

Setting	
Country	Portugal
Location (Town or region)	
Project start date	2008
Project end date	2015
Technology keywords (use keywords from list)	National Plan for Energy Efficiency, Umbrella Programme
Host sector (type of host for the project)	Transports, Industry, Residential and Services, State and General Population

Technical summary of the project	
Objective of the project	The implementation of this plan will allow an energy saving of approximately 1,792 thousand tonnes of oil equivalent (toe) in 2015, which corresponds to savings of 9.8% in comparison with the reference period defined in the European Directive.
Project description	
<p>Summary: Portugal presented in 2005 an Energy Intensity in the national economy 23.3% higher than the EU-27 average. Even though in 2007 this gap was narrowed to 19.2% it became clear that much was to be done in order to converge with the EU average energy intensity. To address this issue the Portuguese Government in collaboration with several public and private entities created the National Action Plan for Energy Efficiency (PNAEE).</p> <p>The PNAEE was presented in 2008 by the Portuguese Ministry of Economics and Innovation having goals until the end of 2015. It contains 12 different programmes that envisage the increment of a more efficient energy Nation Wide. Some of these programmes (with mainly technological guidelines) target different sectors specifically, such as Transport, Residential and Services, Industry and State. Additionally three transversal were defined; Behaviors, Taxes and Incentives, and Financing, aiming to create general public awareness and promote best practices via fiscal and economic incentives.</p> <p>List of Technological Programmes (8):</p> <p><i>Transport</i></p> <ul style="list-style-type: none"> • Vehicle Renewal Programme, including various measures aimed at improving energy efficiency in vehicles, namely equipment renewal and use of more efficient products. • Urban Mobility Programme, which identifies measures related with public transport modal and commuting needs in large urban and corporate centres. • Energy Efficiency System in Transports, which aims to quantify the impact of the concepts of logistics platforms and motorways of the sea on efficient use. <p><i>Residential and Services</i></p> <ul style="list-style-type: none"> • Home Renewal Programme, which defines various energy efficiency measures involving lighting, electrical appliances, consumer electronics and area rehabilitation. • Energy Efficiency System in Buildings, which groups measures resulting from the process of energy certification in buildings, namely insulation, improvement of glass surfaces and energy systems. • Instantly Renewable, oriented towards increased penetration of own-production energies in the residential and service sectors. 	

Industry

- Energy Efficiency System in the Industry replaces the Energy Consumption Management Regulations (Decree Law no. 58/82) with new regulations, the Intensive Energy Consumption Management System (SGCIE). Some transversal measures aimed at the industrial sector should be highlighted, aimed at four technological groups:
 - electric motors,
 - heat and cold generation,
 - lighting
 - industrial process efficiency

State

- Energy Efficiency in the State, a programme which includes a series of measures aimed at state buildings and transport fleets, street lighting and centralised energy negotiation by the central and local administration.

Non Technological Programmes (4):

There are 4 non technological programmes, under the PNAEE, further subdivided in 3 categories, Behaviours, Taxes and Incentives and Financing.

The Behaviours area includes two programmes aimed at promoting energy-efficient consumer habits and attitudes, such as efficient product recommendation, through awareness and communication campaigns.

- Plus Programme, Programme oriented towards divulgation of behaviours and cutting-edge technologies, as well as excellence cases, in order to increase awareness regarding efficient behaviours.
- Operation E, aimed at schools and youngsters, who constitute specific target groups, not only for representing a possibility to effect long-term behaviour changes, but also given their influential role in decisions made by adults.

The Taxes area includes a series of measures aimed at promoting energy efficiency through tax benefits, such as creation of fast depreciation regimes for efficient equipment and establishment of links between the IRS benefits regime and the Energy Certification system for buildings, as well as renewable energies.

- Green Taxes Use of fiscal tools (rates, income deductions, benefits and incentives) aimed at encouraging the search for more energy-efficient equipment and materials, as well as simultaneously deterring people from acquiring less efficient equipment relatively to the best alternatives currently available in the market

The Incentives and Financing area includes a series of innovative programmes, such as creation of the Energy Efficiency Fund, incentives for creation of Energy Service Companies (ESCO) and incentives for urban rehabilitation and electrical appliance acquisition and renewal.

As mentioned previously, the aim of the PNAEE is to reduce national demand for energy in 1.792 thousand toe by 2015. Below (Table 1), it is presented a simplified breakdown of the expected savings by each one of the previously mentioned technological programmes, when a direct estimative exists, under PNAEE.

The savings achieved exceed the target defined by the European Union by approximately 20%, through efficiency contributions given by the various activity sectors, of which the State leads, with generated savings of approximately 12%.

The energy efficiency levels expected in 2015 will be mostly due to annual savings in Transports, of 729 thousand toe, followed by the transforming Industry, of 418 thousand toe, and the Residential and Service areas, contributing with 330 toe and 150 thousand toe, respectively. The State sector will contribute with annual savings of 48 thousand toe; the "Other sectors" item, including non-transforming industries, will contribute with 119 thousand toe.

Sector	Programme	Impacts by 2015 (toe)
Transports	Vehicle Renewal	298,188
	Urban Mobility	169,837
	Energy Efficiency System in Transports	222,988
Residential and Services	Home and Office Renewal	179,613
	Energy Efficiency System in Buildings	198,822
	Renewable at the Time	49,471
Industry	Energy Efficiency System in the Industry	536,356
State	Energy Efficiency in the State	49,371
Behaviours	Operation E	93,832
TOTAL		1,798,478

Table 1 - expected toe reductions by 2015 resulting from PNAEE

Collectively, the measures applied to all these sectors will lead to electricity savings of 4.777 GWh in 2015, corresponding to a 7% reduction in national electricity consumption.

Implementation of the energy efficiency programmes defined will result in final energy consumption rationalisation, with a consequent average annual reduction in energy growth rates of 1.1%, for 2008-2015 (relatively to average consumption for the reference period defined in the Directive).

In terms of energy intensity, implementation of the present plan will allow Portugal to strengthen its convergence with the current European energy intensity average, calculated since 2006 and currently set at approximately 120 toe/million Euros of the Gross Domestic Product (GDP). This efficiency increase objective will result in a reduction equivalent to 11 toe/million Euros of the GDP, an achievable objective for both economic growth scenarios (high and low scenario).

Environmental and social benefits

(Estimate of) Greenhouse Gases abated (in metric tons of CO₂-equivalent)

Albeit PNAEE approaches the problem from the energy side a strong improvement in the environmental side is expected to occur. The ultimate toe reduction goals for each programme, Table 1, are linked to indicators of an environmental nature.

These indicators are presented with below (per programme, Table 2 to Table 9).

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

Table 2 - Indicators and targets under the Vehicle Renewal programme.

<i>Programme: Urban Mobility</i>		Targets	
Indicators	Actual	2010	2015
% of Modal Transfer (accrued relatively to 2005)			5%
% low emission vehicles		1%	10%
% minibus in public transport fleets	-	5%	15%
% GPS with platform optimisation	0%	0%	5%

Table 3 - Indicators and targets under the Urban Mobility programme

<i>Programme: Energy Efficiency System in Transports</i>		Targets		
Indicators		Actual	2010	2015
% road traffic in multimodal logistics platforms, (TKm)		80%	80%	75%
% transfer of international goods traffic by road to maritime transport		-	15%	20%
Modal transfer of passengers to railway to railway (million pkm)	Lisbon - Oporto	n/a	852	943
	Lisbon - Algarve	n/a	178	197
	Lisbon - Castelo-Branco	n/a	70	77
Energy intensity of goods transport (toe/vab)		591	585	550

Table 4 - Indicators and targets under the Energy Efficiency System in Transports programme

<i>Programme: Home and Office Renewal</i>		Targets		
Indicators		Actual	2010	2015
% of efficient equipment (A, A+, A++)	Refrigerators	8%	18%	37%
	Freezers	1%	7%	25%
% of efficient washing machines (class A)		1%	10%	25%
% of CFL lamps		15%	39%	61%
% sales of efficient equipment (class A or higher)		50%	75%	90%
Renewal of glass surfaces	Nr. of homes	-	60,000	160,000
	Nr. of m ² installed	-	60,000	1,600,00
Installation of insulating materials	Nr. of homes	-	30,000	80,000
	Nr. of m ² installed	-	1,500,000	4,000,000
Increase the number of green heat Installations of heat exchangers powered by biomass micro-cogeneration or heat pumps (COP >=4)		-	7,500	20,000
Fast depreciation regime for efficient equipment, as an incentive for replacing office equipment, desktops with laptops, traditional monitors with LCD monitors or multi-function systems (Nr. Of replacements)		-	200,000	1,500

Table 5 - Indicators and targets under the Home and Office Renewal programme

<i>Programme: Energy Efficiency System in Buildings</i>		Targets	
Indicators		2010	2015
Achieving of minimum shares for efficient classes in new buildings. Programmes aimed at remodelling buildings needing repairs. (Nr. of certificates issued)		170,308	475,159
Achieving of minimum shares for efficient classes in new buildings. Increased penetration of cogeneration systems. Implementation of solar thermal and micro-production systems in schools. (Nr. of certificates issued)		9,427	22,705

Table 6 - Indicators and targets under the Energy Efficiency System in Buildings programme

<i>Programme: Instantly Renewable</i>		Targets	
Indicators		2010	2015
Incentives to micro-production (photovoltaic, Aeolian hydraulic, biomass and others). Number of installations		21,788	58,100
Divulcation campaigns, "Solar Thermal Renewal" Programme Incentives programme for installation of new solar thermal equipment. Mandatory installation of solar thermal equipment in new buildings Programmes oriented towards specific segments (Schools, Sports Equipment and Swimming Pools).	Residential - Total area Installed (m ²)	417,410	1,113,093
	Services - Total area Installed (m ²)	102,215	272,572

Table 7 - Indicators and targets under the Instantly Renewable programme

<i>Programme: Energy Efficiency System in the Industry</i>		Targets	
Indicators		Actual	2015
General industrial measures: Electric motors, heat and cold generation, lighting and industrial process efficiency	Energy Intensity Industry	339	302
Sector-specific measures: Food beverages and tobacco, Textile, Paper and Paper Paste, Chemicals, plastics and rubber, Ceramics, Metalworking and foundry, Glass, Cement, Clothing, footwear and leather, Iron and steel Works, Wood and wood articles, Metal, electrical machinery			
Savings in other activity sectors (%)		-	12%

Table 8 - Indicators and targets under the Energy Efficiency System in the Industry programme

<i>Programme: Energy Efficiency in the State</i>		Targets		
Indicators		Actual	2010	2015
Percentage of buildings with improved energy classification		-	6%	20%
Swimming Pools and Sport Premises, Installation of solar thermal for AQS in swimming pools and locker rooms	Nr. of installations in swimming pools	-	107	285
	Nr. of installations in sports buildings	-	266	710
Installation of electricity micro-production systems in public schools.	Nr. of installed systems	-	938	2500
	Installed power (MW)	-	5.6	15
Hospital cogeneration. Creation of energy production centres in medium and large hospital units.	Nr. of hospitals with cogeneration	-	-	22
State fleet with 20% hybrid vehicles in 2016. Vehicle acquisition conditioned to efficient vehicle short-list Mobility plan for entities with over 500 workers at the same location	Reduction in consumption	-	-	10%
Introduction of energy efficiency criteria in equipment acquisition. Company eligibility in tenders limited to entities with approved energy efficiency improvement Procurement of new State buildings limited to buildings of an efficient class.	% of equipment with improved efficiency	-	-	10%
Installation of light regulators to improve energy efficiency in street lighting.	Nr. of light points renewed	-	46,429	162,500
Replacement of light sources in traffic control and crossing systems (LED technology).	Nr. Of lamps replaced	-	14,286	50,000
Compliance with minimum energy efficiency requirements for new installations	Nr. of new installations	-	57,143	200,000
Phase-out of mercury vapour lamps in street lighting	Nr. of mercury lamps installed	300,000	225,000	0
Replacement of lights and electronic ballast in installations with over 10 years	Total lighting points	-	40,385	107,692
Traffic Control Systems. Replacement of light sources in traffic control and crossing systems (LED technology).	Nr. of traffic lights with LEDs	100	1,000	25,000

Table 9 - Indicators and targets under the Energy Efficiency in the State programme

Number of reduction units	N/A
Socio-economic aspects What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project?	The measures mentioned above are a step towards sustainable development, assuring the fulfilment of current needs using fewer resources and thus causing less negative impacts into the environment.
Methodology used	N/K

Economic data	
Capital costs	N/K

Financing scheme	
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Annual sources of public financing will be the Energy Efficiency Fund and amounts to be allocated via the National Strategic Reference Framework (QREN).

National resources will be allocated to various specific areas: Innovation, Industry, Energy Service Companies (ESCO), Efficiency Cheque and Renewal+ Plan, Efficiency Credit, State Energy Audits, Communication and Coordination. The economic and financial criteria used in this allocation will be a maximum payback time of eight years (simple payback), defined as the maximum acceptable period for return on the investments made in implementing the proposed quantitative measures. Both the Financing sources and the Incentives and use of resources are shown in Figure 1 below.

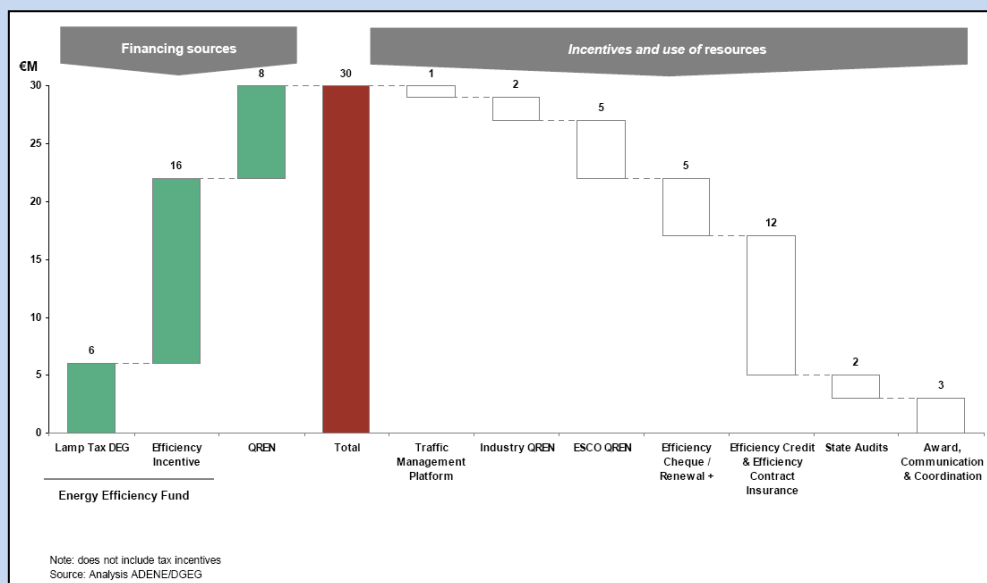


Figure 1 - Financing sources and the Incentives and use of resources under PNAEE

Project developer	
Name of the project developer	MEID - Ministério da Economia, da Inovação e do Desenvolvimento DGEG - Direcção-Geral de Energia e Geologia
Website	www.min-economia.pt / www.dgge.pt
Further Information	dre.pt/pdf1sdip/2008/05/09700/0282402865.pdf [PT]
Host organisation	
Name of Host organisation	Several economic sectors - Transports, Industry, Residential and Services, State and General Population