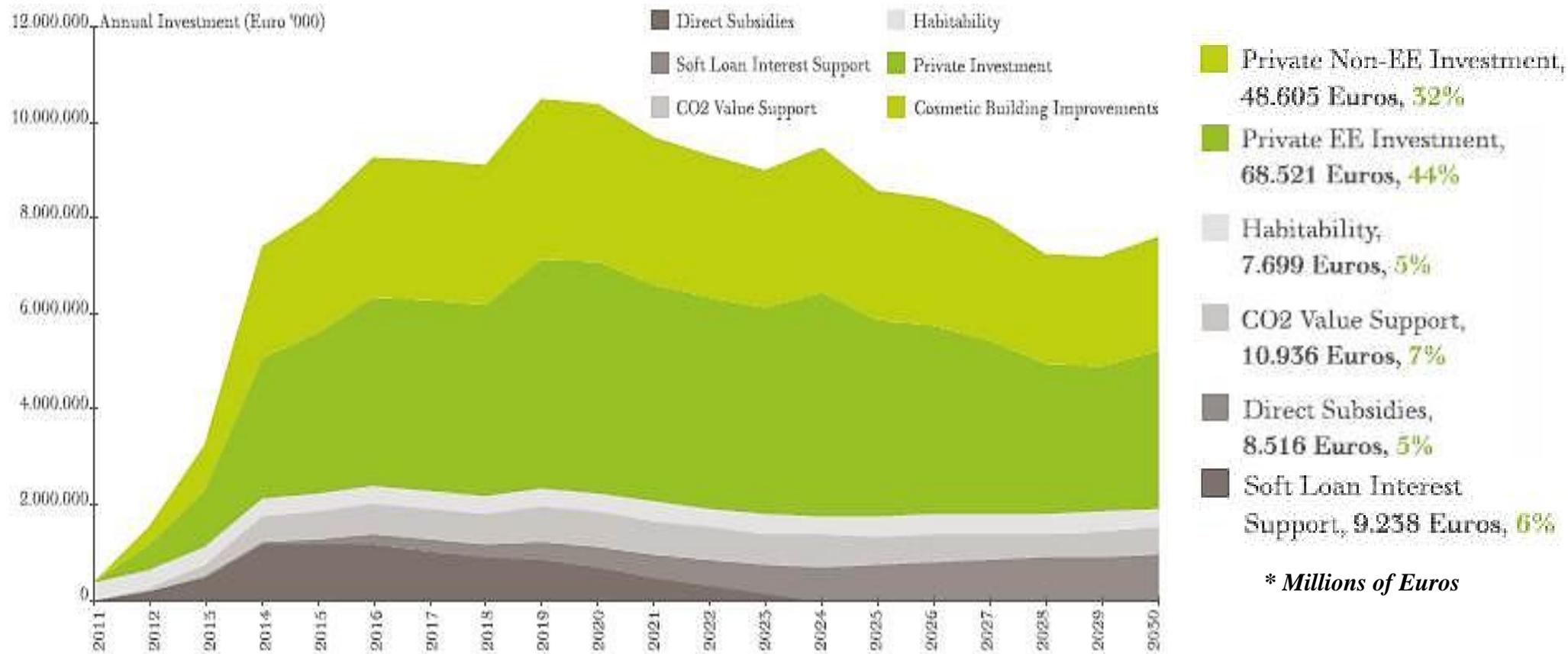
80% en 2050



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan

### ■ Phased Roll-Out of the GTR Action Plan



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

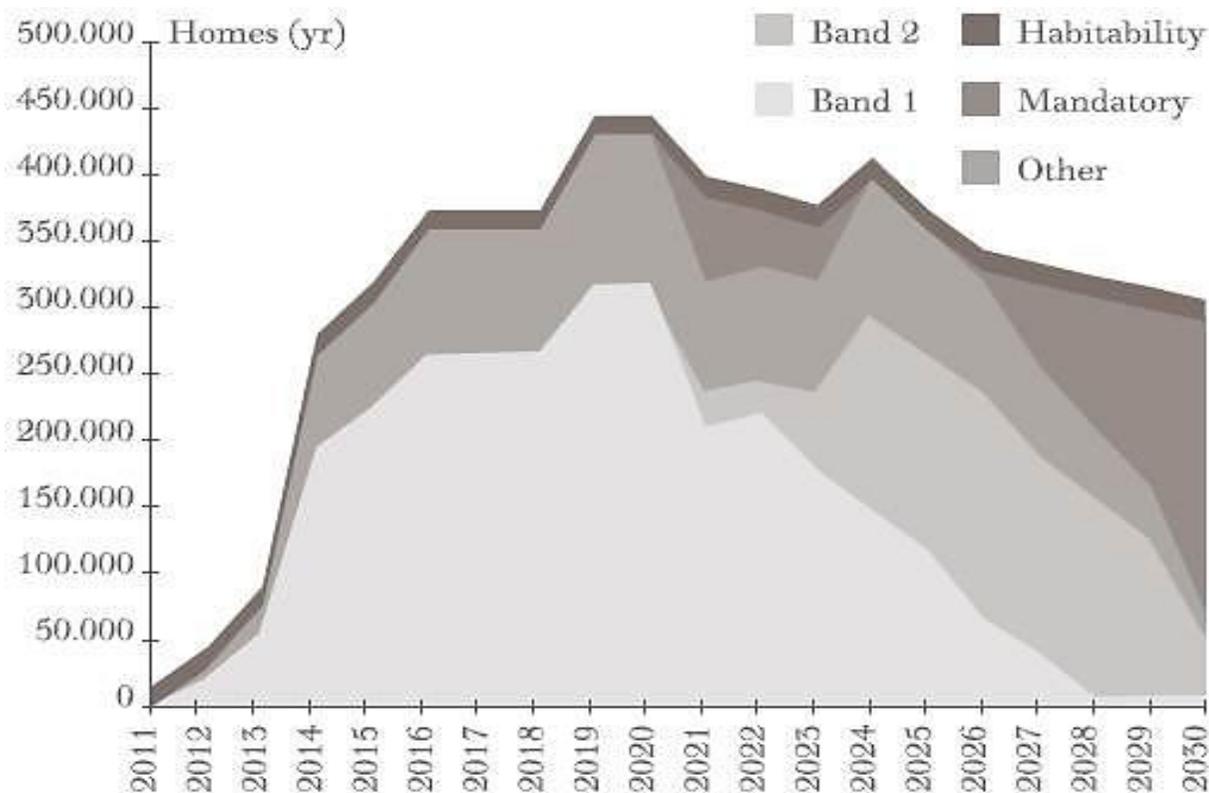
## 2.2 The Action Plan

### ■ The Action Plan

– Necessary Policies for the NHS:

1	Low cost, long-term financing for deep renovation
2	A clear and bankable value to households, funders or utilities for the CO2 savings delivered
3	Up to 25% “kick-start” subsidies paid up-front during the initial stages of each “hot-spot”
4	A mandatory policy ensuring that the NHS renovation activity

### NHS Economic Profile



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

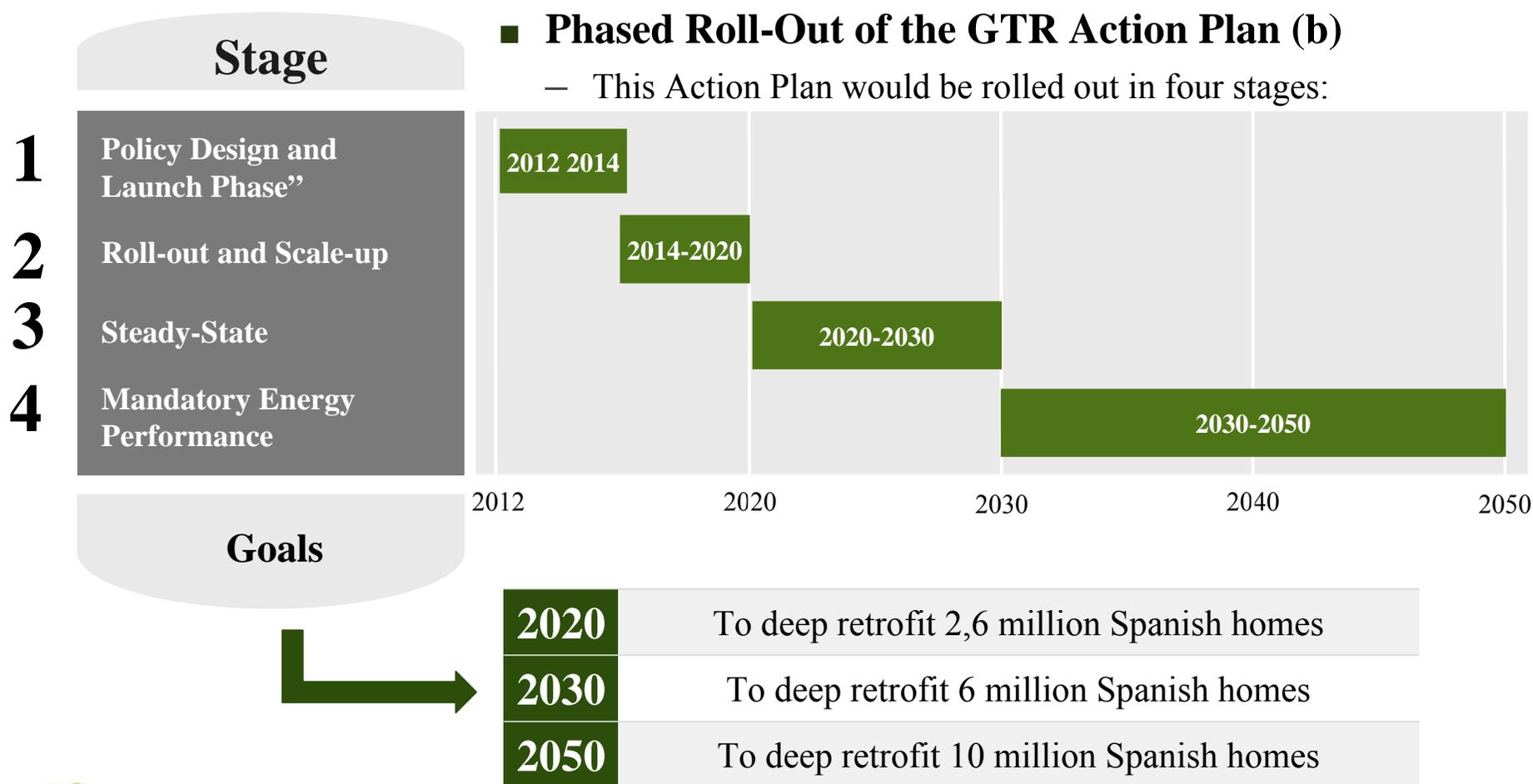
## 2.2 The Action Plan

### Targets for GTR's Action Plan

	2020	2030	2050
Number of Homes Reformed (2012-year)	2,600,000	6,000,000	10,000,000
<i>% of 2011 Primary Residential Homes</i>	16%	37%	64%
Aggregate Investment in Housing (Euro mm)	65,000 €	150,000 €	240,000 €
<i>Cumulative Investment only in Energy Efficiency</i>	43,333 €	100,000 €	160,000 €
Energy Saved in Year (GWhr)	23,000	49,000	70,000
<i>Cumulative Energy Savings since 2012 (GWh)</i>	88,000	470,000	1,700,000
CO2 Saved in Year ('000 Tons)	5,700	11,000	13,000
<i>% Reductions vs 2011 Residential Homes (inc. other measures)</i>	27%	55%	80%
<i>Cumulative CO2 savings from 2012 '000 Tons</i>	23,000	110,000	370,000
Accumulated savings Energy and CO2 from 2012 (Euro mm)	8,900 €	62,000 €	300,000 €
Jobs Sustained (Period average)	130,000	140,000	110,000
<i>Subsidy Cost per Job (average over period)</i>	12,535 €	11,230 €	n/a

# The GTR Action Plan for the Launch of a New Housing Sector in Spain

## 2.2 The Action Plan



# The GTR Action Plan for the Launch of a New Housing Sector in Spain

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## 2.2 Conclusion

**GTR is confident that Spain has the opportunity to convert much of the knowledge, skills and resources of its existing workforce, spread across its core regions, to develop vibrant new economic activity in a sector which addresses the cost effective upgrade and renovation of its housing stock.**

# A NATIONAL PERSPECTIVE ON SPAIN'S BUILDINGS SECTOR A ROADMAP FOR A NEW HOUSING SECTOR



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