



Revised Portuguese National Energy Efficiency Action Plan

(Article 14(2) of Directive 2006/32/EC)

July 2011

1 Background

The purpose of this report is to report on compliance with the provisions of Article 14(2) of Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services.

This second Action Plan amends the National [Portuguese] Energy Efficiency Action Plan (NEEAP) which was approved by Council of Ministers Resolution No 80/2008 of 20 May 2008, which was subsequently sent to the European Commission.

The original NEEAP (*'Portugal Eficiência 2015'* [Portugal Efficiency 2015]) contains a series of measures aimed at improving energy efficiency by the equivalent of 9.8% of final energy consumption by 2015.

Under the Directive, Member States are required to publish national energy efficiency action plans, establishing targets for energy saving of least 1% per year until 2016. However, in 2008 the Portuguese Government decided to bring this target forward by one year.

The work involved in amending this document is based on the global assessment of the implementation of the NEEAP during the period 2008-2010 and also on an analysis of all programmes and measures, in order to establish new objectives and targets for 2016.

Based on the recent establishment of the current government and the assessment prompted by the measures referred to in the **Memorandum of Understanding on Specific Economic Policy Conditionality for Portugal**, aggregate results only have been presented. This is because guidelines on energy policy are currently being defined and reviewed, specifically in the area of energy efficiency.

Most of the measures contained in the initial action plan are also included in the second plan, on occasion with amended targets or with some measures being included or removed, depending on their implementation status. Some new measures already taken by the new Government will also be presented, whilst others which have not had the results that were anticipated will be removed.

2 Analysis of the performance of programmes and measures under the current NEEAP

The NEEAP contains a series of programmes and measures aimed at ensuring that Portugal can achieve and surpass the objectives provided for in Directive 2006/32/EC on energy end-use efficiency and energy services, as transposed by Decree-Law No 319/2009 of 3 November 2009.

Through the implementation of the plan, **1 792 493 tonnes of oil equivalent (toe) would be saved in 2015**, the equivalent of a saving of 9.8% compared to the reference period (average end energy consumption during the period 2001-2005), with specific measures defined in the areas of Transport, Residential and Services, Industry and Public Authorities and a further three 'horizontal' areas of action (Behaviours, Financing and Taxation).

The implementation of this plan has made it possible, in relative terms, to achieve by the end of 2010, 36.7% of the objective, a figure which is on target for meeting the objective.

The examination of the implementation status for each measure contained in the 2015 NEEAP was based on information collected from various sources, having been calculated using the methods of calculation used when preparing the NEEAP.

The energy saved in the course of the measures referred to used as a reference scenario average national end energy consumption during the 2001-2005 period, in accordance with the provisions of the EU Directive.

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Area	2008	2009	2010	Difference 09/10	Cumulated	Target 2015	Implementation
	Impact (toe)	Impact (toe)	Impact (toe)	%	Impact (toe)	Impact (toe)	%
Transport	32.588	41.079	157.387	277%	231.055		
Residential and Services	19.019	73.146	123.024	68%	215.189		
Industry	69.651	67.367	40.875	-39%	177.895	1.792.477	36,7%
Public Authorities	25	3.947	6.092	54%	10.064		
Behaviour	--	6.810	21.313	213%	28.123		
Total	121.283	192.349	348.691	80%	662.326		

2.1 Transport

In this area, reductions in energy consumption were recorded in the order of **231 055 toe** between 2008 and 2010 due to the combination of three programmes: Upgrading of Cars, Urban Mobility and System of Energy Efficiency in Transport.

2.1.1 Upgrading of Cars

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Programmes and Measures		2008	2009	2010	
Programme	Name of measure	Code	Impact (toe)	Impact (toe)	Impact (toe)
	Relaunching of scrapping of end-of-life vehicles	T1M1	13.519	11.151	49.427
	Green Tax – Review of the system of taxation for private cars	T1M2			
Upgrading of Cars		T1M3	1.414	151	2.061
	“Green tyres” and fuel efficiency	T1M4			
		T1M5	--	--	--
		T1M6	--	--	2.993
	New vehicles more “aware” of fuel savings	T1M6	--	--	2.993
	Total		14.933	11.302	54.481

Results were only available for five of the six measures of the Programme. The absence of data for measure **T1M5 – Fuel Efficiency** is most likely due to behavioural reasons linked to the current economic climate, which is reflected in the reduction in demand for more efficient (and also more expensive) fuel and lubricants, compared to the reference scenarios. The measure will not be included in the 2nd NEEAP, on the basis that the situation is not likely to change in the short term.

In global terms, the impact that the measures have already had is 80 716 toe, which represents 27.1% of the reference target for 2015.

2.1.2 Urban Mobility

National Energy Efficiency Action Plan					
Programmes and Measures			2008	2009	2010
Programme	Name of measure	Code	Impactos (tep)	Impactos (tep)	Impact (toe)
Urban Mobility	Modal transfer in Lisbon, Porto and district capitals	T2M1	--	15.270	83.547
	Plans for urban mobility in office parks and industrial parks	T2M2	--	--	--
	Use of more energy efficient transport	T2M3	654	131	0
	Traffic management platform for major urban centres	T2M4	--	--	--
Total			654	15.400	83.547

[Key: *impactos (tep)* = *impact (toe)*]

The Urban Mobility programme has, in global terms, had a fairly large impact in terms of avoiding energy consumption and has surpassed expectations, saving 99 601 toe, i.e. achieving 59% of the target for 2015. As regards individual measures, it should be noted that the results achieved in terms of modal transference in the main urban areas, measure T2M1 – Modal transfer in Lisbon, Porto and district capitals, particularly in connection with increased use made of underground rail (the opening of the Porto underground and the Sul do Tejo surface rail, in addition to the extension of the Lisbon underground). In order to implement this measure, an examination of structural modal transfer up to 2010 was carried out. The major impact that this measure is clearly linked to the economic consequences of the current crisis, and specifically a rise in fuel prices and increased demand for public transport.

As can be seen, despite the smooth implementation of this programme, only two measures (**T2M1 – Modal transfer in Lisbon, Oporto and district capitals** and **T2M3 – Use of more energy efficient transport**) registered any impact during the period in question. Measure **T2M2 - Mobility Plans** was launched in 2009, and savings caused by that measure are expected to be seen as of 2013. As regards measure **T2M4 - Traffic Management Platform for Major Urban Centres**, no initiatives have been taken, nor are any expected in the short term; it has therefore not been included in this version of the plan.

2.1.3 Transport Energy Efficiency System

National Energy Efficiency Action Plan					
Programmes and Measures					
Programme	Name of measure	Code	2008	2009	2010
			Impactos (tep)	Impactos (tep)	Impactos (tep)
System of energy efficiency in transport	Logistics in Portugal	T3M1	--	--	--
	Motorways of the sea	T3M2	--	--	--
	Restructuring of CP services	T3M3	14.891	14.313	16.455
	SEET – Transport Energy Efficiency System	T3M4	--	--	--
Total			14.891	14.313	16.455

[Key: *impactos (tep)* = *impact (toe)*]

As regards the **Transport Energy Efficiency System** programme, measures T3M1 (Logistics in Portugal) and T3M2 (motorways of the sea) have been significantly delayed. However, they may receive support from the current government's strategy for the freight transport sector, which is in the final stages of development.

2.2 Residential and Services

In this area, the 215 188 toe recorded in the first three years are the result of the combination of three programmes, the year-on-year trends for which are shown below.

2.2.1 Upgrading of House and Office

National Energy Efficiency Action Plan					
Programmes and measures					
Programme	Name of measure	Code	2008	2009	2010
			Impactos (tep)	Impactos (tep)	Impactos (tep)
Upgrade to House and Office	Replacement of stock of inefficient equipment	R&S4M1	--	11.120	13.739
		R&S4M2	--	6.630	7.088
		R&S4M3	13.592	19.600	15.338
	Discouragement of purchase of new inefficient equipment	R&S4M4	--	--	--
		R&S4M5	--	--	311
	Remodelling measures	R&S4M6	--	--	435
		R&S4M7	--	--	13.921
	Upgrading office equipment	R&S4M8	--	3.660	3.677
Total			13.592	41.009	54.510

[Key: *impactos (tep)* = *impact (toe)*]

The performance shown for this programme is clearly above the objective set as an accumulated target for 2010 (109 111 toe as opposed to the 70 119 toe set as a target).

The main factor which contributed to this result relates to the smooth implementation of measures designed to replace inefficient equipment. A particular example of this can be seen in the results of measures R&S4M3 – phasing out of filament light bulbs, which has enabled the introduction of approximately 15 billion CFLs in the national light network, through national programmes aimed at replacing inefficient light bulbs, and by changing consumer behaviour as regards purchasing high-performance energy equipment (refrigerators, freezers and washing machines, as regards measures **R&S4M1 and R&S4M2**).

An initial quantification of the impact of the remodelling measures **R&S4M5 – Efficient windows**, **R&S4M6 – efficient insulation** and **R&S4M7 – environmentally-friendly heating**, recently involved a calculation of figures of by how much consumption in these areas has been reduced. In particular, as regards environmentally-friendly heating, the 13 921 toe saved during the three-year period (2008-2010), i.e. almost twice the original target, can be attributed to the highly dynamic nature of the market for heat recuperators.

In total, the impact of these measures (109 111 toe) represents 61% of the 2015 target, which mean the programme has surpassed the proposed objectives.

2.2.2 System of Energy Efficiency in Buildings

National Energy Efficiency Action Plan					
Programmes and Measures			2008	2009	2010
Programme	Name of measure	Code	Impactos (tep)	Impactos (tep)	Impactos (tep)
System of Energy Efficiency in Buildings	Residential buildings	R&S5M 1	3.683	7.295	46.495
	Service buildings	R&S5M 2	630	11.003	12.064
	Total		4.313	18.298	58.559

[Key: *impactos (tep)* = *impact (toe)*]

This programme is aimed at improving the energy performance of buildings, by improving the average energy efficiency of the building stock, by implementing the guidelines regulating the Energy Certification System (ECS).

The trends which have been seen with regard to the System of Energy Efficiency in Buildings reflect the fact that Energy Certificates and Declarations of Regulatory Compliance continue to be issued within the context of the ECS and a reassessment of energy savings per building also takes place, on the basis of almost 400 000 certificates making up the certification system.

In global terms, taking both sectors into account (residential and services), the impact of these measures comes to 81 170 toe, i.e. 42% of the reference target for 2015. It can therefore be concluded that the programme in question is on track to meet the targets established.

2.2.3 Renováveis na Hora ('Instant Renewables')

National Energy Efficiency Action Plan					
Programmes and Measures			2008	2009	2010
Programme	Name of measure	Code	Impactos (tep)	Impactos (tep)	Impactos (tep)
Instant Renewables	Micro-production	R&S6M1	1.114	983	1.975
	Solar thermal energy	R&S6M2	--	11.403	4.900
			--	1.452	3.080
Total			1.114	13.838	9.955

[Key: *impactos (tep)* = *impact (toe)*]

This programme is designed to promote the replacement of fossil fuel consumption by that of renewable energy, by making it easier to access to electricity micro-generation technology and the solar heating of water for sanitary purposes.

The programme in question has been very dynamic with regard to the two measures identified as regards micro-production for electrical purposes as well as in terms of incentives for installing new solar thermal systems.

During its first three years, the measure **R&S6M1 – Micro-production** registered 4 072 toe generated by some 12 000 participating micro-producers.

The measure **R&S6M2 – Thermal Solar Energy** achieved the figure of 20 835 toe as a result of the strong increase caused by the initiative '2009 thermal solar energy programme', which established a framework of incentives linked to the purchase of equipment for the heating of water for sanitary purposes in the residential sector, and which was subsequently extended to the IPSS (Instituições Particulares de Solidariedade Social - private social welfare associations) and ADUP (Associações Desportivas com Utilidade Pública - public service sporting associations) associations.

2.3 Industry

In this area, 177 895 toe were recorded in the first three years of the measures included in the programme which is described below.

2.3.1 Energy efficiency system in industry and other sectors

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Programmes and Measures		Code	2008	2009	2010	
Programme	Name of measure		Impactos (tep)	Impactos (tep)	Impactos (tep)	
System of Energy Efficiency in Industry and other sectors (SGCIE)	System for Management of Intensive Energy Consumption	I7M1	61	387	2.166	
			65	2.608	3.673	
			0	114	636	
			28	472	5.883	
				-----	-----	-----
				151	0	0
				0	4	709
				0	0	0
				0	0	0
				0	355	2.336
			I7M2	0	0	0
				0	0	0
				0	0	0
				0	0	0
				0	0	0
		0	62	76		
		I7M3	9	18.164	4.627	
		I7M4	69.338	45.201	20.770	
		Total	69.651	67.367	40.875	

[Key: *impactos (tep)* = *impact (toe)*]

The trends seen with regard to measures I7M1 (**Transversal Measures**), I7M2 (**Specific Measures**) and I7M3 (**Other Sectors of Activity**) took account of the submission of almost 400 energy consumption rationalisation plans, within the framework of the SGCIE. The SGCIE network currently includes 878 companies, a figure which exceeds the expectations at the time that the system was launched.

2.4 Public authorities

During the first three years, 10 064 toe were recorded as a result of the implementation of the programme described below.

Programmes and Measures		Code	2008	2009	2010
Programme	Name of measure		Impactos (tep)	Impactos (tep)	Impactos (tep)
Energy efficiency in public institutions	Buildings	E8M1	--	1.462	3.307
		E8M2	--	136	880
		E8M3	--	--	--
		E8M4	24,9	24,6	113
		E8M5	--	--	--
		E8M6	--	--	165
		E8M7	--	--	--
		E8M8	--	--	118
		E8M9	--	--	229
		E8M10	--	--	--
		E8M11	--	1.954	734
		E8M12	--	--	102
		E8M13	--	371	444
		Total	25	3.947	6.092

[Key: impactos (tep) = impact (toe)]

2.4.1 Public authorities' energy efficiency

The application of this programme was essentially boosted by the good performance of measures E8M1 (Energy certification of public authorities' buildings, involving the energy certification of public authorities' buildings, which has resulted in energy savings doubling in 2010) and for the measures Efficient Public Lighting, in particular E8M8 – Installation of flow regulators, E8M11 (phase out of mercury vapour light bulbs) and E8M13 (traffic control systems) – LED technology in traffic lights.

Also of note are the positive results which have started to be seen with regard to measures E8M2 (Solar energy for swimming pools) and E8M3 (solar energy for sports premises), as a result of the range of incentives made available and to a significant awareness-raising campaign.

Similarly, following the acquisition of more efficient vehicles, 2010 saw for the first time the impact of measure E8M6 (fleet renewals using low-emission vehicles), which represents 165 toe saved in the year.

In global terms, the impact of the measures is 10 064 toe, which represents 20% of the reference target for 2015.

2.5 Behaviour

During the first three years, 28 123 toe were recorded, which can be broken down as follows by programme and measure.

National Energy Efficiency Action Plan					
Programmes and measures			2008	2009	2010
Programme	Name of measure	Code	Impactos (tep)	Impactos (tep)	Impactos (tep)
	Energy in Schools	C10M1			
	Energy in transport	C10M2	--	--	--
"operation" E	Energy at home	C10M3	--	6.810	19.489
	Energy at home	C10M4	--	--	1.824
	"15º ordenado" campaign	C10M5			
		Total	--	6.810	21.313

[Key: *impactos (tep)* = *impact (toe)*]

2.5.1 "Operation E"

The series of measures comprising this programme, which relates to behavioural issues, is designed to increase awareness on energy efficiency, by encouraging changes to behaviour vis-à-vis the end use of energy. Results have been recorded in the measures C10M3 (Energy at Home) and C10M4 (Energy at Work). The first of these measures has had very positive results, with 75% of the reference target for 2015 already having reached.

It should be noted that during this period, important initiatives have been taken, such as the '2009 Solar Energy Campaign', the market study entitled 'changes in behaviour in energy efficiency' and the implementation of the '2010 Portugal energy efficiency barometer' in companies.

In total terms, the impact of the measures in this area is 28 123 toe, which represents 30% of the reference target for 2015.

3 Review of the NEEAP for 2016

The current government's programme has sought to significantly increase Portugal's national energy efficiency target for 2020, increasing it from 20% to 25% of consumption.

On the basis of the implementation of the NEEAP for the period 2008-2010, new objectives and targets have been set for 2016, on the basis of the confirmation of the feasibility of current measures, replacing those which have not had the impact anticipated and by including new measures. **It is hoped that end energy consumption will be reduced by 2 239 973 toe, the equivalent of a reduction of 12.1% when compared to the same reference period of the initial NEEAP (2001-2005).**

	Anticipated impact (toe)			
	Target for 2010	Target for 2015	New target for 2016	Actual impact 2008/2010
TOTAL Transport	174 163	691 015	843 338	231 055
TOTAL Residential and Services	155 967	421 908	643 417	215 189
TOTAL Industry	161 962	536 356	543 541	177 895
TOTAL Public authorities	13 998	49 372	97 027	10 064
TOTAL Behaviour	--	93 832	112 650	28 123
TOTAL	344 128	1 792 483	2 239 973	662 326

The aggregate results for the various areas included in the NEEAP are as follows:

Transport

One of the new measures which will be introduced in this area relates to the implementation of a new environmentally-friendly driving system and driving monitoring system relating to public transport heavy goods and passenger vehicles. This may have an impact by 2016 equivalent to the reduction in consumption of approximately 20 000 toe.

Under the Strategic Transport Plan currently being drawn up by the Government, it is hoped that further progress can be made through various other initiatives which will have an impact on energy efficiency in the sector, specifically:

- in the area of logistics and rail infrastructure, the reshaping and the requalification of the national rail network, by 'weighting' the need for passenger and goods transport;
- with regard to ports and maritime transport, improvements to the way that the ports system is governed, the effective integration of ports within the global logistics and transport system and the intensification of the technological modernisation of port management tools.

Transport	Anticipated impact (toe)			Actual impact 2008/2010
	Target for 2010	Target for 2015	New target for 2016	
Total NEEAP	174.163	691.015	843.338	231.055

Residential and Services

Given the good performance of programme **R&S5M1**, where the number of energy performance certificates issued has increased enormously, this is one of the measures to be maintained, and targets increased, in the second NEEAP. Similarly, measure R&S6M2 will also be maintained and targets for that measure also significantly increased, both with regard to residential and services sectors, in view of the results achieved.

Residential and Services	Anticipated impact (toe)			Actual impact 2008/2010
	Target for 2010	Target for 2015	New target for 2016	
Total NEEAP	155.967	421.908	643.417	215.189

Industry

With regard to this sector, efforts will be made to maintain targets and the indicators associated with the implementation of the respective measures, by improving the SGCIE system (I7M1, I7M2 and I7M3), specifically by encouraging companies to sign up to the scheme, by improving conditions for voluntary compliance, it being hoped that the number of companies involved in the system will increase.

Industry	Anticipated impact (toe)			Actual impact 2008/2010
	Target for 2010	Target for 2015	New target for 2016	
Total NEEAP	161.962	536.356	543.541	177.895

Public authorities

Following the entry into force on 12 January 2011 of the Public Administration Energy Efficiency Programme (ECO.AP), the bases for developing an effective energy efficiency policy for public administration were launched, it being expected that by 2020, an increase in energy efficiency of 20% (compared to current figures) should be possible for public administration departments, buildings and equipment. **The target of 20% has since been increased within the framework of the current Government's programme, to a more ambitious figure of 30% by 2020.**

The programme in question has taken the shape of a series of energy efficiency measures to be implemented in the short, medium and long-term within public departments, bodies and equipment, the intention being to change behaviour and promote the rational management of energy services, specifically through entering into contracts with energy service companies, which will make energy efficiency more dynamic, particularly as regards financing.

The figure of a local energy manager for each public department or body has also been created, responsible for promoting and organising behavioural measures for energy efficiency.

A number of targets, such as those relating to the measure 'Energy Certification of Public Authorities' buildings' (E8M1) have been revised in view of the establishment of this programme. It is anticipated that by 2016, 25% of all public authorities' premises would be covered by the energy certification programme.

Public Authorities	Anticipated impact (toe)			Actual impact 2008/2010
	Target for 2010	Target for 2015	New target for 2016	
Total NEEAP	13 998	49 372	97 027	10 064

Behaviour

Based on the results obtained and through cross-checking with other sources relating to energy efficiency in residential areas, it was possible to determine potential saving in changes of behaviour in areas such as the efficient use of white goods (washing machines and dishwashers), audiovisual and entertainment equipment (standby/on-off) and lighting (turning of lights). Therefore, the target concerning measure Energy at Home (C10M3) has been increased, since it was responsible for the increase in the target for 2016 in this area.

Behaviour	Anticipated impact (toe)			Actual impact 2008/2010
	Target for 2010	Target for 2015	New target for 2016	
Total NEEAP	--	93 832	112 650	28 123