# *Portugal Efficiency 2015*

## National Action Plan for Energy Efficiency

Council of Ministers Resolution No. 80/2008
2008

MINISTÉRIO DA ECONOMIA
E DA INOVAÇÃO

Coordination : Direcção Geral de Geologia e Energia

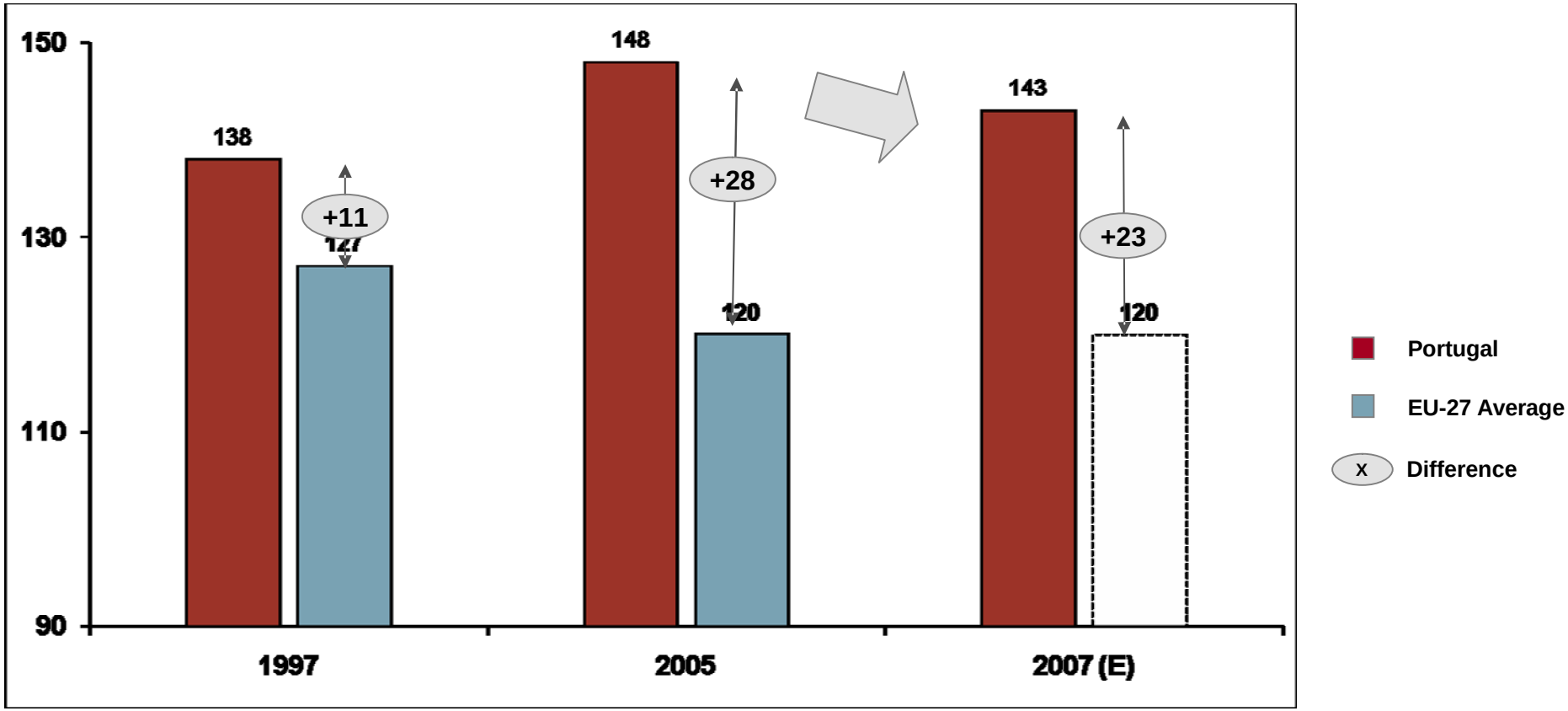
Support : ADENE AGÊNCIA PARA A ENERGIA

# Strong reversal in energy intensity in the last 2 years

However, national energy intensity remains significantly above the European average

**Energy Intensity in Portugal versus European average**
Final energy / GDP

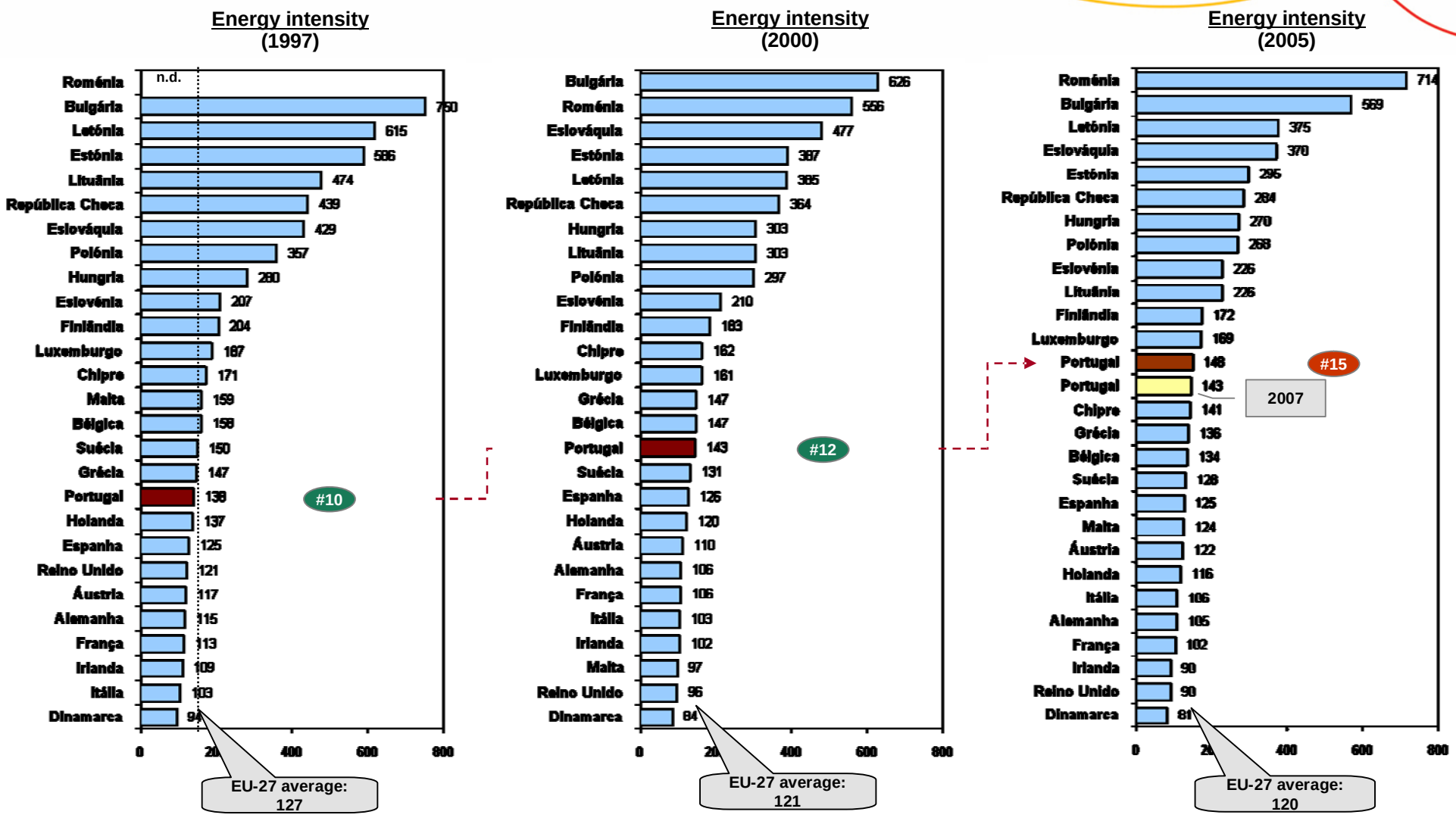
(Ton oil e*quivalent* per million euros of the GDP)




NOTE: GDP at constant 2000 prices
Source: Eurostat; Energy Balances (DGEG); Analysis ADENE/DGEG

# The observed reversal has not changed the relative position of Portugal

The relative position of Portugal within the European context has been worsening since 1997

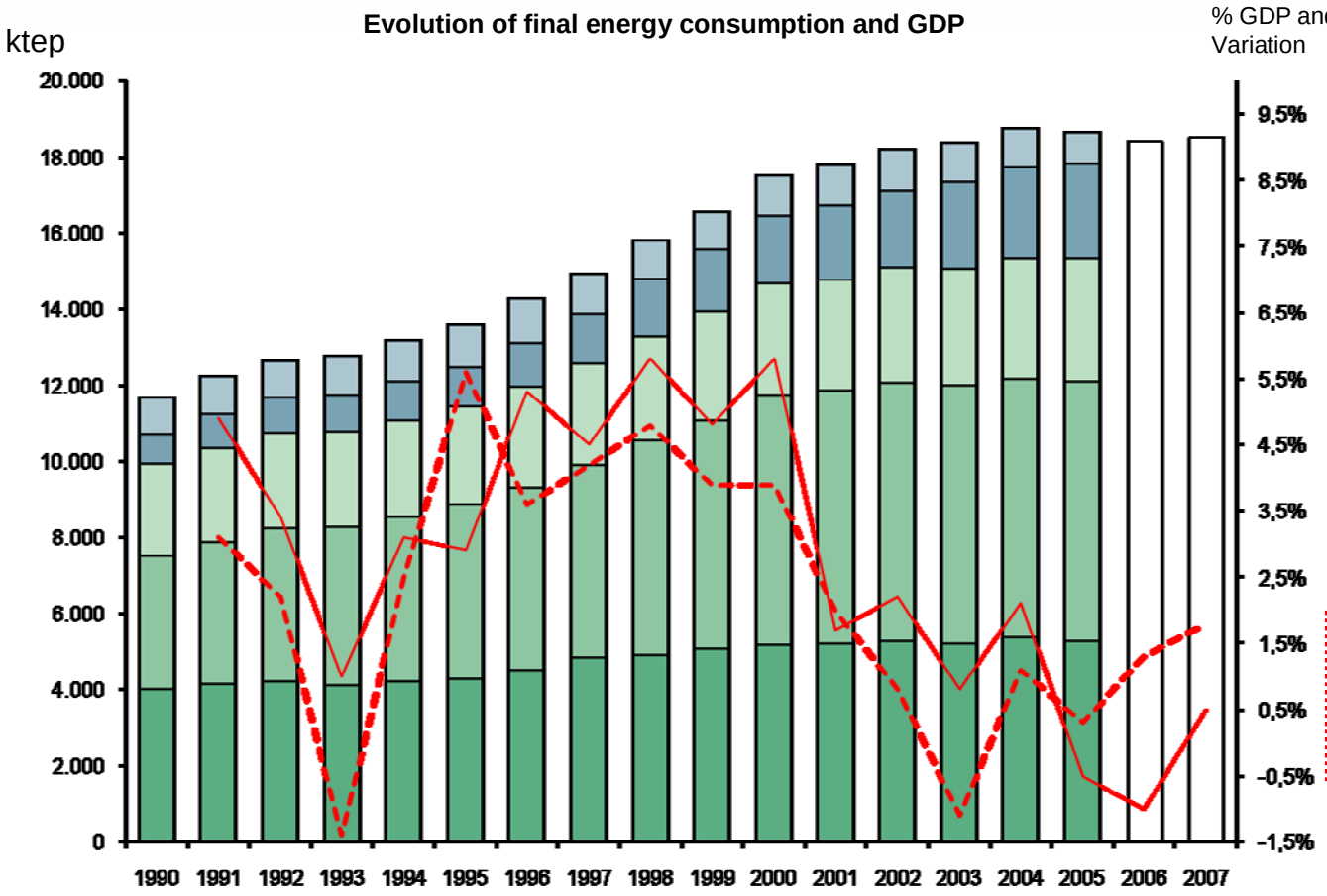



NOTE: GDP at constant 2000 prices
Source: Eurostat; Energy Balances (DGEG); Analysis ADENE/DGEG

# In the last five years, Portugal managed to significantly decelerate energy consuption

## Having reversed the relationship between economic and energy growth in the last two years

**Evolution of final energy consumption and GDP**




| | AAGR (1) '90-'95 | '95-'00 | '00-'05 | '05-'07 |
|---|---|---|---|---|
| Other (2) | 3,0% | -2,1% | -0,4% | |
| Services | 6,7% | 10,8% | 6,8% | |
| Domestic | 1,0%. | 2,8%. | 1,9%. | |
| Transports | 5,3% | 7,3% | 0,7% | |
| Industry | 1,3% | 4,1% | -0,2% | |
| % var. GDP | 2,4% | 4,1% | 0,6% | 1,5% |
| % final energy var. | 3,0% | 5,3% | 1,3% | -0,3% |

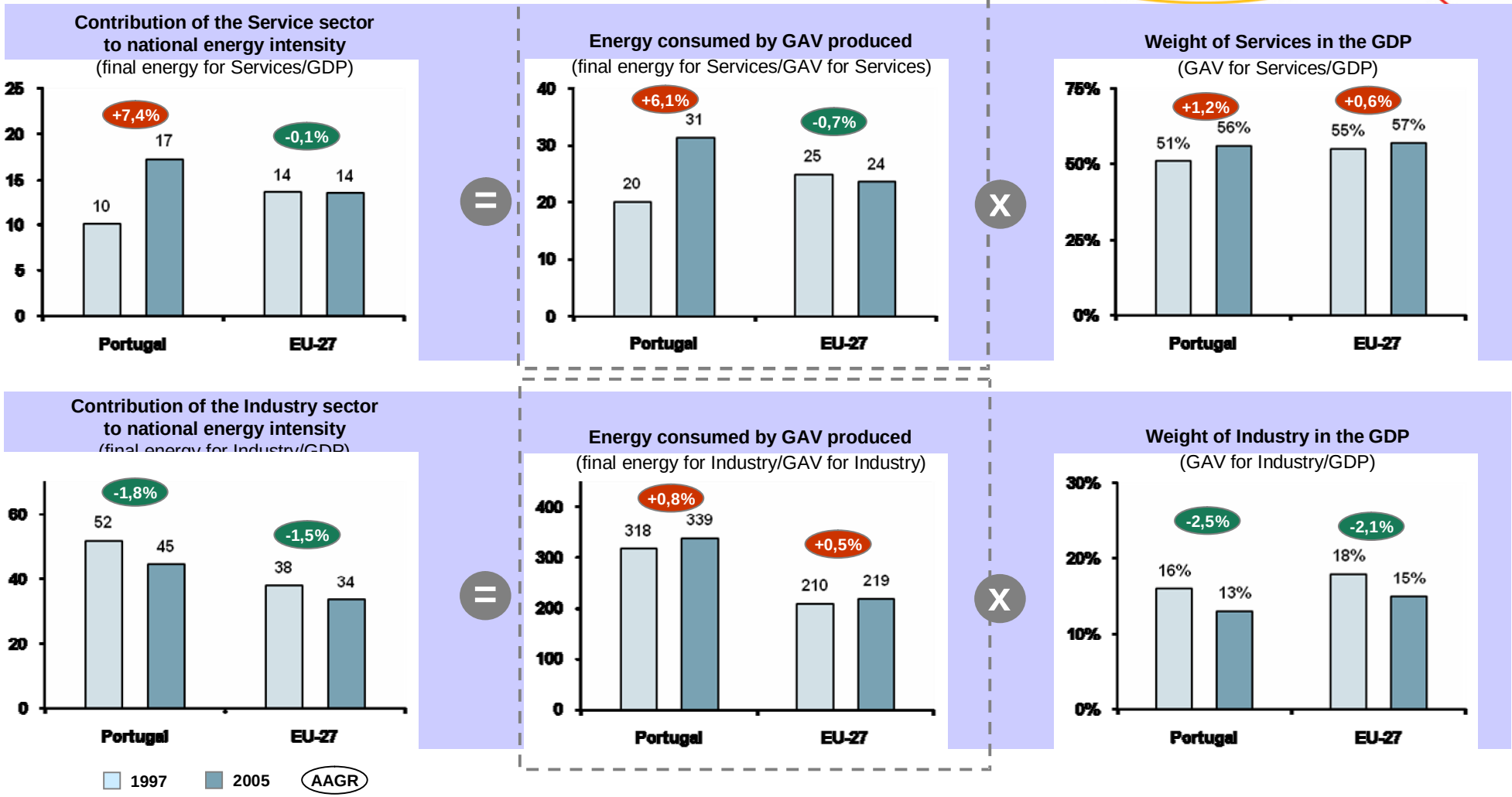
- The observed slowdown in energy consumption cannot be dissociated from the present context of economic slowdown
- Despite this contexto, the Service sector maintains high growth rates

1. AAGR = Average Annual Growth Rate
2. Agriculture and Fisheries, Mining Industry, Construction and Public Works

Note: excludes comsumption of non-energy oil

Source: Energy Balances (DGGE);INE; Analysis ADENE/DGEG

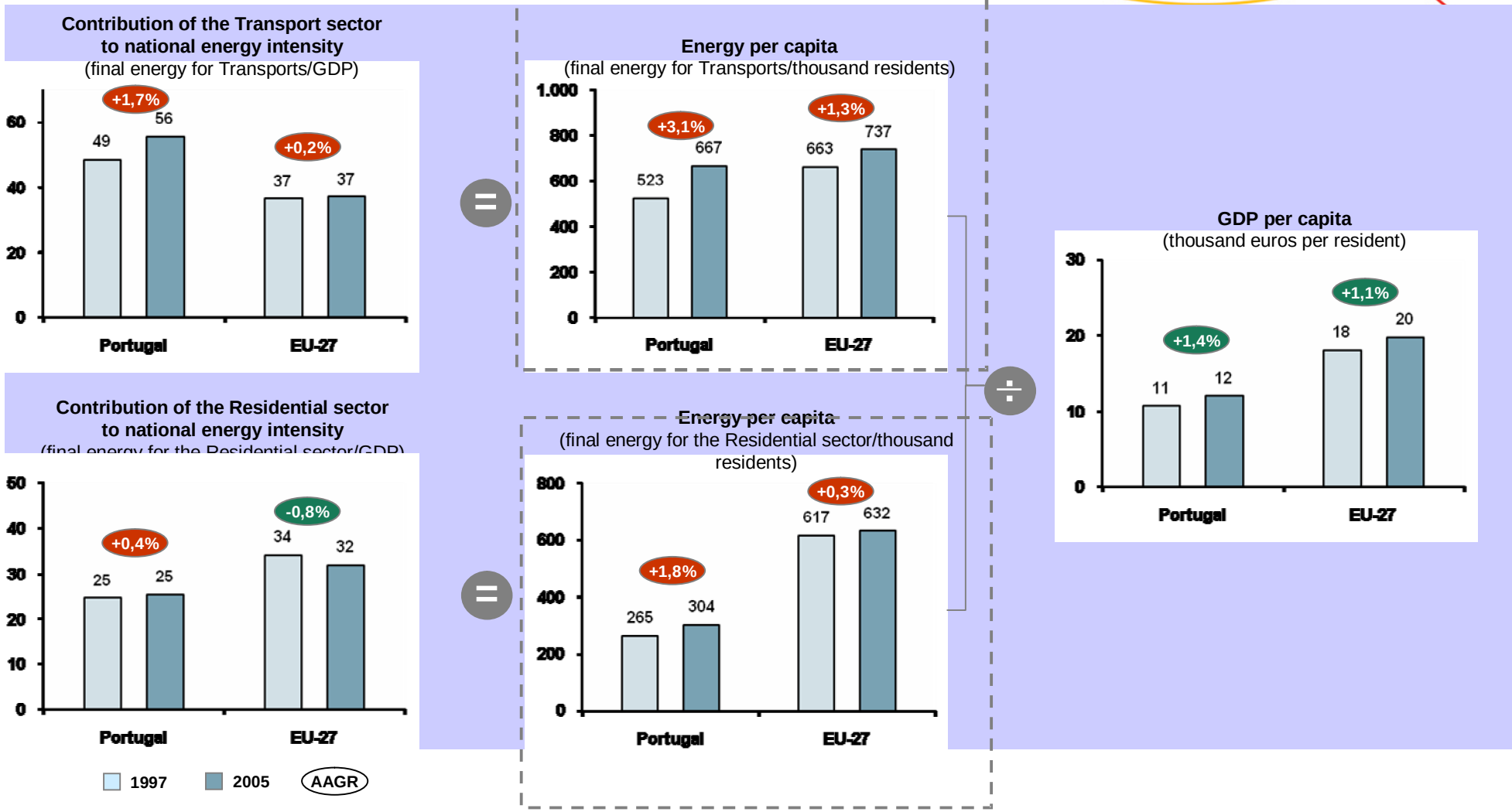
# Services presented streep growth in energy intensity, opposing European trends




NOTE: GDP and GAV at constant 2000 prices; AAGR = average annual growth rate
Source: Eurostat; Energy Balances (DGEG); Analysis ADENE/DGEG

# Transports and Residential sectors in line with European energy intensity

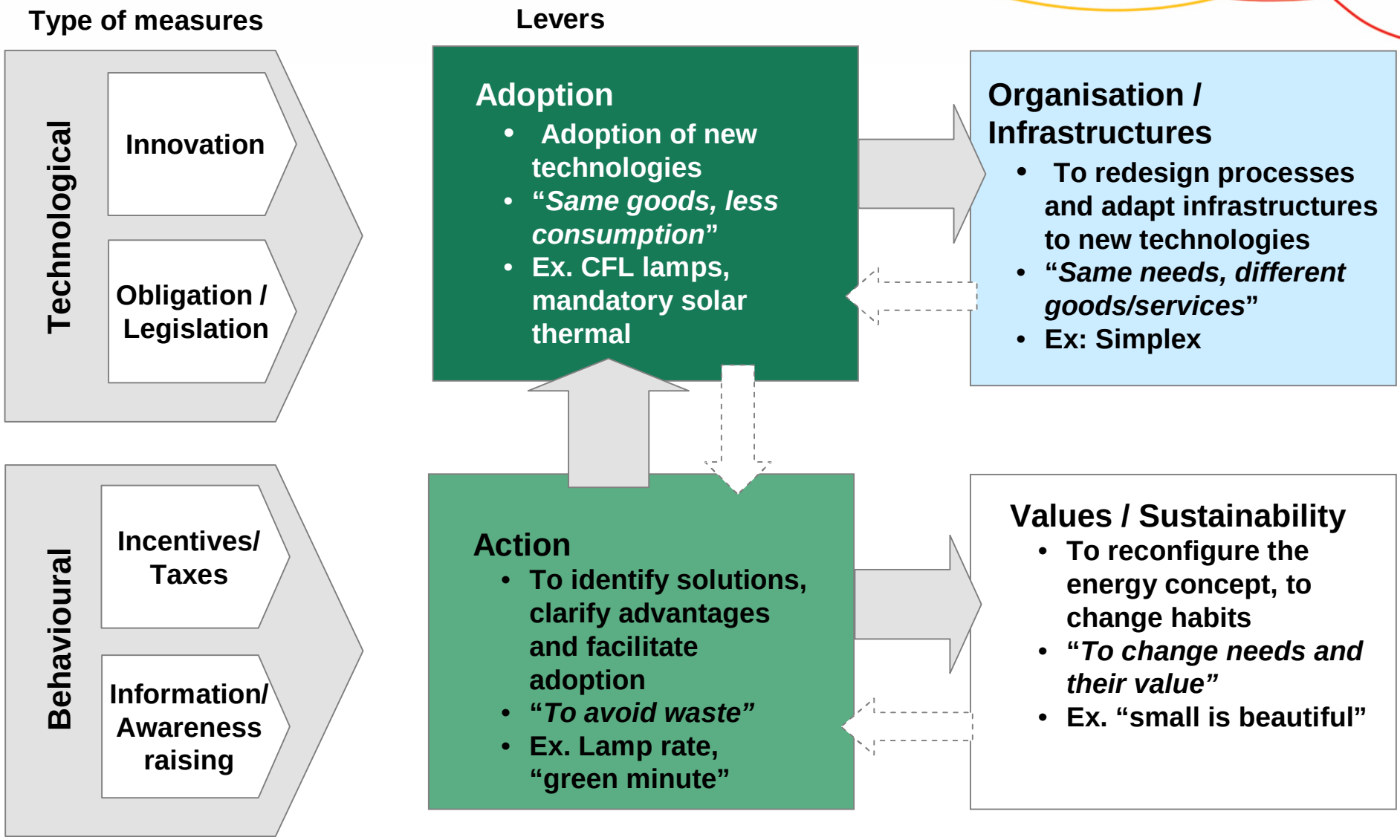
## Not compensated by alignment of the GDP per capita




NOTE: GDP and GAV at constant 2000 prices; AAGR = average annual growth rate
Source: Eurostat; Energy Balances (DGEG); Analysis ADENE/DGEG

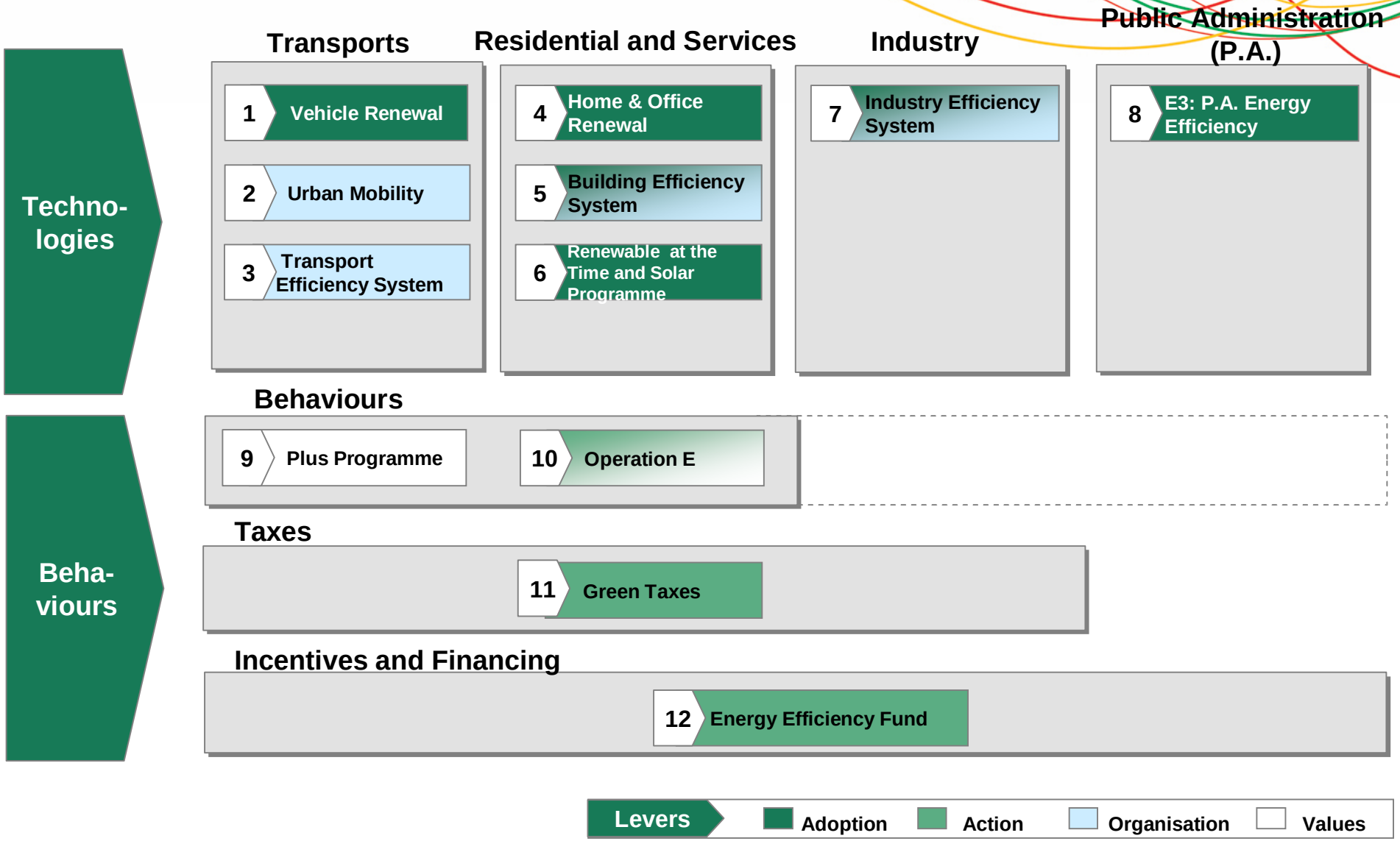
# Strategic approach to energy efficiency

Involving 2 aspects: equipment and behaviour



# 12 great Portugal Efficiency 2015 *Programmes*

Focussing on different ways to promote energy efficiency



# Portugal Efficiency *2015 Programmes* (I/II)

Main measures and objectives

## Transports

1. **Vehicle Renewal Programme**
2. **Urban Mobility Programme**
3. **Energy Efficiency System in Transports**

- 20% reduction in light goods vehicles with over 10 years
- Over 20% reduction in average $CO_2$ emissions for new vehicles sold annually (143g/km in 2005 to 110g/km) .
- 20% of vehicles with monitoring equipment (on-board computer, GPS, *cruise control* or automatic tyre checking) .
- Creation of an innovative traffic management platform with GPS-optimised routes
- Creation of urban mobility plans for district capitals and corporate centres with over 500 workers
- Modal transfer of 5% of individual transport to collective transport.
- 20% of the international goods trade transferred from road transport to maritime transport.

## Residential and Services

4. **Home & Office Renewal Programme**
5. **Energy Efficiency System in Buildings**
6. **Renewable at the Time and Solar Programme**

- Incentives programme for sustainable urban rehabilitation, with the objective of achieving 1 in 15 households with optimised energy class (equal or higher than B-) .
- Programme to renew 1 million large electrical appliances
- Replacement of 5 million lamps by CFL
- 75 thousand electricity-producing homes (165MW of installed power).
- 1 in 15 buildings with Solar Hot Water.

## Industry

7. **Energy Efficiency System in Industry**

- Agreement with the manufactoring industry to achieve reduction in energy consumption.
- Creation of the *Intensive Energy Consumption Management System* extended to medium-size companies (> 500 tep) and incentives for implementing identified measures

# Portugal Efficiency *2015 Programmes* (II/II)

Main measures and objectives

## State

**8 E3 Programme: Energy Efficiency in the State**

- Energy certification for all the Public Administration buildings
- 20% of Public Administration buildings of class B or higher (above)
- 20% of State vehicles with $CO_2$ emissions lower than 110 g/km
- *Phase-out* of inefficient street lighting
- 20% of traffic lights with efficient lighting (*LED* )

## Behaviours

**9 Plus Programme**

**10 Operation E**

- Launch of the "Efficiency Plus Bonus" to reward excellence on several levels (ex., companies, buildings, schools, amongst others).
- "Energy*Efficiency* Plus" concept: "stamp"/accreditation in order to identify good practices, on five levels: Homes, Councils, Companies, Schools and Equipment.
- Increased awareness of energy efficiency and changes in behaviour through communication and awareness campaigns (up to 2 million euros/year)

## Taxes

**11 Green Taxes**

- New vehicle tax regime and taxing of industrial fuels
- Fast depreciation regime for efficient equipment and vehicles
- Fiscal incentives to micro-production and progressive alignment of taxes with the Energy Certification System for Buildings (ex., IRS benefits for class A/A+ homes)

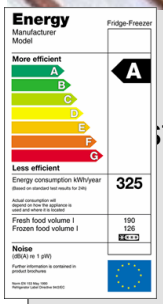
## Incentives and financing

**12 Energy Efficiency Fund**

- Incentives to efficient electricity consumption - incentives for clients with large consumption through bonuses given to clients with lower consumption and the Energy Efficiency Fund
- Efficiency cheque: Bonus equivalent to 10% or 20% of electricity costs for 2 years in case of observed 10% or 20% reduction in electricity consumption
- Low-interest credit: €250M/year for investments in efficiency (focus on urban rehabilitation)
- Promotion of Energy Service Companies through incentives to their creation (QREN), tenders for State audits and "Efficiency Contract" regulations

# Incentives to efficiency in the residential & service sector

With strong focus on electrical appliance replacement and urban rehabilitation




## Efficiency credit

Personal Low-Credit for financing efficiency measures

- Agreement with banks for up to €250M/year (bonus ~€10M/year)
- 4% interest rate reduction for credit; up to 8% w/o guarantees
- Eligible for selected measures

## Efficiency Cheque

Bonus for effective reduction in electricity consumption, for investing in efficiency measures

-Cheque corresponding to 10% of annual electricity costs for 2 years, if a 10% reduction is achieved

- Cheque corresponding to 20% of annual electricity costs for 2 years, if a 20% reduction is achieved

## Renewal+ Programme

Bonuses for replacement of an old appliance with a new one A+ or A++

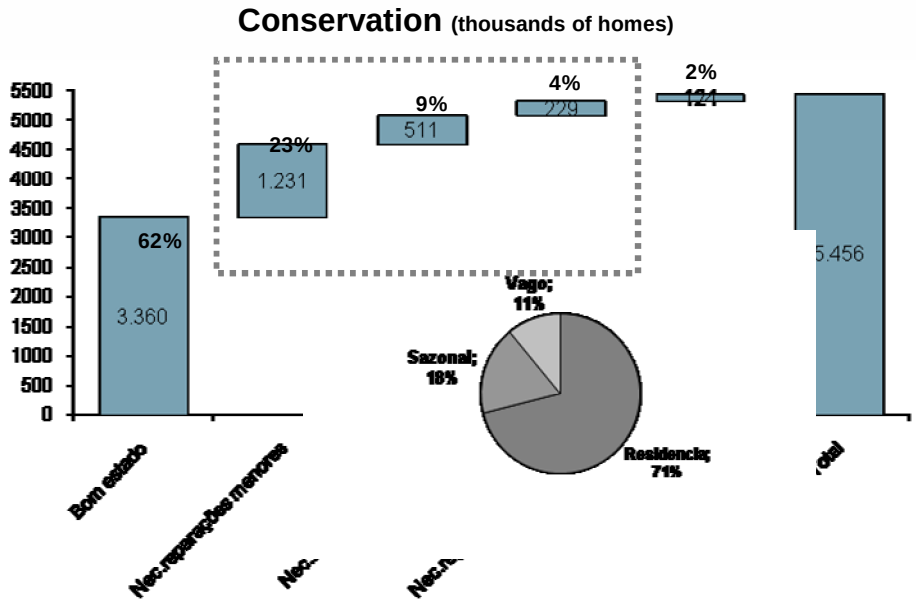
- €50 for A+
- €100 for A++

Requires handing of an old appliance for recycling

**Strong focus on urban rehabilitation financing**

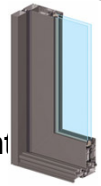
# Urban rehabilitation promotion potential

Residential estate including 5.5 million homes, of which less than 2/3 are in good conservation state




- 62% of homes in good conservation state
- 1.2 million needing small repairs
- Nearly 800 thousand needing medium or large repairs
- Seasonal homes represent nearly 1/5 of the total

- **Efficient *Window Measure***
  - **Incentives for replacement of inefficient glass surfaces**
  - **Involving rehabilitation of approximately 200 thousand homes by 2015**



- **Thermal *Insulation Measure***
  - **Incentives for thermal insulation**
  - **100 thousand rehabilitated homes by 2015**

- **Green *Heat Measure***
  - **Installation programme for 200 thousand efficient ambient heating systems**
    - biomass heat exchangers
    - heat pumps with COP equal or greater than 4

Source: INE Census 2001 (Estate and conservation profile) / INE 2005 (Estate)

# Promotion of Energy Service Companies

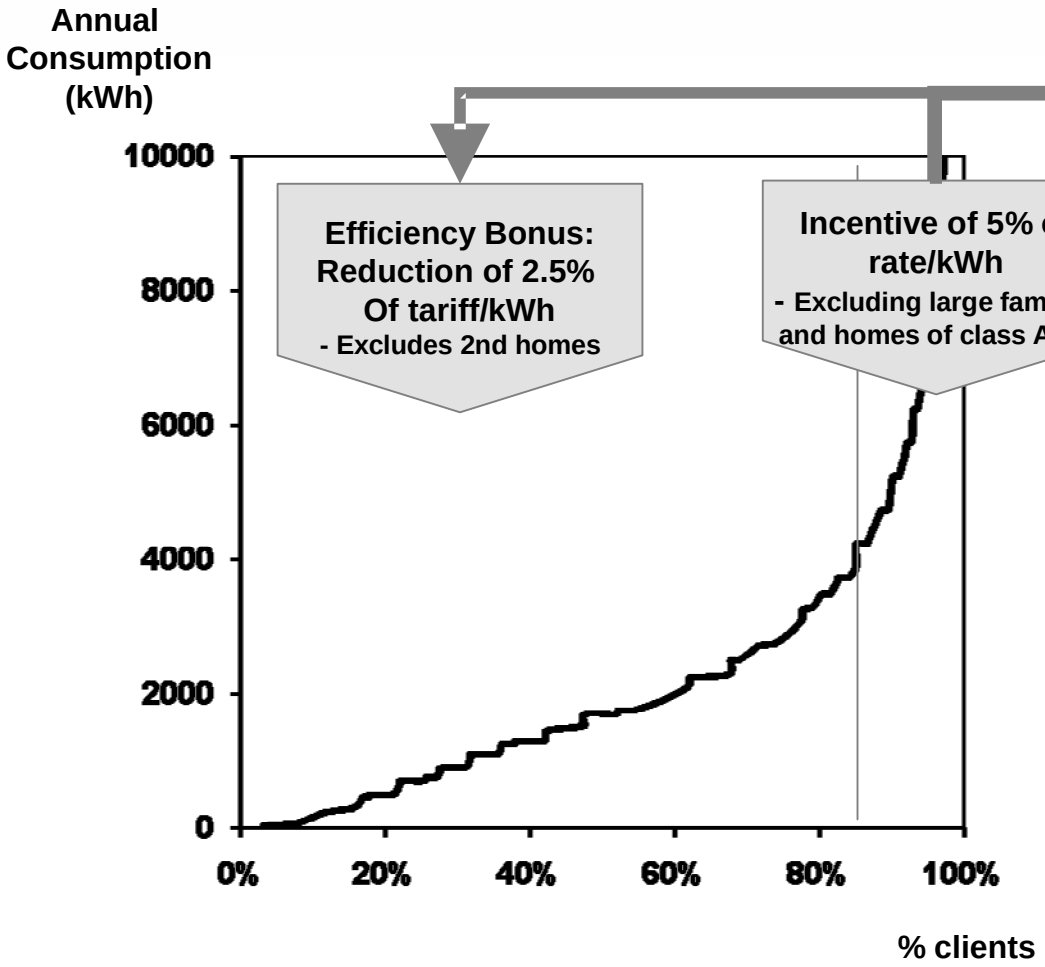
Tenders, Incentives for creation of Energy Service Companies **(ESCOs)** and Efficiency contract

| | | Incentives for creation of ESCOs | Efficiency Contract | Efficiency Credit |
|---|---|---|---|---|
| State | **Efficiency tenders - State**<br>€2 M/year for ESCOs:<br>- Audits and certificates<br>- Financing of measures with efficiency contract | Tenders for creation of ESCOs based on the *QREN Incentives to Innovation* System<br>• Framework of Decree 1464/2007<br>• Warning for qualified enterprise in energy services<br>•Annual warnings with *ceiling* of €5M/year | Contract regulated by decree(1)<br>-Mandatory for the P.A.<br>-Channels 50% to 75% of revenue reductions to an autonomous account (ESCO)<br>> vs. Average revenue for previous years<br>> for 3 to 5 years | Accessible to ESCOs<br>(including implementation of measures for the P.A.) |
| Private citizens | **PPEC(2)**<br>Tenders for energy efficiency measures<br>• €10M/year for the electricity sector<br>• To be extended to other energy sources(3) | | Available to private citizens and ESCOs<br>Includes "insurance"<br>- 50% of losses between ESCO investment and Contract profits covered by the *Energy Efficiency Fund*<br>- €1 to 2M/year | |

(1) According to article 33 of Decree-Law no. 172/2006
(2) Plan for Promoting Efficiency in Electricity Consumption (ERSE)
(3) Dimension and eligibility criteria depending on the dimension and eligibility criteria for internal measures of the Portuguese Carbon Fund

# Direct incentives to energy efficiency

Efficiency Incentive, Efficiency Cheque and Renewal+




**Efficiency Bonus:**
**Reduction of 2.5%**
**Of tariff/kWh**
- Excludes 2nd homes

**Incentive of 5% of rate/kWh**
- Excluding large families and homes of class A/A+

**Efficiency Cheque to spend on energy efficiency measures**

= 10% of electricity costs for 2 years (1)
- If you save 10% vs. Previous year

= 20% of electricity costs for 2 years (1)
- If you save 20% vs. Previous year

**Renewal + Cheque**

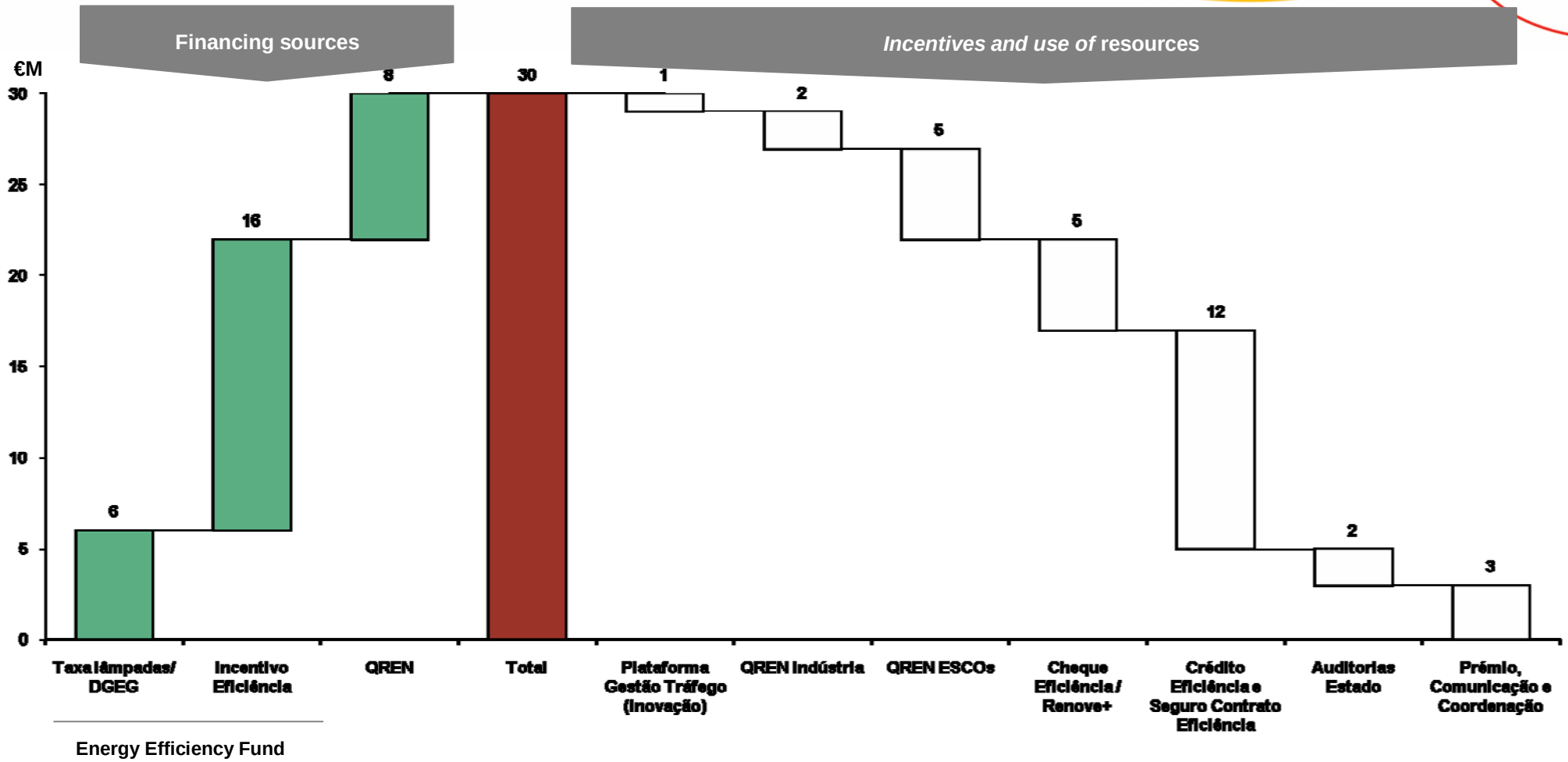
- € 50 for acquiring an appliance of class A+
- €100 for acquiring appliance of class A++

**Energy Efficiency Fund**
- Efficiency Credit
- Efficiency Contract Insurance

1) The efficiency cheque will only be received in the second year if consumption levels reached in the previous year are maintained

# Approximately €30M of additional annual investment

With a financing and applications plan defined from the start




Note: does not include tax incentives

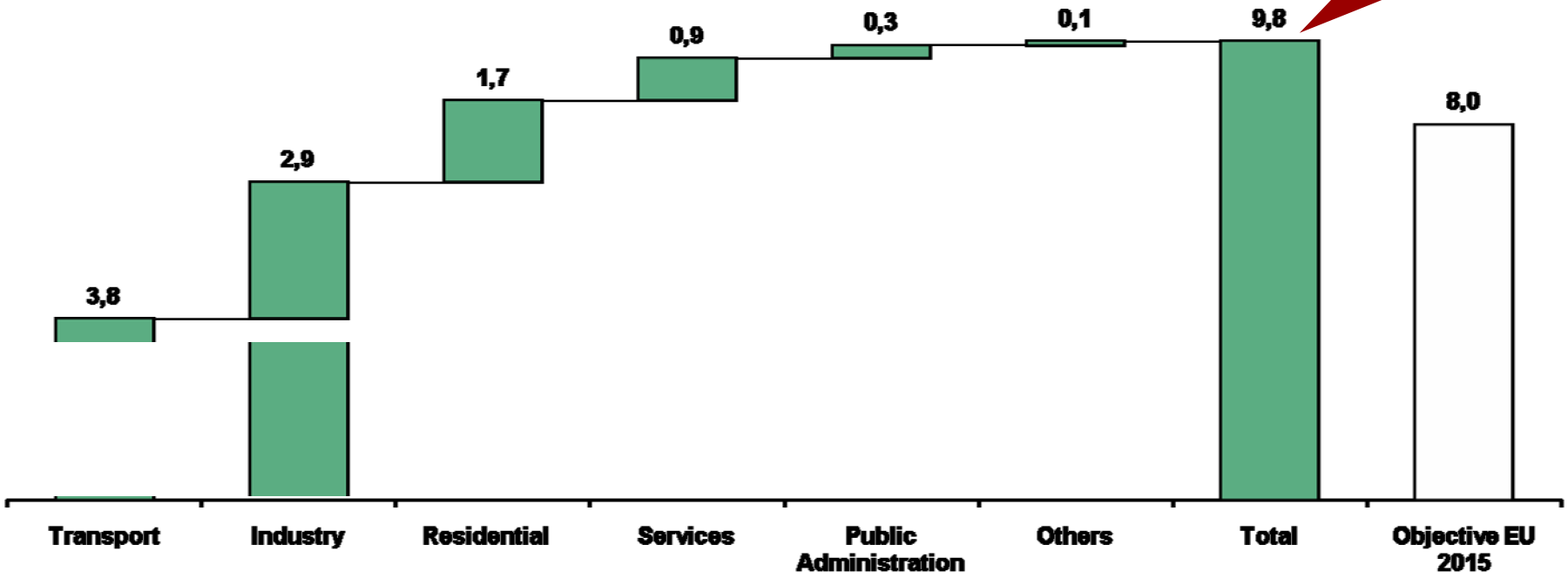
Source: Analysis ADENE/DGEG

# 10% savings target by 2015

20% higher than the target set in European Guideline 2006/32/EC for 2015

**Impact of EE measures on energy consumption in 2015**
(% savings vs. '01-'05 average)

*National Objective 20% higher than the European objective*




| | Transport | Industry | Residential | Services | Public Administration | Others | Total |
|---|---|---|---|---|---|---|---|
| Savings (ktep) | 706 | 536 | 318 | 166 | 49 | 16,3 | 1.792 |
| % sector consumption ('01-'05) | 10,3% | 10,1%(1) | 10,4% | 8,9% | 12,3% | 1,8% | |
| Electricity savings (GWh) | | | | | | | 4.777 |
| % reduction in electricity consumption in 2015 | | | | | | | 7% |

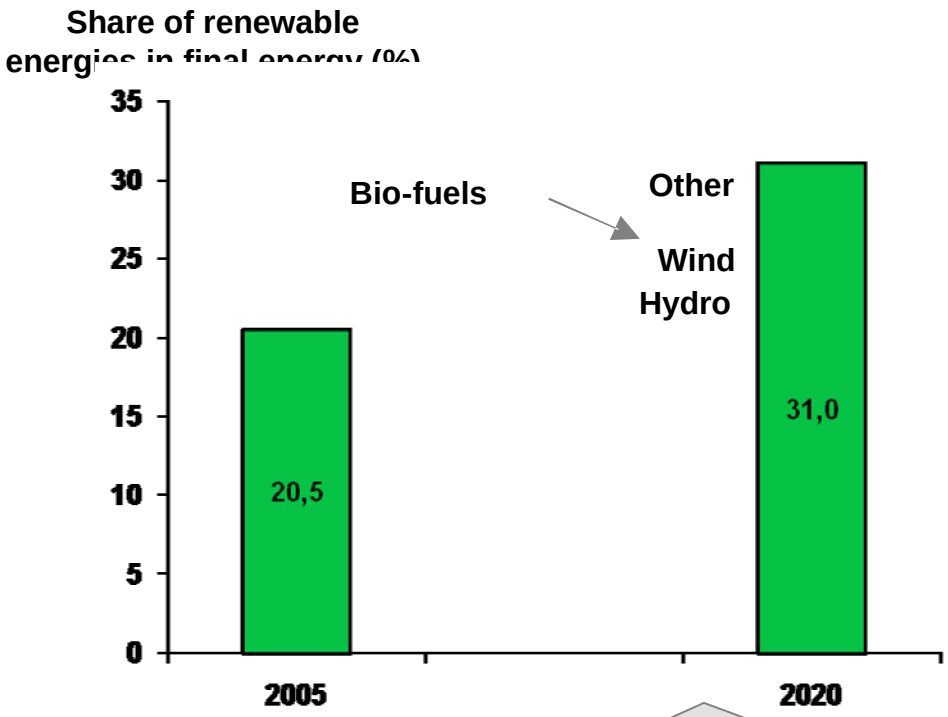
(1) Including consumption for companies within the scope of the PNALE and retroactive RGCE measures

Source: Energy Balances DGEG 2001-05; Analysis ADENE/DGEG

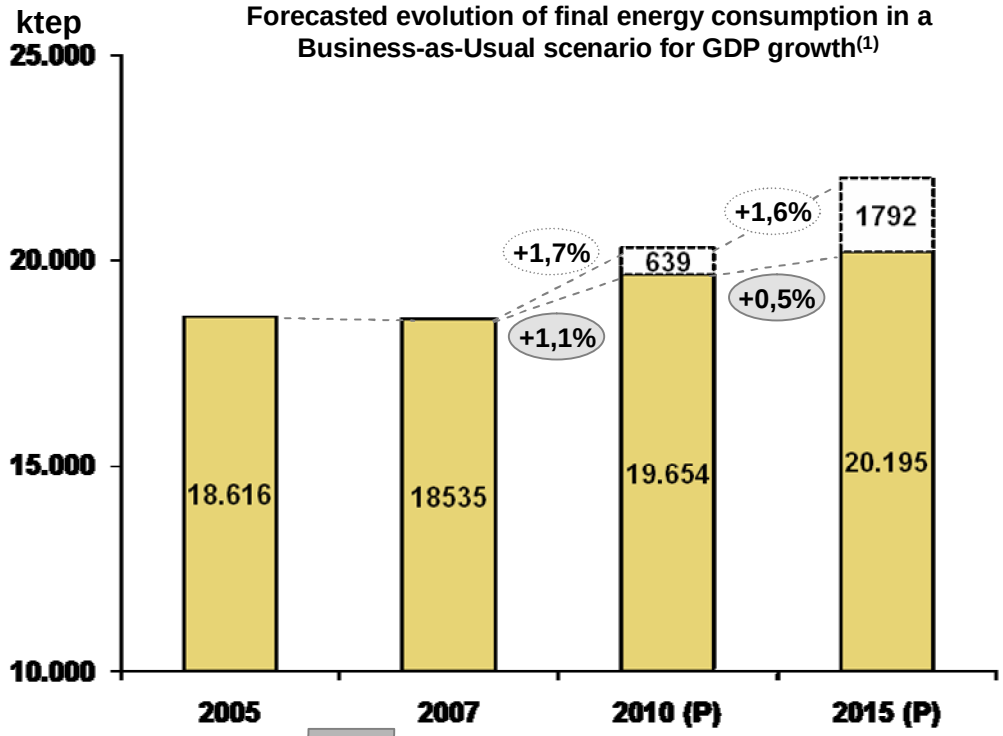
# Strong bet on renewable energies and energy efficiency

The Plan reduces the increase in the energy invoice in ~1%/year

## 31% target for renewable energies in final energy in 2020



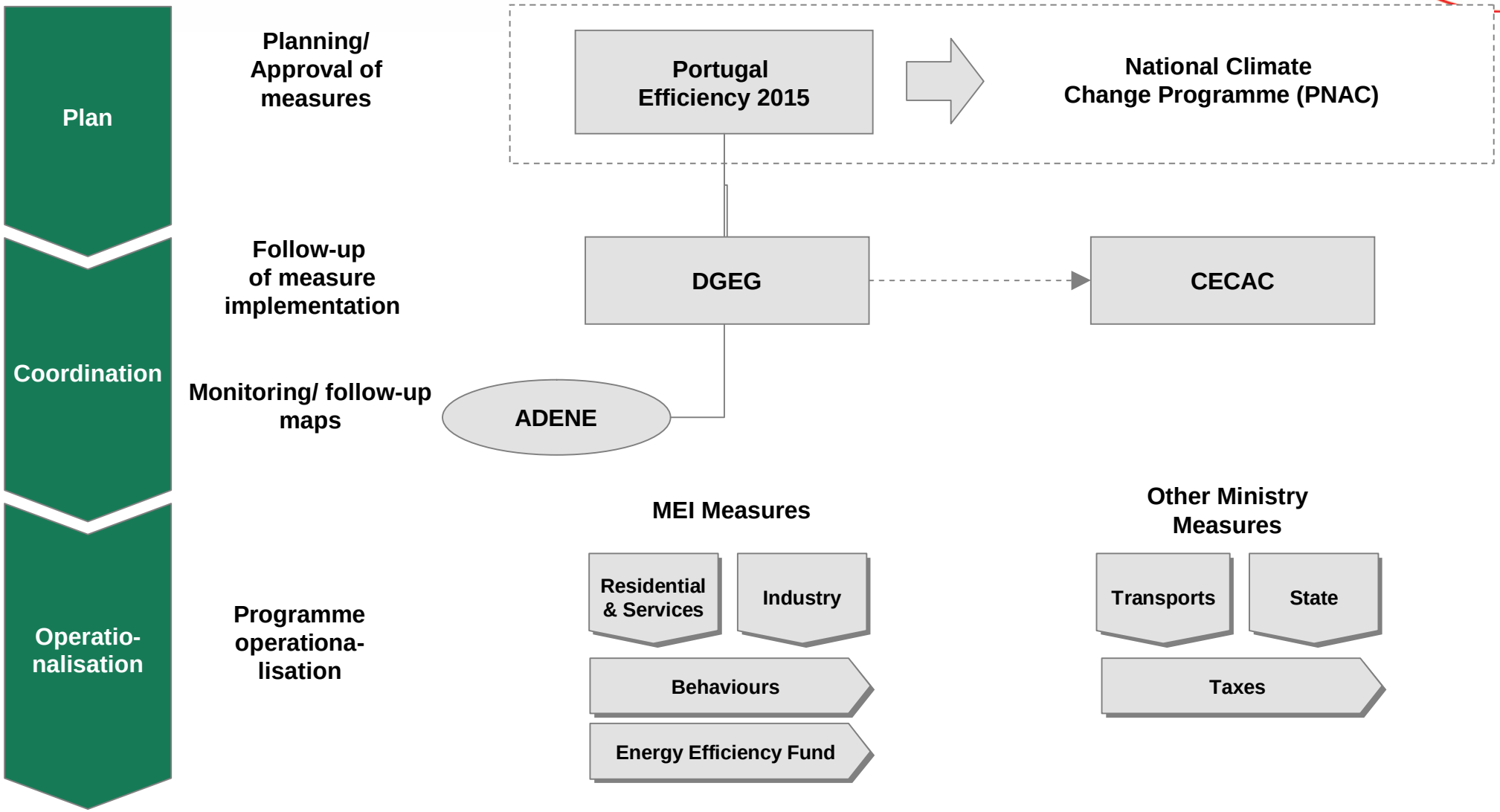

## Implementation of the Plan allows a reduction of ~1% in energy invoice increase



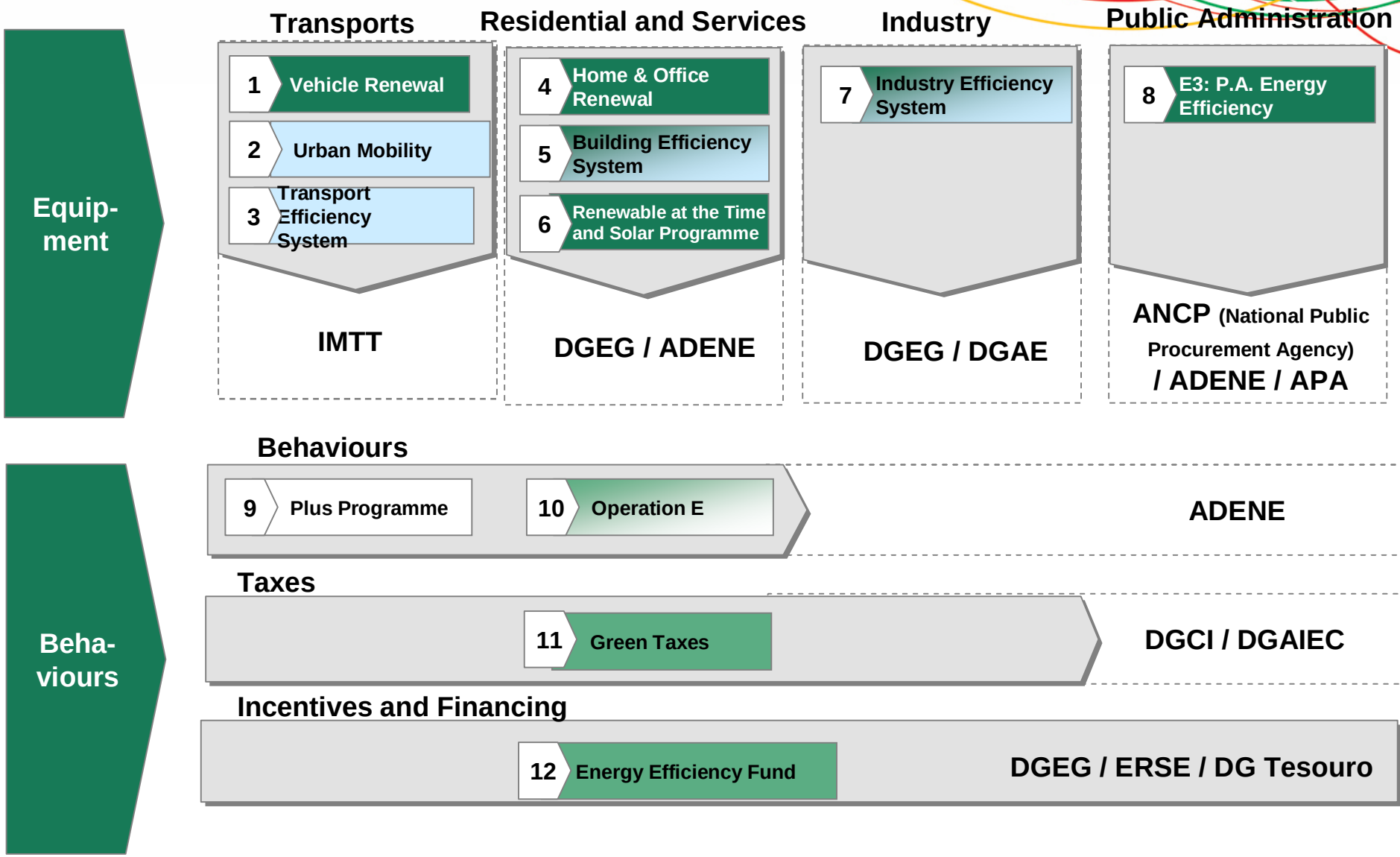

**Reduction in final energy consumption is also an important leveraging factor for increasing the share of renewable energies**

(1) Medium scenario between high and low GDP growth scenarios
Source: Energy Balances (DGEG); CEEETA; Analysis ADENE/DGEG

# Coordination of Portugal Efficiency 2015 should be coordinated with the National Climate Change Programme (PNAC)



# Portugal Efficiency 2015 Programmes will have various coordinating bodies



# Programmes will have follow-up maps with performance indicators

## Vehicle Renewal Example

### National Energy Efficiency Action Plan

**Programmes and Measures** / **Impacts (tep)**

| Programme | Name of the measure | Code of measure | Description | Medium Scenario 2010 | Medium Scenario 2015 | High Scenario 2015 | Low Scenario 2015 |
|---|---|---|---|---|---|---|---|
| Vehicle Renewal | Reviving of end-of-life vehicle decommissioning | T1M1 | Reduction in vehicle tax for acquisition of new light goods vehicles. | 57,772 | 231,056 | 234,832 | 227,280 |
| | Green Taxes - Review of the tax regime for private vehicles | T1M2 | Voluntary Agreements with Manufacturers AutoOil). Inclusion of the CO2 emission factor in Vehicle Tax .and Circulation Tax calculations | | | | |
| | Green tyre and fuel efficiency | T1M3 | Penetration of low rolling resistance tyres. Voluntary agreement with vehicle makers so standard versions of new A, B and C segment vehicles are equipped with low rolling resistance tyres) (RR), checking at the IPV and rates on inefficient tyres. | 16,843 | 27,401 | 27,849 | 26,953 |
| | | T1M4 | Correct pressure. Reduction of the number of circulating vehicles with incorrect tyre pressure to half. | | | | |
| | | T1M5 | Efficient fluids. Information campaigns and certification of fuel-efficient lubricants and fuels | 6,079 | 12,962 | 13,174 | 12,750 |
| | New vehicles more oriented towards save fuel | T1M6 | Voluntary agreements with vehicle importers for inclusion of equipment leading to reduced consumption (on-board computers, tyre pressure checking systems…) | 10,200 | 26,769 | 27,206 | 26,331 |
| | | | **Total** | **90,894** | **298,188** | **303,061** | **293,314** |

**Targets**

| Indicators | | Actual | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|
| % Automotive vehicle; motor vehicle over 10 years | | 37% | 35% | 30% | 20% |
| CO2 emissions for new vehicles sold | | 143 | 120 | 110 | 100 |
| % of hybrid vehicles in total vehicles | | | 3% | 10% | 20% |
| Efficient tyre penetration in total vehicles (low rolling resistance tyres) | Light goods/passenger vehicles | 15% | 25% | 30% | 35% |
| | Commercial/passenger vehicles | 5% | 10% | 15% | 20% |
| % vehicles with incorrect tyre pressure | Light goods/passenger vehicles | 30% | 20% | 15% | 10% |
| | Commercial/passenger vehicles | 30% | 20% | 15% | 10% |
| | Heavy goods vehicles | 20% | 15% | 10% | 5% |
| % efficient lubricant sales | | 10% | 15% | 20% | 25% |
| % vehicles with monitoring systems (On-board computer, Cruise control GPS and "tyre-check") | | n.d. | 8% | 20% | 30% |