National Energy Efficiency Action Plan

MALTA

2007

As required by Directive 2006/32/EC

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National Energy Efficiency Action Plan 2007

1 EXECUTIVE SUMMARY AND SUMMARY TABLES

1.1 OBJECTIVES

1.1.1 Objectives

Energy efficiency is a key objective in the Government's energy policy. It can have a significant impact on the demand for energy, and so can reduce the country's fuel bill and the release of carbon into the environment.

It is widely perceived that the potential for improving energy efficiency exists. This energy efficiency plan is designed such that the part of the technical potential that yields the most savings for a given investment is identified and given first priority for exploitation.

Energy efficiency finds synergy in the achievement of all Government's energy policy objectives - it assists the economy, as well as help to achieve social and environmental goals. In improving energy security and reducing carbon emissions, it has arguably the lowest cost, and highest reversibility of all options available to Government to meet its objectives.

The general objectives of this National Energy Efficiency Plan are to identify cost-effective measures that will generate energy efficiency and to chart a plan whereby these measures are implemented in a structured holistic manner.

1.1.2 Targets

Average annual energy consumption (October 2001 to September 2006): 4195 GWh

National indicative annual energy savings target:

Target adopted for 2016 (GWh): 9% or 378GWh per year

Target adopted for 2010 (GWh): 3% or 126GWh per year

1.1.3 Format of the plan

This plan follows in general the template put forward by the Commission on the 14 May 2007. It also assumes some familiarity with Directive 2006/32/EC in its reading.

1.2 SUMMARY TABLE OF MEASURES

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	**Type of measure**
Domestic sector	
Rebates on energy efficient domestic appliances	Financial instruments
Promotion of solar water heaters	Financial instruments, informative
Promotion of micro-generation of electricity from RES	Financial instruments
Subsidy schemes for insulation for buildings	Financial instruments
Promotion of compact fluorescent lamps	Financial instruments
Industry	
Targets for energy efficiency in government owned industry	Voluntary – institutional organisations; Informative
Support schemes for industry and sme's	Informative, Financial instruments; voluntary agreements
Tertiary	
Action in the public sector	Voluntary – institutional organisations;
Energy efficiency promotion in the tourism industry	Informative, Financial instruments; voluntary agreements
Improvements in street lighting	Voluntary – institutional organisations
Energy efficiency in the commercial sector	Informative, Financial instruments; voluntary agreements
Transport	
Promotion of modal shifts	Informative; Financial instruments; Regulation
Provision of advisory services on energy efficient driving	Informative
Provision of energy efficiency services at petrol stations	Informative, Financial instruments; voluntary agreements
Promotion of e-work or tele-working	Voluntary – institutional organisations
Green travel plans for the public sector	Voluntary – institutional organisations;
Promotion of electric vehicles	Regulation; Informative; Financial
Horizontal and Cross-sectoral	
Review of administrative arrangements	Regulation
Publicity and information campaigns	Informative
Provision of advisory services	Informative
Creation of an energy fund	Financial instruments
Improvement in buildings efficiency	Regulation, informative,
Intelligent metering systems	Informative
Promotion of CHP for large industry and tourist complexes	Informative
Participation in research in energy saving measures	Informative

Estimates of savings

A number of measures, such as the creation of an energy fund, will not have a direct measurable effect but are essential for the successful implementation of the action plan.

In the case of other measures, such as the promotion campaign, the savings that will be achieved after the implementation of this measure will be estimated using the top-down methodology. This means that the amount of energy savings is calculated using the national aggregated sectoral levels of energy savings as the starting point.

The following table gives an indication of the areas where savings can actually be quantitatively estimated. The objective of the table is to indicate that measures proposed should have the effect of achieving the targets set. These estimates will be subsequently revised and updated in accordance with the harmonised models that will be established by the Commission in line with Annex IV of Directive 2006/32/EC.

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	**Annual energy savings expected as at end of 2010 (GWh)**	**Annual energy savings expected as at end of 2016 (GWh)**
Domestic sector		
Rebates on energy efficient domestic appliances	11 to 21	22 to 50
Promotion of solar water heaters	13 to 14	31 to 37
Promotion of micro-generation of electricity from RES	1	3
Subsidy schemes for insulation for buildings	<<1	<1
Industry		
Targets for energy efficiency in government owned industry	42 to 43	42 to 43
Support schemes for industry and sme's	18	62
Tertiary		
Action in the public sector	7	11
Energy efficiency in the commercial sector	5	14
Transport		
Promotion of e-work or tele-working	<1	1 to 4
Promotion of electric vehicles	<<1	<1
Total estimated to date	**100 to 113**	**189 to 225**

The basic calculation that was used to establish the savings from each measure is explained in the following sections of this document.

The total savings from the measures that can be quantitatively estimated at this point are quite close to the target for 2010. Given that the estimates were calculated in a reasonably realistic and achievable manner and that a number of actions could not be quantified, the assumption that the target could be met could be considered reasonable.

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2 OVERALL NATIONAL INDICATIVE TARGET

2.1 CALCULATION OF NATIONAL TARGET

2.1.1 Final consumption

Article 4(3) of Directive 2006/32/EC requires Member States to adopt and aim to achieve an overall national indicative energy savings target of 9 % for the ninth year of application of this Directive, to be reached by way of energy services and other energy efficiency improvement measures.

The target established for Malta is 9% for 2016 and 3% for 2010. Table 1 to Table 3 show the consumption of energy in Malta that falls within the scope of this directive.

Table 1- Final consumption of energy in Malta (tons)

Energy commodity	2001/2	2002/3	2003/4	2004/5	2005/6
Diesel / gas oil	92,870	94,383	94,412	95,533	95,411
Motor spirit	67,999	66,957	66,594	66,793	65,168
Kerosene	11,639	14,185	16,620	5,447	2,025
Thin Fuel Oil	9,222	7,875	7,543	8,355	7,704
Light Heating Oil	3,342	3,129	4,135	10,545	8,721
LPG	16,940	16,992	16,247	17,169	19,978
Propane	253	232	282	176	371
Biodiesel	-	25	337	1,256	1,418

Table 2 – Electricity sales (MWh)

	2001/02	2002/03	2003/04	2004/05	2005/06
Electricity sales	1,612,718	1,712,786	1,721,365	1,794,350	1,757,212

Table 3 - Final consumption of energy in Malta (MWh)

Energy commodity	2001/2	2002/3	2003/4	2004/5	2005/6
Diesel / gas oil	1,119,175	1,137,410	1,137,756	1,151,269	1,149,800
Motor spirit	831,088	818,343	813,914	816,342	796,478
Kerosene	142,011	173,071	202,778	66,462	24,712
Thin Fuel Oil	108,359	92,531	88,630	98,171	90,522
Light Heating Oil	39,269	36,771	48,586	123,900	102,478
LPG	216,461	217,118	207,600	219,387	255,273
Propane	3,239	2,962	3,599	2,251	4,742
Biodiesel	-	273	3,645	13,577	15,326
Electricity sold	1,612,718	1,712,786	1,721,365	1,794,350	1,757,212
Final consumption (MWh)	**4,072,320**	**4,191,265**	**4,227,873**	**4,285,710**	**4,196,542**

Based on this information, the energy savings for the purpose of the directive are shown below:

Average final consumption over 5 year period		4195	GWh
Energy saving target for 2016	9%	378	GWh
Intermediate energy saving target for 2010	3%	126	GWh

2.2 SPECIFIC ASPECTS IN THE CALCULATION OF THE NATIONAL TARGET

2.2.1 Data sources and peculiarities

The data is all obtained from information submitted to the regulator of the energy sector in Malta (the Malta Resources Authority) by the operators licensed to operate in Malta.

The only organisation that carried out retail of fuels and electricity in Malta is Enemalta for all fuels and electricity, apart from Biodiesel. Biodiesel was retailed by one other company in Malta during the period in question.

The source of information for the fuels (other than biodiesel) in Section 2.1 was Enemalta who supplied monthly figures of sales. Biodiesel sales are as reported by the manufacturing firm.

This data was used in preference to Eurostat data since the Eurostat data was not complete for 2005 at the time of writing. Other data sets investigated could not be used due to poor data quality.

One characteristic that needs to be pointed out in this data set is that electricity consumption reporting period was financial years covering 1 October to 30 September, not calendar years. The 5 year period covered in Section 2.1 is therefore 1 October 2001 to 30 September 2006.

Electricity consumption was obtained from the Enemalta audited accounts 2001/02, 2002/03, 2003/04 and 2004/05. The sales of electricity for the year 2005/6 are extracted from the management accounts (as deposited on the table of the House of Representatives) and are still subject to audit. The data for electricity consumption accounts for 40% of the decrease in final consumption. Most of the decrease can, provisionally, be attributed to a substantial increase in the cost of fuel for the year in question.

2.2.2 Sectors covered in the national target

This plan covers all forms of commercially available energy including electricity, liquefied petroleum gas, and any fuel fused for heating and cooling, transport fuels and biomass, but excludes:

- maritime bunker fuels
- aviation bunker fuels

Legal entities that are involved in the category of activities listed in Annex I of Directive 2003/87/EC establishing a scheme for greenhouse gas emission trading within the Community are also excluded from the scope of the directive. Enemalta Corporation operates a combustion installation with a rated thermal input exceeding 20 MW, and therefore falls within the scope of the Emissions Trading Scheme. The energy used by Enemalta for transformation of fuels to electricity and its distribution

is already excluded from the calculations in Section 2.1.1. No other entity falls within the scope of Annex I in Malta.

The consumption of the military sector is not excluded from the scope of this plan.

2.2.3 Conversion factors

The conversion factors for fuels are those in Directive 2006/32/EC as far as possible. Where not available, the conversion factors available in the OECD/IEA publication Energy statistics manual, 2004, were used. Finally, for biodiesel, for which conversion factors are not available in either publication, a conversion ratio of 32.8MJ/litre was used[1].

Table 4 - Conversion factors used

Energy commodity	ton	MWh	Notes on source:
Diesel / gas oil	1	12.051	OECD/ IEA Energy Statistics Manual, 2004
Motor spirit	1	12.222	Directive 2006/32/EC
Kerosene	1	12.201	OECD/ IEA Energy Statistics Manual, 2004
Fuel oil	1	11.111	Directive 2006/32/EC
Thin Fuel Oil	1	11.750	Directive 2006/32/EC (LHO)
Light Heating Oil	1	11.750	Directive 2006/32/EC
LPG	1	12.778	Directive 2006/32/EC
Propane	1	12.778	Directive 2006/32/EC (LPG)
Biodiesel	1	10.809	Malta's report to the Commission in terms of Directive 2003/30/EC

2.2.4 Definition of the boundary between final consumption and the supply (or transformation) sector

Some fossil fuels in Malta are transformed to electricity. The energy required for the production and distribution of electricity is excluded from the scope of this plan and from the calculations of final energy consumption. (Article 2(b) of Directive 2006/32/EC)

Waste cooking oil is transformed to biodiesel. Sales of biodiesel are included as part of final energy consumption. (Article 3(a) of Directive 2006/32/EC)

The generation of electricity from grid connected small PV systems and microwind systems used for the generation of electricity on a small scale are excluded from the calculations of national final energy consumption, in so far as their installation counts towards the target of energy efficiency. (Annex III (g) of Directive 2006/32/EC)

[1] Data for biodiesel was submitted in litres.

2.2.4 Common characteristics of the measures envisaged

In this first action plan, emphasis is made on measures that are expected to start in the short term and have effect up to 2010. It is expected that all measures will be reviewed regularly and updated to take into account the results being achieved, changes in regulatory and legislative structures (particularly those driven at EU levels), and changes and developments in technology. New measures are also expected to be introduced.

The measures identified are in line with the definitions in the directive. Of particular interest are the measures relating to the micro-generation of electricity from renewable energy sources in the domestic sector and combined heat and power applications in industry and the tertiary sector, in line with the directive[2]. Such measures are also promoted by other EU directives. The treatment of the savings arising from the implementation of these measures will be reviewed at the end of the first reporting period.

The a-priori assessment of the energy efficiency savings does not take into account the effects of multiplier effects and free-riders. These calculated savings are to be taken as indicative only, and are generally realistic and achievable.

All of the measures proposed in this national action plan have a national scope.

2 Annex III (Indicative list of examples of eligible energy efficiency improvement measures) of Directive 2006/32/EC

3 SECTORAL ACTIVITIES

3.1 RESIDENTIAL SECTOR

3.1.1 Overview table of measures in the domestic sector

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	**Annual energy savings expected by end of 2010 (GWh)**	**Annual energy savings expected by end of 2016 (GWh)**
Rebates on energy efficient domestic appliances	11 to 21	22 to 50
Promotion of solar water heaters	13 to 14	31 to 37
Promotion of micro-generation of electricity from RES	1	3
Subsidy schemes for insulation for buildings	<<1	<1

A crude bottom up assessment of savings in the sector indicates a savings on electricity consumption in the domestic sector of around 1% of electricity consumption, mainly achieved through the adoption of more energy efficient cooling equipment, and increased uptake of solar water heaters. A better assessment will be made once more information is collected.

3.1.2 Description of individual measures

Title of the measure:	Rebates on energy efficient domestic appliances

Category

Financial instruments

Target group

Domestic, though there will be a multiplier effect on other sectors of market for these appliances.

End-use action targeted

Energy efficient appliances.

Description

In the budget speech for 2007 Government announced a scheme whereby the purchase of energy efficient appliances is incentivised through payment of a rebate on the purchase price of the appliance.

The scheme has been very successful with so far close to 8,000 applications for the rebate being submitted to the Malta Resources Authority in the first six months of operation and about 100 new applications are being received daily. The Authority has also registered 45 importers and 50 other retail outlets. 1,900 different appliances have been registered by dealers with the Authority. The information on the registered dealers and appliances can be accessed on the Authority's website www.mra.org.mt.

Preliminary indications are that a substantial market transformation was achieved.

This scheme came into effect from 1st November 2006 as follows:

Appliances	Category	20% of selling price with a maximum grant of
Dishwashers	A	€58.23
Refrigerators, Freezers or Combinations	A Tropical A+ Subtropical	€116.48 €116.48
	A Subtropical (till 31st March 2007)	€58.23
Washing Machines	A	€58.23
Tumble Dryers	A	€58.23
Air Conditioning Units	A	€58.23

The scheme also requires that available technical documentation to demonstrate the eligibility of the registered appliances for the rebate be submitted and vetted. Appliances that are registered for similar schemes in other EU Member States and/or subject to third party verification have been exempted from the need to be covered by such verification.

Qualitative assessment – impact level of measure

High (effect on market)

Interaction of measures

These schemes are also being promoted by the energy efficiency campaign.

Expected annual savings in 2011 and 2016

	Early action savings	Measure start year	Take-up		Savings (kWh/year/unit)		2010 savings in MWh	
Subactivity	**kWh**		**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Refrigerators and freezers	3,000,000	2006	5,000	6,000	300	500	7,500	12,000
Washing machines	960,000	2006	8,000	10,000	50	100	1,760	2,960
Dishwashers	200,000	2006	500	800	200	200	400	520
Tumble dryers	10,000	2006	100	100	100	200	30	50
Air conditioners	400,000	2006	2,000	3,000	200	600	1,600	5,800

The calculations assume that around 50% of applicants to the scheme in the case of washing machines and 20% in the case of refrigerators are free riders. This may be an overestimation and will need to be confirmed using surveys. Furthermore, the savings per appliance per year are generally based on data used for schemes similar in other member states in the EU. Again, more information on consumption in the domestic sector taking into account climate effects will be required. A major difficulty with these calculations is the assumptions that savings from extension of the scheme in the future will remain constant. Improvements in technology and / or changes to legislation (minimum standards) may change the situation significantly.

Status of implementation

Early action / New EEI measure – process of implementation started.

Date of start and end of implementation of measure

The scheme started being implemented in November 2006. The scheme will be revised during 2008.

Title of the measure:	Promotion of solar water heaters

Category

Financial instruments, informative

Target group

Domestic

End-use action targeted

Energy efficient appliances, domestic generation from renewable energy sources.

Description

A rebate on solar water heaters of 20% with a maximum grant of €232.94 is granted by Government. Furthermore, when solar water heaters are installed in new buildings that were not previously supplied by electricity, Enemalta (the distribution system operator in Malta) waives the connection fee (€163.06).This measure will have a multiplier effect.

Visits are organised by the Institute of Energy Technology with the consent of the home owner. A technical inspection is made on the installed solar heating system. A pre-defined technical form is used. Observations made include measuring the azimuth and the inclination of the panels, checking the water storage tank size and solar panel area, to see if sufficient collector area is available to heat the water effectively and checking on lagging, insulation, back-up heating settings. A questionnaire is also carried out to be able to understand the lifestyle of the users and advise on certain measures that could save on hot water usage. Following the visit, an official report is sent to the owner, highlighting the good results as well as those measures that need to be taken to improve the performance of the solar system, with the scope of saving more energy and getting better customer satisfaction.

Qualitative assessment – impact level of measure

High

Interaction of measures

These schemes are also being promoted by the energy efficiency campaign.

Expected annual savings in 2011 and 2016

	Early action savings	Measure start year	Take-up		Savings (kWh/year/unit)		2010 savings in MWh	
Subactivity	**kWh**		**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Solar water heaters	3,520,000	2006	3,000	3500	1,050	1,050	12,970	14,545

Estimates of savings are based on daily savings of 5kWh per day for 210days per year. These need to be confirmed using field data or other models.

The target take up will yield 27,000 units installed, in addition to an estimated 10000 already installed by the end of 2007. Total annual savings will be 13GWh, out of 1720GWh electricity end use. Changes to the housing stock (in terms of impact on availability of roof space) in future may lead to further restrictions on the levels of penetration.

Status of implementation

Early action – adaptations may be implemented

Date of start and end of implementation of measure

The first grant by government on solar water heaters was announced in 2005. The maximum allowed then was €116.48 and take up was rather low. The maximum doubled to €232.94 in 2006, where upon uptake tripled. No date for termination has been established. The scheme will be revised late 2007.

Title of the measure:	Promotion of micro-generation of electricity from RES

Category

Financial instruments

Target group

Domestic

End-use action targeted

Domestic generation of renewable energy sources.

Description

Microwind

Eligible systems are microwind systems that are installed in a residence, through which wind energy is converted into electric energy, which appliance is connected with the national electric grid system.

Eligible applicants may apply for a once-only grant of 25% on the purchase of the wind energy system subject to a maximum grant of €232.94.

PV

Eligible systems are PV systems that are installed in a residence, through which solar energy is converted into electric energy, which appliance is connected with the national electric grid system.

Eligible applicants may apply for a once-only grant of 20% on the purchase price of a photovoltaic system with a minimum installed size of one kilowatt peak, plus or minus five per cent (1kWp+/-5%) and this subject to a maximum grant of €1164.68. Applicants are also eligible to an additional grant of €582.34 for every additional installed kilowatt peak, plus or minus five per cent (1kWp+/-5%), subject to a total maximum input power of 3.7 kilowatt peak (3.7kWp). Fractions of a kilowatt peak installed additionally above the minimum of one kilowatt peak(1kWp) are treated pro rata.

Qualitative assessment – impact level of measure

Low

Interaction of measures

These schemes are also being promoted by the energy efficiency campaign.

Expected annual savings in 2011 and 2016

Expected savings, unless prices of PV systems fall dramatically, are not expected to exceed 7GWh in 2016.

Status of implementation

Early action – adaptations may be implemented

Date of start and end of implementation of measure

Grants started to be given in November 2005. The scheme will be revised substantially during 2008 to increase uptake. No date is established for its termination.

Title of the measure:	Subsidy schemes for insulation in buildings

Category

Financial instruments

Target group

Domestic

End-use action targeted

Building insulation

Description

Government is subsidising roof insulation up to 20% of the value up to a maximum of €232.94.
A review of the scheme and its combination with the promotion of other actions to reduce heating and cooling load will be carried out during 2008.

Qualitative assessment – impact level of measure

Low

Interaction of measures

These schemes are also being promoted by the energy efficiency campaign.

Expected annual savings in 2011 and 2016

Minimal savings

Status of implementation

Early action – adaptations may be implemented

Date of start and end of implementation of measure

Grants started to be given in November 2005. No date is yet established for its termination.

3.2 TERTIARY SECTOR

3.2.1 Overview table of measures in the tertiary sector

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	Annual energy savings expected by end of 2010 (GWh)	Annual energy savings expected by end of 2016 (GWh)
Action in the public sector	7	34
Energy efficiency promotion in the tourism industry	Not available	Not available
Improvements in street lighting	Not available	Not available
Energy efficiency in the commercial sector	5	27

The tertiary sector is estimated by Enemalta to account for around 30% of electricity demand in the country.

3.2.2 *Description of individual measures*

Title of the measure:	Energy efficiency action in the public sector

Category

Voluntary measure

Target group

Government administration.

End-use action targeted

Green leaders
Audits in government departments
Green public procurement
New school/hospital construction policy
Energy saving measures in Housing Authority schemes
Implementation of RES in all Government ministries

Description

Government has started the process of promoting energy efficiency within its departments by appointing Green Leaders, one in each Ministry, in an initiative aimed towards meeting government's corporate responsibilities with regard to the environment.

The Green Leaders have a duty to create environmental awareness within their Ministries and act as catalysts for action to promote environmentally – friendly practices within their spheres. The Green Leaders are coordinated by the Government Environmental Corporate Responsibility Office set up for the purpose within the Office of the Prime Minister. A major activity for each green leader is to commission an energy audit of at least one building belonging to their Ministry. Training courses for green leaders have been held.

In terms of procurement, Government has also established a green public procurement policy to promote environmental elements when buying products, services or works and published a handbook on environmental public procurement that also takes into account energy usage. (www.greennetwork.gov.mt)

Hospitals and education account for 85% of all electricity used by Government. Specific measures will be identified and proposed for these sectors during 2006 to limit growth and use of energy by these sectors.
The Malta Resources Authority will be opening up discussions with the Ministry for Education with a view to establishing benchmarks for primary and secondary schools,

possibly establishing energy plans for each school and developing audits for other types of educational institutions. The possibility of establishing guidelines for new schools will also be discussed with the Foundation for Tomorrow's Schools. For hospitals, certain consumption areas – including HVAC, lighting, catering and laundry – may be eligible for an energy audit, and this will be discussed with the medical authorities.

The Housing Authority has taken a pro-active approach to energy efficiency in its social housing projects. The project at tal-Ftieh, Birkirkara was the Authority's pilot project in this field, wherein a number of energy saving features were introduced fro the first time. This was followed by the 80-apartment project in Site A, Pembroke, where solar water heaters are being installed for all units. Besides enhancing the thermal efficiency of the housing units it provides, the Housing Authority aims to instil in its beneficiaries a consciousness of the national need to save energy.
Following this pilot projects, the Housing Authority decided that all housing projects for which the tenders were issued as from January 2005 would include some or all of the following energy saving features:

1. Double glazing in apertures;
2. Windows and door louvers;
3. Roof insulation;
4. Storm water cistern;
5. Solar water heaters.

The Housing Authority will also be continuously monitoring the advancement of technologies and products through its consultants to further consider the future implementation of other energy saving and economically feasible measures such as control of size of fenestration, provision of shading devices.

Government will also be taking action to improve energy efficiency in ICT systems and other office systems. Practical measures that are being studied are:

- review of current hardware purchasing standards to identify what energy efficiency requirements can be incorporated in a cost effective manner;
- review of any other software and hardware systems to identify situations where energy efficiency can be incorporated within the systems (e.g. group policy)
- review of user procedures and policies to incorporate guidelines for good energy efficient practices by users (promotion of behaviour change)

Finally, all Government Ministries will be fitted with RES PV panels as a demo project. A budget of €23,000 per Ministry is allocated for this purpose.

Qualitative assessment – impact level of measure

Medium.

Interaction of measures

Not applicable

Expected annual savings in 2011 and 2016

An estimate of savings from the support scheme was established at 4.6million kWh on the basis of cost effectiveness in a maximum of three years.

Status of implementation

Early action / New EEI measure, process of implementation started.

Date of start and end of implementation of measure

Date of start of implementation of energy efficiency funding: 2009
End – 2013 for structural funding measures. The measure will be reviewed at that time. It is estimated for the purposes of this plan that the scheme will be replaced by another scheme of equivalent effect at that time.

Title of the measure:	Energy efficiency promotion in the tourism industry

Category

Financial

Target group

Tourism and culture operators.

End-use action targeted

Reduction in energy (and water) demand

Description

The proposed scheme for tourism and culture enterprises, which shall run between 2008 and 2013 builds on the Grant Scheme for Tourism Enterprises which ran in 2004-2006. It aims at encouraging innovation and economic development of undertakings in the tourism and cultural sectors. This scheme envisages directing aid to all undertakings that apply for projects which will generate economic activity, mainly SMEs, and large enterprises. The applicants will have the possibility of submitting projects under a number of action lines which will affect a number of horizontal issues, resulting mostly from the Lisbon Agenda. Through investment in different eligible project intervention areas, the project has the objective of achieving increased competitiveness in the tourism and cultural sectors. This will in turn help achieve EU policy targets and also raise the national standard of living.

A key priority of the Scheme is to improve and support the sustainability of the tourism industry as a whole. Projects must therefore actively contribute to initiatives enhancing the environmental performance of tourism-related operations, by reducing the consumption of resources or by otherwise improve the efficiency of such consumption. This should also have a beneficial effect on the operational sustainability of the operation. Activities qualifying as eco-friendly involve both the purchase of equipment which would lead to further environmental-friendly measures as well as the creation of processes so as to improve operation efficiency as well as, where applicable, to further compliment the equipment bought.

Qualitative assessment – impact level of measure

Medium

Interaction of measures

None

Expected annual savings in 2011 and 2016

Not available

Status of implementation

Early action / New measure

Date of start and end of implementation of measure

Proposal: 2008 to 2013

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National Energy Efficiency Action Plan 2007

1 EXECUTIVE SUMMARY AND SUMMARY TABLES

1.1 OBJECTIVES

1.1.1 Objectives

Energy efficiency is a key objective in the Government's energy policy. It can have a significant impact on the demand for energy, and so can reduce the country's fuel bill and the release of carbon into the environment.

It is widely perceived that the potential for improving energy efficiency exists. This energy efficiency plan is designed such that the part of the technical potential that yields the most savings for a given investment is identified and given first priority for exploitation.

Energy efficiency finds synergy in the achievement of all Government's energy policy objectives - it assists the economy, as well as help to achieve social and environmental goals. In improving energy security and reducing carbon emissions, it has arguably the lowest cost, and highest reversibility of all options available to Government to meet its objectives.

The general objectives of this National Energy Efficiency Plan are to identify cost-effective measures that will generate energy efficiency and to chart a plan whereby these measures are implemented in a structured holistic manner.

1.1.2 Targets

Average annual energy consumption (October 2001 to September 2006): 4195 GWh

National indicative annual energy savings target:

Target adopted for 2016 (GWh): 9% or 378GWh per year

Target adopted for 2010 (GWh): 3% or 126GWh per year

1.1.3 Format of the plan

This plan follows in general the template put forward by the Commission on the 14 May 2007. It also assumes some familiarity with Directive 2006/32/EC in its reading.

1.2 SUMMARY TABLE OF MEASURES

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	**Type of measure**
Domestic sector	
Rebates on energy efficient domestic appliances	Financial instruments
Promotion of solar water heaters	Financial instruments, informative
Promotion of micro-generation of electricity from RES	Financial instruments
Subsidy schemes for insulation for buildings	Financial instruments
Promotion of compact fluorescent lamps	Financial instruments
Industry	
Targets for energy efficiency in government owned industry	Voluntary – institutional organisations; Informative
Support schemes for industry and sme's	Informative, Financial instruments; voluntary agreements
Tertiary	
Action in the public sector	Voluntary – institutional organisations;
Energy efficiency promotion in the tourism industry	Informative, Financial instruments; voluntary agreements
Improvements in street lighting	Voluntary – institutional organisations
Energy efficiency in the commercial sector	Informative, Financial instruments; voluntary agreements
Transport	
Promotion of modal shifts	Informative; Financial instruments; Regulation
Provision of advisory services on energy efficient driving	Informative
Provision of energy efficiency services at petrol stations	Informative, Financial instruments; voluntary agreements
Promotion of e-work or tele-working	Voluntary – institutional organisations
Green travel plans for the public sector	Voluntary – institutional organisations;
Promotion of electric vehicles	Regulation; Informative; Financial
Horizontal and Cross-sectoral	
Review of administrative arrangements	Regulation
Publicity and information campaigns	Informative
Provision of advisory services	Informative
Creation of an energy fund	Financial instruments
Improvement in buildings efficiency	Regulation, informative,
Intelligent metering systems	Informative
Promotion of CHP for large industry and tourist complexes	Informative
Participation in research in energy saving measures	Informative

Estimates of savings

A number of measures, such as the creation of an energy fund, will not have a direct measurable effect but are essential for the successful implementation of the action plan.

In the case of other measures, such as the promotion campaign, the savings that will be achieved after the implementation of this measure will be estimated using the top-down methodology. This means that the amount of energy savings is calculated using the national aggregated sectoral levels of energy savings as the starting point.

The following table gives an indication of the areas where savings can actually be quantitatively estimated. The objective of the table is to indicate that measures proposed should have the effect of achieving the targets set. These estimates will be subsequently revised and updated in accordance with the harmonised models that will be established by the Commission in line with Annex IV of Directive 2006/32/EC.

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	**Annual energy savings expected as at end of 2010 (GWh)**	**Annual energy savings expected as at end of 2016 (GWh)**
Domestic sector		
Rebates on energy efficient domestic appliances	11 to 21	22 to 50
Promotion of solar water heaters	13 to 14	31 to 37
Promotion of micro-generation of electricity from RES	1	3
Subsidy schemes for insulation for buildings	<<1	<1
Industry		
Targets for energy efficiency in government owned industry	42 to 43	42 to 43
Support schemes for industry and sme's	18	62
Tertiary		
Action in the public sector	7	11
Energy efficiency in the commercial sector	5	14
Transport		
Promotion of e-work or tele-working	<1	1 to 4
Promotion of electric vehicles	<<1	<1
Total estimated to date	**100 to 113**	**189 to 225**

The basic calculation that was used to establish the savings from each measure is explained in the following sections of this document.

The total savings from the measures that can be quantitatively estimated at this point are quite close to the target for 2010. Given that the estimates were calculated in a reasonably realistic and achievable manner and that a number of actions could not be quantified, the assumption that the target could be met could be considered reasonable.

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2 OVERALL NATIONAL INDICATIVE TARGET

2.1 CALCULATION OF NATIONAL TARGET

2.1.1 Final consumption

Article 4(3) of Directive 2006/32/EC requires Member States to adopt and aim to achieve an overall national indicative energy savings target of 9 % for the ninth year of application of this Directive, to be reached by way of energy services and other energy efficiency improvement measures.

The target established for Malta is 9% for 2016 and 3% for 2010. Table 1 to Table 3 show the consumption of energy in Malta that falls within the scope of this directive.

Table 1- Final consumption of energy in Malta (tons)

Energy commodity	2001/2	2002/3	2003/4	2004/5	2005/6
Diesel / gas oil	92,870	94,383	94,412	95,533	95,411
Motor spirit	67,999	66,957	66,594	66,793	65,168
Kerosene	11,639	14,185	16,620	5,447	2,025
Thin Fuel Oil	9,222	7,875	7,543	8,355	7,704
Light Heating Oil	3,342	3,129	4,135	10,545	8,721
LPG	16,940	16,992	16,247	17,169	19,978
Propane	253	232	282	176	371
Biodiesel	-	25	337	1,256	1,418

Table 2 – Electricity sales (MWh)

	2001/02	2002/03	2003/04	2004/05	2005/06
Electricity sales	1,612,718	1,712,786	1,721,365	1,794,350	1,757,212

Table 3 - Final consumption of energy in Malta (MWh)

Energy commodity	2001/2	2002/3	2003/4	2004/5	2005/6
Diesel / gas oil	1,119,175	1,137,410	1,137,756	1,151,269	1,149,800
Motor spirit	831,088	818,343	813,914	816,342	796,478
Kerosene	142,011	173,071	202,778	66,462	24,712
Thin Fuel Oil	108,359	92,531	88,630	98,171	90,522
Light Heating Oil	39,269	36,771	48,586	123,900	102,478
LPG	216,461	217,118	207,600	219,387	255,273
Propane	3,239	2,962	3,599	2,251	4,742
Biodiesel	-	273	3,645	13,577	15,326
Electricity sold	1,612,718	1,712,786	1,721,365	1,794,350	1,757,212
Final consumption (MWh)	**4,072,320**	**4,191,265**	**4,227,873**	**4,285,710**	**4,196,542**

Based on this information, the energy savings for the purpose of the directive are shown below:

Average final consumption over 5 year period		4195	GWh
Energy saving target for 2016	9%	378	GWh
Intermediate energy saving target for 2010	3%	126	GWh

2.2 SPECIFIC ASPECTS IN THE CALCULATION OF THE NATIONAL TARGET

2.2.1 Data sources and peculiarities

The data is all obtained from information submitted to the regulator of the energy sector in Malta (the Malta Resources Authority) by the operators licensed to operate in Malta.

The only organisation that carried out retail of fuels and electricity in Malta is Enemalta for all fuels and electricity, apart from Biodiesel. Biodiesel was retailed by one other company in Malta during the period in question.

The source of information for the fuels (other than biodiesel) in Section 2.1 was Enemalta who supplied monthly figures of sales. Biodiesel sales are as reported by the manufacturing firm.

This data was used in preference to Eurostat data since the Eurostat data was not complete for 2005 at the time of writing. Other data sets investigated could not be used due to poor data quality.

One characteristic that needs to be pointed out in this data set is that electricity consumption reporting period was financial years covering 1 October to 30 September, not calendar years. The 5 year period covered in Section 2.1 is therefore 1 October 2001 to 30 September 2006.

Electricity consumption was obtained from the Enemalta audited accounts 2001/02, 2002/03, 2003/04 and 2004/05. The sales of electricity for the year 2005/6 are extracted from the management accounts (as deposited on the table of the House of Representatives) and are still subject to audit. The data for electricity consumption accounts for 40% of the decrease in final consumption. Most of the decrease can, provisionally, be attributed to a substantial increase in the cost of fuel for the year in question.

2.2.2 Sectors covered in the national target

This plan covers all forms of commercially available energy including electricity, liquefied petroleum gas, and any fuel fused for heating and cooling, transport fuels and biomass, but excludes:

- maritime bunker fuels
- aviation bunker fuels

Legal entities that are involved in the category of activities listed in Annex I of Directive 2003/87/EC establishing a scheme for greenhouse gas emission trading within the Community are also excluded from the scope of the directive. Enemalta Corporation operates a combustion installation with a rated thermal input exceeding 20 MW, and therefore falls within the scope of the Emissions Trading Scheme. The energy used by Enemalta for transformation of fuels to electricity and its distribution

is already excluded from the calculations in Section 2.1.1. No other entity falls within the scope of Annex I in Malta.

The consumption of the military sector is not excluded from the scope of this plan.

2.2.3 Conversion factors

The conversion factors for fuels are those in Directive 2006/32/EC as far as possible. Where not available, the conversion factors available in the OECD/IEA publication Energy statistics manual, 2004, were used. Finally, for biodiesel, for which conversion factors are not available in either publication, a conversion ratio of 32.8MJ/litre was used[1].

Table 4 - Conversion factors used

Energy commodity	ton	MWh	Notes on source:
Diesel / gas oil	1	12.051	OECD/ IEA Energy Statistics Manual, 2004
Motor spirit	1	12.222	Directive 2006/32/EC
Kerosene	1	12.201	OECD/ IEA Energy Statistics Manual, 2004
Fuel oil	1	11.111	Directive 2006/32/EC
Thin Fuel Oil	1	11.750	Directive 2006/32/EC (LHO)
Light Heating Oil	1	11.750	Directive 2006/32/EC
LPG	1	12.778	Directive 2006/32/EC
Propane	1	12.778	Directive 2006/32/EC (LPG)
Biodiesel	1	10.809	Malta's report to the Commission in terms of Directive 2003/30/EC

2.2.4 Definition of the boundary between final consumption and the supply (or transformation) sector

Some fossil fuels in Malta are transformed to electricity. The energy required for the production and distribution of electricity is excluded from the scope of this plan and from the calculations of final energy consumption. (Article 2(b) of Directive 2006/32/EC)

Waste cooking oil is transformed to biodiesel. Sales of biodiesel are included as part of final energy consumption. (Article 3(a) of Directive 2006/32/EC)

The generation of electricity from grid connected small PV systems and microwind systems used for the generation of electricity on a small scale are excluded from the calculations of national final energy consumption, in so far as their installation counts towards the target of energy efficiency. (Annex III (g) of Directive 2006/32/EC)

[1] Data for biodiesel was submitted in litres.

2.2.4 Common characteristics of the measures envisaged

In this first action plan, emphasis is made on measures that are expected to start in the short term and have effect up to 2010. It is expected that all measures will be reviewed regularly and updated to take into account the results being achieved, changes in regulatory and legislative structures (particularly those driven at EU levels), and changes and developments in technology. New measures are also expected to be introduced.

The measures identified are in line with the definitions in the directive. Of particular interest are the measures relating to the micro-generation of electricity from renewable energy sources in the domestic sector and combined heat and power applications in industry and the tertiary sector, in line with the directive[2]. Such measures are also promoted by other EU directives. The treatment of the savings arising from the implementation of these measures will be reviewed at the end of the first reporting period.

The a-priori assessment of the energy efficiency savings does not take into account the effects of multiplier effects and free-riders. These calculated savings are to be taken as indicative only, and are generally realistic and achievable.

All of the measures proposed in this national action plan have a national scope.

2 Annex III (Indicative list of examples of eligible energy efficiency improvement measures) of Directive 2006/32/EC

3 SECTORAL ACTIVITIES

3.1 RESIDENTIAL SECTOR

3.1.1 Overview table of measures in the domestic sector

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	**Annual energy savings expected by end of 2010 (GWh)**	**Annual energy savings expected by end of 2016 (GWh)**
Rebates on energy efficient domestic appliances	11 to 21	22 to 50
Promotion of solar water heaters	13 to 14	31 to 37
Promotion of micro-generation of electricity from RES	1	3
Subsidy schemes for insulation for buildings	<<1	<1

A crude bottom up assessment of savings in the sector indicates a savings on electricity consumption in the domestic sector of around 1% of electricity consumption, mainly achieved through the adoption of more energy efficient cooling equipment, and increased uptake of solar water heaters. A better assessment will be made once more information is collected.

3.1.2 Description of individual measures

Title of the measure:	Rebates on energy efficient domestic appliances

Category

Financial instruments

Target group

Domestic, though there will be a multiplier effect on other sectors of market for these appliances.

End-use action targeted

Energy efficient appliances.

Description

In the budget speech for 2007 Government announced a scheme whereby the purchase of energy efficient appliances is incentivised through payment of a rebate on the purchase price of the appliance.

The scheme has been very successful with so far close to 8,000 applications for the rebate being submitted to the Malta Resources Authority in the first six months of operation and about 100 new applications are being received daily. The Authority has also registered 45 importers and 50 other retail outlets. 1,900 different appliances have been registered by dealers with the Authority. The information on the registered dealers and appliances can be accessed on the Authority's website www.mra.org.mt.

Preliminary indications are that a substantial market transformation was achieved.

This scheme came into effect from 1st November 2006 as follows:

Appliances	Category	20% of selling price with a maximum grant of
Dishwashers	A	€58.23
Refrigerators, Freezers or Combinations	A Tropical A+ Subtropical	€116.48 €116.48
	A Subtropical (till 31st March 2007)	€58.23
Washing Machines	A	€58.23
Tumble Dryers	A	€58.23
Air Conditioning Units	A	€58.23

The scheme also requires that available technical documentation to demonstrate the eligibility of the registered appliances for the rebate be submitted and vetted. Appliances that are registered for similar schemes in other EU Member States and/or subject to third party verification have been exempted from the need to be covered by such verification.

Qualitative assessment – impact level of measure

High (effect on market)

Interaction of measures

These schemes are also being promoted by the energy efficiency campaign.

Expected annual savings in 2011 and 2016

	Early action savings	**Measure start year**	**Take-up**		**Savings (kWh/year/unit)**		**2010 savings in MWh**	
Subactivity	**kWh**		**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Refrigerators and freezers	3,000,000	2006	5,000	6,000	300	500	7,500	12,000
Washing machines	960,000	2006	8,000	10,000	50	100	1,760	2,960
Dishwashers	200,000	2006	500	800	200	200	400	520
Tumble dryers	10,000	2006	100	100	100	200	30	50
Air conditioners	400,000	2006	2,000	3,000	200	600	1,600	5,800

The calculations assume that around 50% of applicants to the scheme in the case of washing machines and 20% in the case of refrigerators are free riders. This may be an overestimation and will need to be confirmed using surveys. Furthermore, the savings per appliance per year are generally based on data used for schemes similar in other member states in the EU. Again, more information on consumption in the domestic sector taking into account climate effects will be required. A major difficulty with these calculations is the assumptions that savings from extension of the scheme in the future will remain constant. Improvements in technology and / or changes to legislation (minimum standards) may change the situation significantly.

Status of implementation

Early action / New EEI measure – process of implementation started.

Date of start and end of implementation of measure

The scheme started being implemented in November 2006. The scheme will be revised during 2008.

Title of the measure:	Promotion of solar water heaters

Category

Financial instruments, informative

Target group

Domestic

End-use action targeted

Energy efficient appliances, domestic generation from renewable energy sources.

Description

A rebate on solar water heaters of 20% with a maximum grant of €232.94 is granted by Government. Furthermore, when solar water heaters are installed in new buildings that were not previously supplied by electricity, Enemalta (the distribution system operator in Malta) waives the connection fee (€163.06).This measure will have a multiplier effect.

Visits are organised by the Institute of Energy Technology with the consent of the home owner. A technical inspection is made on the installed solar heating system. A pre-defined technical form is used. Observations made include measuring the azimuth and the inclination of the panels, checking the water storage tank size and solar panel area, to see if sufficient collector area is available to heat the water effectively and checking on lagging, insulation, back-up heating settings. A questionnaire is also carried out to be able to understand the lifestyle of the users and advise on certain measures that could save on hot water usage. Following the visit, an official report is sent to the owner, highlighting the good results as well as those measures that need to be taken to improve the performance of the solar system, with the scope of saving more energy and getting better customer satisfaction.

Qualitative assessment – impact level of measure

High

Interaction of measures

These schemes are also being promoted by the energy efficiency campaign.

Expected annual savings in 2011 and 2016

	Early action savings	Measure start year	Take-up		Savings (kWh/year/unit)		2010 savings in MWh	
Subactivity	**kWh**		**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Solar water heaters	3,520,000	2006	3,000	3500	1,050	1,050	12,970	14,545

Estimates of savings are based on daily savings of 5kWh per day for 210days per year. These need to be confirmed using field data or other models.

The target take up will yield 27,000 units installed, in addition to an estimated 10000 already installed by the end of 2007. Total annual savings will be 13GWh, out of 1720GWh electricity end use. Changes to the housing stock (in terms of impact on availability of roof space) in future may lead to further restrictions on the levels of penetration.

Status of implementation

Early action – adaptations may be implemented

Date of start and end of implementation of measure

The first grant by government on solar water heaters was announced in 2005. The maximum allowed then was €116.48 and take up was rather low. The maximum doubled to €232.94 in 2006, where upon uptake tripled. No date for termination has been established. The scheme will be revised late 2007.

Title of the measure:	Promotion of micro-generation of electricity from RES

Category

Financial instruments

Target group

Domestic

End-use action targeted

Domestic generation of renewable energy sources.

Description

Microwind

Eligible systems are microwind systems that are installed in a residence, through which wind energy is converted into electric energy, which appliance is connected with the national electric grid system.

Eligible applicants may apply for a once-only grant of 25% on the purchase of the wind energy system subject to a maximum grant of €232.94.

PV

Eligible systems are PV systems that are installed in a residence, through which solar energy is converted into electric energy, which appliance is connected with the national electric grid system.

Eligible applicants may apply for a once-only grant of 20% on the purchase price of a photovoltaic system with a minimum installed size of one kilowatt peak, plus or minus five per cent (1kWp+/-5%) and this subject to a maximum grant of €1164.68. Applicants are also eligible to an additional grant of €582.34 for every additional installed kilowatt peak, plus or minus five per cent (1kWp+/-5%), subject to a total maximum input power of 3.7 kilowatt peak (3.7kWp). Fractions of a kilowatt peak installed additionally above the minimum of one kilowatt peak(1kWp) are treated pro rata.

Qualitative assessment – impact level of measure

Low

Interaction of measures

These schemes are also being promoted by the energy efficiency campaign.

Expected annual savings in 2011 and 2016

Expected savings, unless prices of PV systems fall dramatically, are not expected to exceed 7GWh in 2016.

Status of implementation

Early action – adaptations may be implemented

Date of start and end of implementation of measure

Grants started to be given in November 2005. The scheme will be revised substantially during 2008 to increase uptake. No date is established for its termination.

Title of the measure:	Subsidy schemes for insulation in buildings

Category

Financial instruments

Target group

Domestic

End-use action targeted

Building insulation

Description

Government is subsidising roof insulation up to 20% of the value up to a maximum of €232.94.
A review of the scheme and its combination with the promotion of other actions to reduce heating and cooling load will be carried out during 2008.

Qualitative assessment – impact level of measure

Low

Interaction of measures

These schemes are also being promoted by the energy efficiency campaign.

Expected annual savings in 2011 and 2016

Minimal savings

Status of implementation

Early action – adaptations may be implemented

Date of start and end of implementation of measure

Grants started to be given in November 2005. No date is yet established for its termination.

3.2 TERTIARY SECTOR

3.2.1 Overview table of measures in the tertiary sector

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	Annual energy savings expected by end of 2010 (GWh)	Annual energy savings expected by end of 2016 (GWh)
Action in the public sector	7	34
Energy efficiency promotion in the tourism industry	Not available	Not available
Improvements in street lighting	Not available	Not available
Energy efficiency in the commercial sector	5	27

The tertiary sector is estimated by Enemalta to account for around 30% of electricity demand in the country.

3.2.2 Description of individual measures

Title of the measure:	Energy efficiency action in the public sector

Category

Voluntary measure

Target group

Government administration.

End-use action targeted

Green leaders
Audits in government departments
Green public procurement
New school/hospital construction policy
Energy saving measures in Housing Authority schemes
Implementation of RES in all Government ministries

Description

Government has started the process of promoting energy efficiency within its departments by appointing Green Leaders, one in each Ministry, in an initiative aimed towards meeting government's corporate responsibilities with regard to the environment.

The Green Leaders have a duty to create environmental awareness within their Ministries and act as catalysts for action to promote environmentally – friendly practices within their spheres. The Green Leaders are coordinated by the Government Environmental Corporate Responsibility Office set up for the purpose within the Office of the Prime Minister. A major activity for each green leader is to commission an energy audit of at least one building belonging to their Ministry. Training courses for green leaders have been held.

In terms of procurement, Government has also established a green public procurement policy to promote environmental elements when buying products, services or works and published a handbook on environmental public procurement that also takes into account energy usage. (www.greennetwork.gov.mt)

Hospitals and education account for 85% of all electricity used by Government. Specific measures will be identified and proposed for these sectors during 2006 to limit growth and use of energy by these sectors.
The Malta Resources Authority will be opening up discussions with the Ministry for Education with a view to establishing benchmarks for primary and secondary schools,

possibly establishing energy plans for each school and developing audits for other types of educational institutions. The possibility of establishing guidelines for new schools will also be discussed with the Foundation for Tomorrow's Schools. For hospitals, certain consumption areas – including HVAC, lighting, catering and laundry – may be eligible for an energy audit, and this will be discussed with the medical authorities.

The Housing Authority has taken a pro-active approach to energy efficiency in its social housing projects. The project at tal-Ftieh, Birkirkara was the Authority's pilot project in this field, wherein a number of energy saving features were introduced fro the first time. This was followed by the 80-apartment project in Site A, Pembroke, where solar water heaters are being installed for all units. Besides enhancing the thermal efficiency of the housing units it provides, the Housing Authority aims to instil in its beneficiaries a consciousness of the national need to save energy.
Following this pilot projects, the Housing Authority decided that all housing projects for which the tenders were issued as from January 2005 would include some or all of the following energy saving features:

1. Double glazing in apertures;
2. Windows and door louvers;
3. Roof insulation;
4. Storm water cistern;
5. Solar water heaters.

The Housing Authority will also be continuously monitoring the advancement of technologies and products through its consultants to further consider the future implementation of other energy saving and economically feasible measures such as control of size of fenestration, provision of shading devices.

Government will also be taking action to improve energy efficiency in ICT systems and other office systems. Practical measures that are being studied are:

- review of current hardware purchasing standards to identify what energy efficiency requirements can be incorporated in a cost effective manner;
- review of any other software and hardware systems to identify situations where energy efficiency can be incorporated within the systems (e.g. group policy)
- review of user procedures and policies to incorporate guidelines for good energy efficient practices by users (promotion of behaviour change)

Finally, all Government Ministries will be fitted with RES PV panels as a demo project. A budget of €23,000 per Ministry is allocated for this purpose.

Qualitative assessment – impact level of measure

Medium.

Interaction of measures

Not applicable

Expected annual savings in 2011 and 2016

An estimate of savings from the support scheme was established at 4.6million kWh on the basis of cost effectiveness in a maximum of three years.

Status of implementation

Early action / New EEI measure, process of implementation started.

Date of start and end of implementation of measure

Date of start of implementation of energy efficiency funding: 2009
End – 2013 for structural funding measures. The measure will be reviewed at that time. It is estimated for the purposes of this plan that the scheme will be replaced by another scheme of equivalent effect at that time.

Title of the measure:	Energy efficiency promotion in the tourism industry

Category

Financial

Target group

Tourism and culture operators.

End-use action targeted

Reduction in energy (and water) demand

Description

The proposed scheme for tourism and culture enterprises, which shall run between 2008 and 2013 builds on the Grant Scheme for Tourism Enterprises which ran in 2004-2006. It aims at encouraging innovation and economic development of undertakings in the tourism and cultural sectors. This scheme envisages directing aid to all undertakings that apply for projects which will generate economic activity, mainly SMEs, and large enterprises. The applicants will have the possibility of submitting projects under a number of action lines which will affect a number of horizontal issues, resulting mostly from the Lisbon Agenda. Through investment in different eligible project intervention areas, the project has the objective of achieving increased competitiveness in the tourism and cultural sectors. This will in turn help achieve EU policy targets and also raise the national standard of living.

A key priority of the Scheme is to improve and support the sustainability of the tourism industry as a whole. Projects must therefore actively contribute to initiatives enhancing the environmental performance of tourism-related operations, by reducing the consumption of resources or by otherwise improve the efficiency of such consumption. This should also have a beneficial effect on the operational sustainability of the operation. Activities qualifying as eco-friendly involve both the purchase of equipment which would lead to further environmental-friendly measures as well as the creation of processes so as to improve operation efficiency as well as, where applicable, to further compliment the equipment bought.

Qualitative assessment – impact level of measure

Medium

Interaction of measures

None

Expected annual savings in 2011 and 2016

Not available

Status of implementation

Early action / New measure

Date of start and end of implementation of measure

Proposal: 2008 to 2013

Title of the measure:	Improvements in street lighting

Category

Voluntary measure

Target group

Government administration.

End-use action targeted

Improvement in street lighting efficiency. Covers street lighting, lighting of monuments; Appropriate intensity levels (changes with time, season and location)

Description

Street lighting is somewhat perceived as inefficient, despite a systematic programme by Enemalta to replace all bulbs with high efficiency high pressure sodium lighting. Further work is required to develop guidelines and standards, and possibly including legislation, that could be adopted by both Enemalta and local councils. No details of costs and potential energy savings are available at the time of writing. The MRA will establish the situation re street (and monument) lighting and identify guidelines in use, responsibilities and roles, and way forward.

The Malta Transport Authority is currently investigating methods of reducing energy demand in other areas such as traffic lights.

Qualitative assessment – impact level of measure

Medium.

Interaction of measures

Not applicable

Expected annual savings in 2011 and 2016

Not available

Status of implementation

New EEI measure, process of implementation started.

Date of start and end of implementation of measure

Start: 2008
End: not established

Title of the measure:	Energy efficiency in the commercial sector

Category

Informative / financial

Target group

Commercial SMEs.

End-use action targeted

Reduction in energy demand. Covers power factor improvement, industrial cooling, space heating and cooling, CHP, display lighting, office equipment including pc's, standby and other issues identified during audits.

Description

A variety of means will be employed to inform SMEs on energy efficiency including workshops, seminars, and other targeted campaigns. Subsidised energy audits will be provided.

Support mechanisms will be developed and funded under the energy efficiency fund.

Qualitative assessment – impact level of measure

Not known.

Interaction of measures

None

Expected annual savings in 2011 and 2016

An estimate of savings from the support scheme was established at 3.7million kWh on the basis of cost effectiveness in a maximum of three years.

Status of implementation

New measure

Date of start and end of implementation of measure

Date of start: 2009
End – 2013 for structural funding measures. The measure will be reviewed at that time. It is estimated for the purposes of this plan that the scheme will be replaced by another scheme of equivalent effect at that time.

3.3 INDUSTRIAL SECTOR

3.3.1 Overview table of measures in the industrial sector

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	Annual energy savings expected by end of 2010 (GWh)	Annual energy savings expected by end of 2016 (GWh)
Targets for energy efficiency in government owned industry		
WSC investments in energy efficiency	42 to 43	42 to 43
Investments in energy efficiency at Malta shipyards	1	1
Support schemes for industry and SME's	18	92

Measures in the industrial sector – particularly the water sector – are expected to contribute a significant portion of measurable bottom-up energy savings over the period in question.

3.3.2 *Description of individual measures*

Title of the measure:	Energy efficiency in Government owned industry

Category

Financial / voluntary – institutional organisations

Target group

Government owned industry including Water Services Corporation, Malta Shipyards, Gozo Channel, Airmalta, etc

End-use action targeted

Energy audits, investments

Description

Publicly owned industries have long been scrutinised in Parliament during their annual budget review, with investments in energy efficiency being given importance, notably at the Water Services Corporation.

Since 2007, the Ministry responsible for Investments has published a Corporate Environmental Policy which sets targets for energy efficiency in Government owned industry falling under its responsibility. These include the major energy consumers in the country, and particularly the Water Services Corporation which consumes nearly 6% of the national electricity demand.

Substantial investment in energy efficiency is envisaged, or have just been undertaken. These include the following entities.

WSC

Potable water in Malta is provided through two main sources of supply namely, groundwater extraction and seawater desalination. Since the quality of groundwater is very difficult to control , EU and local health standards can only be met by blending groundwater with the high quality water produced from the Reverse Osmosis plants. The current annual demand of potable water is 34 million m^3 per year, of which approximately 60% is produced form the three main Reverse Osmosis plants at Pembroke, Lapsi and Cirkewwa.

Malta is obliged to respect the parametric levels set out by the EU Drinking Water Directive (Dir 98/83/EC) . In its drive to improve the water quality, the high level of groundwater extraction could not be realistically sustained for a number of reasons. Such extraction will negatively effect the long-term sustainability of the water table and will definitely jeopardize Malta's chances of achieving its commitments as stipulated in the water quality acquis. The only viable alternative to improve water

quality is, therefore, to invest heavily in seawater desalination to provide superior water quality with a higher blending potential.

Since 2000, the Water Services Corporation has utilised the experience gained in SWRO desalination plants to optimize plant operation and ensure production of potable water at minimum resource cost. A number of initiatives were taken to accomplish these targets. These include reduction of energy utilised for production through the installation of highly efficient equipment; regular energy audits to ensure optimal operational efficiency at all times and careful membrane management.

The WSC is continuing with its programme of acquiring and installing state-of–the-art equipment in its Reverse Osmosis plants to:

- Increase the production capacity of the existing RO plants
- Improve the quality of desalinated water
- Decrease the energy utilised to desalinate each cubic meter of sea water

The installation of this equipment will increase the production levels of better quality water distributed across the Maltese Islands. This will also assist the Water Services Corporation, not only in reducing production costs but also to keep in line with increasing public awareness and consumer pressures.

Since 1998, energy audits are regularly carried out in order to ensure that the plant operates at optimal operating efficiencies at all times. As a result a number of initiatives were taken in order to reduce avoidable energy use. A number of variable speed drives were installed to avoid valve throttling thus ensuring optimal operation efficiency even when the operation conditions (due to ageing etc.) change. Also when deemed economically feasible pump/motor sets were replaced to ensure that the duty pumps of such pumps match the plant characteristics.

Apart from these measures the Water Services Corporation also scans the market for any new technology that may be used to meet its environmental obligations and/or deliver an economic advantage.

Early action has included:

- Lapsi one system of 3,800 m^3/day equipped with Pressure Exchanger technology – November 2002
- Pembroke (replacement of energy recovery system with Pelton turbine)
    - September 2000 - One system of 4,000 m^3/day
    - March 2001 - One system of 4,000 m^3/day
    - January 2002 - One system of 4,000 m^3/day
    - March 2002 - Two systems of 4,000 m^3/day s
    - May 2002 – One system of 4,000 m^3/day

With the measures mentioned above the specific power over the last 8 years has been reduced from 7.2kwhr/m^3 to 5.9 kwhr/m^3. This implies a saving of 1.3kwhr/m^3 on energy costs for the 2006 production of 17.3million m^3.

In the distribution of water, it is planned to reduce the specific energy consumption to transfer water between reservoirs. Rather than pump water at an excessive flow rate, water is transferred over a 24 hour period. This reduces frictional head loss thus reducing the energy requirement. The plan comprises keeping the level of the reservoir constant over the 24 hour period rather than on an instantaneous manner. This reduced head loss would result in less energy being spent in carrying out the same task.

Malta Shipyards

Action implemented aims at reducing the primary use of fuel in the process thereby saving in energy necessary to be generated for the process to be completed and at the same time reducing the emissions of greenhouse gases. The installation receives mixtures of oils of mineral origin and water from vessels in the shore tanks. After primary (gravity) separation, the oil-water mixture is extensively heated in other tanks where the viscosity of the oil is altered thereby facilitating in the separation of the oil from the water. A clean oil-water interface is achieved which could be measured and located. However in the process the water reaches boiling point and many low boiling petroleum fractions would boil off to the atmosphere. These VOCs could cause a nuisance because of odours and moreover part of the oil phase would be lost besides the excessive heat input that would have to be used for the completion of the process. A condenser (catchpot) has now been installed which efficiently condenses all the low boiling fractions and prevents them from going to the atmosphere. Moreover there has been a reduction of the heat input into the process such that the heat of the tank reaches just below the temperature when these fractions begin to boil. The same separation efficiency has been achieved albeit with a longer process period. This has saved on the quantity of heavy fuel oil used to complete the process.

Qualitative assessment – impact level of measure

High.

Interaction of measures

None

Expected annual savings in 2011 and 2016

Saving achieved could be significant. For the Water Services Corporation alone, 2010 savings are estimated to reach 26GWh for early actions and 50GWh for actions undertaken during and after 2008.

Savings from the early actions listed above yield 7.8million kWh assuming a 90% online factor. As for future energy efficiency action envisaged for the RO plants alone, the following table shows scenarios used for efficiency calculations

Indicators	Current Situation	After Project Completion
Nominal Capacity of RO Plants	70,000 m^3/day	97,000 m^3/day
Chloride Level	250 mg/l	150 mg/l
Specific Power (excluding product pumping)	5.5 kWhr/m^3	4.4 kWhr/m^3

The overall annual savings are subject to the demand at that time. Projections are made assuming production of 17.4million m^3/year.

Energy savings from the Malta Shipyards measures are a reduction in fuel consumption for the process by 25 percent from 8000 litres to 6000 litres per week.

Status of implementation

Early action with major adaptations

Date of start and end of implementation of measure

Start – 2000
End – 2009 for measures listed above.

Title of the measure:	Support schemes for industry and SME's

Category

Informative / financial

Target group

Industry and SMEs.

End-use action targeted

Energy audits, investments. Covers power factor improvement, CHP, high efficiency motors, space heating and cooling, office equipment including pc's, standby losses, other issues identified during audits.

Description

Through a public call, Malta Enterprise has appointed a list of approved advisors in various areas related to industry and SMEs. These advisors would assist companies in the area in question (Energy Optimisation is included as one of these areas and can include the carrying out of an energy audit). Malta Enterprise pays fully for the first 10 hours of service and 65% of the next 40 hours. An advisor which experience in energy optimisation is sent onto the client's site to carry out an energy audit and prepare a report in what measures the client should take to improve its energy performance. It is then up to the client whether to take up these measures or not, however Malta Enterprise will provide guidance as to whether any other of its schemes may provide assistance for the implementation of the measure proposed.

This measure will be supplemented and/or replaced with another similar measure after 2008.

This scheme will be supplemented by a scheme run by MRA aimed at stimulating Malta-based SMEs including micro-enterprises to achieve competitive advantage by providing financial assistance for adopting environmentally sensitive technologies, operating systems and processes. This support scheme will encourage Maltese enterprises to embrace high environmental quality as a key driving force, rather than regard it as a barrier to competitiveness. It will consist of two interlinked components: energy efficiency audits and an investment scheme. The audits will provide a basis for subsequent investment in environmental improvement and create an increased environmental awareness amongst target enterprise. Grants provided through the scheme will strive to achieve reduction in consumption of resources of energy among other environmental objectives.

Qualitative assessment – impact level of measure

High.

Interaction of measures

The IMT Advisory scheme is at a pilot stage and will be integrated into the revised Malta Enterprise Act together with a number of other schemes which are being prepared. The scheme has proven quite popular and is likely to be renewed. In fact a fresh public call of advisors is underway.

Expected annual savings in 2011 and 2016

It is not possible to determine this as it depends on the take-up of the audit scheme and on the particular requirements of each client. A clearer picture can be made once a significant number of reports have been submitted. Savings will also depend on whether client actually implements the actions proposed or not.

An estimate of savings from the support scheme was established at 12.3million kWh on the basis of cost effectiveness in a maximum of three years. Some funds from this scheme may be directed towards the tourism scheme

Status of implementation

Early action with adaptations/ new measure

Date of start and end of implementation of measure

Start – October 2006
End – 2013 for structural funding measures. The measure will be reviewed at that time. It is estimated for the purposes of this plan that the scheme will be replaced by another scheme of equivalent effect at that time.

3.4 TRANSPORT SECTOR

3.4.1 Overview table of measures in the transport sector

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	Annual energy savings expected by end of 2010 (GWh)	Annual energy savings expected by end of 2016 (GWh)
Promotion of modal shifts	Not available	Not available
Provision of advisory services on energy efficient driving	Not available	Not available
Provision of energy efficiency services at petrol stations	Not available	Not available
Promotion of e-work or tele-working	<1	1 to 3.6
Green travel plans for the public sector	Not available	Not available
Promotion of electric vehicles	<<1	<1

It is difficult to assess the total savings in the sector. Diesel and petrol, in Malta, account for nearly half (46-48%) of the energy consumption in Malta. Both fuels are extensively used for road transport, though diesel has some use in industry and possibly hotels for heating. The reduction of use of energy for road transport is particularly important.

3.4.2 Description of individual measures

Title of the measure:	Promotion of modal shift

Category

Regulatory, informative and financial combination

Target group

General public and industry/ commercial users

End-use action targeted

Development of cycling lanes and cycle racks
Improvement of public transport efficiency
Restrictions on access to Valletta
Free entry to Valletta of motor cycles and electric cars

Description

The white paper on transport being implemented by Government envisages a number of measures that lead to improved energy efficiency in transport.

In an effort to increase the usage of the public transport service, a number of buses have been replaced and improvements carried out to the public transport infrastructure and in providing reliable passenger information, while certain bus routes have been restructured and new ones introduced. Concessionary fares for elderly and students were introduced to improve accessibility for the transport disadvantaged.

The white paper envisages the following measures that will have an impact on energy efficiency:

- Re-organise the operations and upgrade the infrastructure of the public transport system;
- Restraining non-essential car use by parking management to restrict the availability of free parking, promoting employment schemes to encourage commuters to use public or shared transport, introducing car access restrictions and integrating land use and transport planning;
- Increase the accessibility for pedestrians, cyclists, through the use of safer infrastructure;
- Develop guidelines for good practices in urban transport planning;
- Commission feasibility studies on alternative mass transit systems for Malta.

Qualitative assessment – impact level of measure

Low

Interaction of measures

This measure is linked to the information campaign being implemented to advise consumers about energy efficiency in general.

Expected annual savings in 2011 and 2016

Not available

Status of implementation

Early action – in progress of implementation and major adaptations envisaged

Date of start and end of implementation of measure

On-going

Title of the measure:	Provision of advisory services on energy efficient driving

Category

Informative

Target group

General public and industry/ commercial users

End-use action targeted

Provision of advisory services on energy saving measures.
Provision of information to the public on eco-driving at driving schools, vehicle repairers, car retailers and vehicle roadworthiness test sites.

Description

This action is intended to change attitudes and influence behaviour in transport use. It will be combined with the advisory services that will be provided to the general public on energy efficiency measures in general, and will take advantage of existing energy efficiency directives (For example: labelling of vehicles, labelling of tyres). Consultation with all stakeholders will be required.

Qualitative assessment – impact level of measure

Low

Interaction of measures

This measure is linked to the information campaign being implemented to advise consumers about energy efficiency in general.

Expected annual savings in 2011 and 2016

No information

Status of implementation

New EEI measure – under consideration, process of implementation not started yet

Date of start and end of implementation of measure

Date of start – 2009; Date of end – not established

Title of the measure:	Provision of energy efficiency services at petrol stations

Category

Voluntary agreement

Target group

Providers of energy services

End-use action targeted

Provision of services to reduce fuel consumption at service providers

Description

This measure will seek to investigate whether petrol stations, which currently qualify as small retail energy sales companies, can provide cost effective energy efficiency services – such as compressed air, information and/or engine checks. Consultation with all stakeholders will be required.

Qualitative assessment – impact level of measure

Low

Interaction of measures

This measure is linked to the information campaign being implemented to advise consumers about energy efficiency in general.

Expected annual savings in 2011 and 2016

Not available

Status of implementation

New EEI measure – under consideration, process of implementation not started yet

Date of start and end of implementation of measure

Date of start – 2009; Date of end – not established

Title of the measure:	Promotion of e-working or tele-working

Category

Voluntary agreement

Target group

General public / workers

End-use action targeted

Reduction in energy consumption for daily transport to/from work.

Description

Guidelines for public employees are in the final stages of drafting. Several entities are trying out this new method on a trial basis.

Qualitative assessment – impact level of measure

Medium

Interaction of measures

This measure is linked to other transport measures.

Expected annual savings in 2011 and 2016

This measure could potentially have a significant impact. If 100 employees per year take up the scheme for one day a week resulting in fuel savings of 100lt/year, savings for 2010 would be 180MWh. Maximum savings based on 200 employees saving 200lt/year.

Status of implementation

New EEI measure – under consideration, process of implementation not started yet

Date of start and end of implementation of measure

Date of start – 2009; Date of end – not established

Title of the measure:	Green travel plans for the public sector

Category

Voluntary agreement

Target group

Public sector workers

End-use action targeted

Reduction in energy consumption for daily transport to/from work.

Description

The aim behind having Green Travel Plans for government employees and large employers in the Valletta/Floriana area is to achieve three main objectives. These objectives include:

- Reductions in car usage (particularly single occupancy journeys) and increased use of alternative modes of transport, including public transport, walking and cycling;
- Reduce traffic speeds and improve road safety and personal security particularly for pedestrians and cyclists; and
- Provide more environmentally friendly modes of travel, particularly to enhance a healthier living environment.

Qualitative assessment – impact level of measure

Medium

Interaction of measures

This measure is linked to other transport measures, particularly those related to encouraging modal shift.

Expected annual savings in 2011 and 2016

Not available

Status of implementation

New EEI measure – under consideration, process of implementation not started yet

Date of start and end of implementation of measure

Date of start – 2008; Date of end – not established

Title of the measure:	Promotion of electric and hybrid vehicles

Category

Financial

Target group

General public.

End-use action targeted

Increased uptake of more efficient vehicles

Description

Promotion of electric vehicles includes:
- a grant of €1164.68 on the purchase of a new electric vehicle;
- removal of registration fees on electric cars and electric motor bikes;
- reduction of registration tax on hybrid cars to 16.5% (from 50.5% to 75% for similar cars);
- elimination of road licence for low powered two and three wheeled scooters;
- exemption from payment of 'congestion' fees for entry into Valletta for electric cars.

Qualitative assessment – impact level of measure

Low.

Interaction of measures

Not applicable

Expected annual savings in 2011 and 2016

Take up has so far been very poor despite a subsidy of €1164.

Status of implementation

New EEI measure, process of implementation started.

Date of start and end of implementation of measure

Date of start: 2005
Date of end not established.

4 HORIZONTAL AND CROSS-SECTORAL MEASURES

4.1 OVERVIEW TABLE OF MEASURES

Energy efficiency improvement programmes, energy services, and other measures to improve energy efficiency planned for achieving the target	Annual energy savings expected by end of 2010 (GWh)	Annual energy savings expected by end of 2016 (GWh)
Review of administrative arrangements	Not applicable	Not applicable
Publicity and information campaigns	Not established	Not established
Provision of advisory services	Not established	Not established
Creation of an energy fund	Not applicable	Not applicable
Improvement in buildings efficiency		
Intelligent metering systems		
Promotion of CHP for large industry and tourist complexes		
Participation in research in energy saving measures	Not applicable	Not applicable

It is roughly estimated that there will be between 5 to 10% savings on energy consumption for heating and cooling for buildings. The methodology for this assessment is not fully accepted and still needs to be developed.

4.2 DESCRIPTION OF INDIVIDUAL MEASURES

Title of the measure:	Revision of administrative arrangements

Category

Regulation

Target group

Government administration.

End-use action targeted

Clarification of roles of entities involved in energy efficiency
Ensuring the continuous development, refinement and implementation of energy efficiency measures and the collection of data and knowledge to support these actions.

Description

This measure will see the transposition of the energy services directives, and the revision of Malta Resources Authority Act to ensure that the duties of the Authority include the promotion of energy efficiency and the revision of the Enemalta Act to ensure that the Corporation is authorised to provide energy services.

In practice, the objectives of the Authority will include the following:

- To put energy-use efficiency high on the national agenda
- To ensure maximum stakeholder participation in the national effort to achieve increased energy-use efficiency
- To achieve economic gains through wise use of energy and avoidance of waste
- To fulfil international obligations, legal and moral, including climate change mitigation.
- To determine the potential and set quantified targets for energy-use efficiency, where possible, including the setting of indicators.
- To establish a monitoring program whereby progress is measured and any changes or refinement needed are identified
- To serve as the basis for a deeper understanding of energy consumption habits
- To identify gaps in the knowledge of the energy-use scenario and to provide a vehicle that progressively leads to the structured build-up of such knowledge.

The objectives defined above recognize that:

- Any action undertaken needs to be knowledge-based and practical.
- Stakeholder consultation at all appropriate stages is needed so as to ensure that the best-available knowledge is utilized and that stakeholders own the final plan and strive to achieve its targets.
- Energy consumption patterns and habits are dynamic and change with time, so the plan must be geared to identify and be responsive to these changes, possibly proactive
- Energy-efficiency chasing is to be a continuous activity, and is to become more refined as knowledge is increased

Methodology

The objectives will be pursued through a structured approach based on the following methodology.

1. Continue to monitor quantitatively how energy, imported into Malta as fossil fuel, is transformed or otherwise made available to consumers in the required convenient forms and identify the uses to which this energy is put;
2. Keep under review the potential for increased cost-effective energy efficiency and establish targets and timeframes together with the resources required, priority in allocating resources, and the involved stakeholders;
3. Set stakeholder-specific plans and programs to achieve this energy efficiency with the participation of stakeholders especially those with responsibility to achieve it;
4. Monitor and review the plan on a three year basis to refine and update as a deeper understanding develops.

Qualitative assessment – impact level of measure

Medium – indirect effect.

Interaction of measures

Not applicable

Expected annual savings in 2011 and 2016

Not applicable

Status of implementation

New EEI measure, process of implementation started.

Date of start and end of implementation of measure

Start: 2007
End: none envisaged

Title of the measure:	Information campaigns

Category

Informative measures

Target group

Domestic sector. This will have a spill-over effect to other sectors, particularly SME's.

End-use action targeted

National information campaign
Information conservation tips by Enemalta
Informative activities - World energy saving day, Car free day, Mobility week
Labelling enforcement for appliances
RESE demo projects by Enemalta
Integration of energy efficiency in school curriculum
Proġett Eco-skola – a project to promote environmental awareness in schools
Proġett dawl – assistance to families needing social assistance to utilise energy in the best possible way.

Description

Activities included as part of this measure are:

- National information campaign targeting the domestic customer, school children and other non-domestic sectors.
- Information on energy savings by the electricity supplier. Information on current energy consumption with previous energy consumption when meter is read.
- Informative activities
- Assistance to specific energy-poor households

A national educational campaign is currently being carried out to increase the level of the general public and consumers' awareness on sustainable energy use. The aims of this campaign are:

- to educate consumers through dissemination of information and knowledge :
  - (a) on Malta's dependency of oil;
  - (b) associated measures that may be implemented to reduce this dependency on oil including energy efficiency measures, energy conservation measures and integration of renewable energy sources;
  - (c) benefits of sustainable energy use to the environment and society as a whole;

- to increase public participation and change consumers' behaviour towards more sustainable energy use.

The educational campaign will address the following key issues:

- Energy efficiency and conservation of electricity;
- Micro-generation through renewable energy sources and promotion of solar thermal systems;
- Energy efficiency in transport;
- Energy performance in buildings.

The project is divided in 3 phases with the target audiences in Phases 1 and 2 being domestic consumers, school children and environmental NGOs and opinion leaders. The specific objectives of the Phases of the campaign are to:

- raise public awareness on energy efficiency, energy conservation and integration of renewable energy resources in Malta;
- educate consumers on measures and best practices for sustainable energy use;
- educate school children on sustainable energy use,
- disseminate information on Government's policies, measures and support mechanisms to assist consumers in energy efficiency, energy conservation and use of renewable energy sources;
- ensure that consumers become more aware of their energy consumption and understand the benefits associated with energy efficiency and conservation and contribution of micro generation from RES (wind and solar);
- change consumers behaviour towards energy saving and sustainable energy use.

Phase 3 of the campaign seeks to target professional bodies and associations, government departments and entities, importers and industry associations and organisations and other heavy consumers. The specific objectives in this phase are to:

- raise target specific groups awareness on energy efficiency, energy conservation and the integration of renewable energy resources in Malta;
- educate heavy consumers on measures and best practices for sustainable energy use;
- disseminate information on Government's policies, measures and support mechanisms to assist heavy consumers in energy efficiency, energy conservation and use of renewable energy sources;
- ensure heavy consumers are aware of their energy consumption and understand the benefits associated with energy efficiency and conservation and contribution of micro generation from RES (wind and solar).

Qualitative assessment – impact level of measure

Medium

Interaction of measures

There is a substantial interaction with the information campaign on sustainable energy use, and with the rebate schemes that are in place to encourage investment in energy efficient appliances, thermal insulation of roofs, solar water heaters and micro RES-E generation.

Expected annual savings in 2011 and 2016

Not available.

Status of implementation

Early action that is being modified.

Date of start and end of implementation of measure

Start: January 2007 to January 2008. Some actions such as the energy conservation tips by Enemalta and information on bills started earlier.
End: none envisaged

Title of the measure:	Creation of an energy efficiency fund

Category

Financial

Target group

All sectors.

End-use action targeted

Support measure

Description

Government will create an energy efficiency fund that will provide support for energy efficiency activities. Apart from national funding, €15million from structural funds will be allocated to energy efficiency and €10 million for renewable sources of energy.

Qualitative assessment – impact level of measure

High.

Interaction of measures

This measure will support a number of other measures that provide financial incentives

Expected annual savings in 2011 and 2016

Not applicable

Status of implementation

New EEI measure, process of implementation started.

Date of start and end of implementation of measure

Start: 2008
End: none envisaged

Title of the measure:	Provision of advisory services

Category

Information

Target group

All sectors.

End-use action targeted

Support measure

Description

Provision of advisory services to consumers in the form of

- help line services
- information available on website
- presentations and discussions during radio shows
- discussions in local councils

Qualitative assessment – impact level of measure

High.

Interaction of measures

This measure will support a number of other measures

Expected annual savings in 2011 and 2016

Not applicable

Status of implementation

New EEI measure, process of implementation started.

Date of start and end of implementation of measure

Start: 2008
End: none envisaged

Title of the measure:	Improvement in buildings efficiency

Title of sub-measure: Publication of Technical Guidance Document on Minimum Requirements on the Energy Performance of Buildings Regulations 2006.

Category

Informative measures

Target groups

The target groups are:

- Architects, Services Engineers in public or private practice ;
- Building's services managers
- Building Contractors, estate agents and the general public

End-use action targeted

New building regulations to minimise energy consumption in newly built buildings and others that undergo major renovations.

Description

The Document gives prescriptive requirements for;

- the thermal values of the building fabric, limitations on areas of glazing in connection with loss of heat or coolness, as well as solar gain
- controls and insulation of heating and cooling systems
- controls of artificial lighting
- conservation and re-use of rainwater

Qualitative assessment – impact level of measure

Measure provides a medium impact level.

Interaction of measures

This measure is part of the regulatory requirements imposed by the transposition of Directive 2002/91/EC on the Energy Performance of Buildings and will also supplement the MRA's campaign for increased energy efficiency awareness.

Historical data

Due to Malta's temperate climate, only a limited number of buildings have been equipped with whole building systems for heating or cooling. This state of affairs did not put particular pressures on the authorities to issue national regulations that specifically target the control of the building envelop viz a viz energy use in buildings. The evolving changes in Maltese lifestyles coupled with a continuous improvement in the standard of living are today resulting in the changing of traditional habits of not providing central heating and cooling systems in buildings. The increase in the installation of air conditioning units even in residential dwellings was also of concern in the need to issue regulations on energy performance of buildings.

Expected annual savings in 2011 and 2016

Not yet accurately calculated. It is roughly estimated that there will be between 5 to 10% savings over energy consumption levels that would have been used had measure not been introduced.

Status of implementation

The Document was issued in October 2006

Date of start and end of implementation of measure

Start: 2006
End: none envisaged

Title of sub-measure: Energy Management Plans for Major Projects

Category

Regulation

Target group

Residential and Commercial Sector - Energy Efficiency in Buildings

End-use action targeted

Consideration of energy efficiency in the design and operation of large residential and commercial projects.
Potential for implementation of building management systems (commercial buildings) and alternative energy and water technologies (e.g. solar water heating, solar PV, waste water treatment for reuse).

Description

Residential and commercial projects of a certain scale are required to submit energy and water management plans as part of the application procedure for a development planning permit.
Terms of reference for the plan include:

- a description of the architectural aspects (design and choice of construction materials) and building services and their role in maximising the energy efficiency of the development;
- the identification and quantitative assessment of energy and water requirements of the project by process;
- the identification of possible alternative ways in which energy and water requirements can be met (including energy efficiency considerations, renewable technologies for decentralised energy supply systems, combined heat and power, waste water treatment, and the collection of rainwater);
- recommendations on the most appropriate energy and water management options for the project.

The aim of the measure is to ensure that energy and water efficiency is taken into consideration at the start of, and throughout, the design process, in particular for large projects where the developer is not the final end user and therefore does not have a direct interest in reducing the energy demand of the operational development (unlike industrial developments). Furthermore, such projects have the potential to implement alternative systems that are not economically or technically feasible on a smaller scale.
It is expected that these projects shall go beyond the minimum requirements required by law and be partly self-sufficient. A requirement for offsetting of a percentage of their energy demand through investment in renewables, on or off-site, may also be imposed if the measures voluntarily undertaken by the developers are not considered to be sufficient.

The measure has initially been imposed on major projects within scope of the national EIA regulations and selected major projects for which environmental impacts are assessed in the course of the planning process. Work is ongoing to assess the potential for extending the scope of the measure and implementing standard thresholds that will identify projects that are significant (in terms of energy use) at the start of the planning process and independently of environmental legislative requirements.

Qualitative assessment – impact level of measure

Medium – The individual demand of these projects is relatively small on a national scale (estimated at approx. 0.5% of 2005 demand for each project), however the cumulative effect of a number of these projects can be significant. The measure will mitigate the energy demand of large projects, and was considered as the most appropriate way forward under MEPA's legislative remit and the level of resources currently available.
It is also expected that this measure will highlight the importance of energy efficiency and assist the learning curve of architectural and engineering firms with regard to building-integrated alternative systems.

Interaction of measures

The measure has interlinkages with L.N. 238/2006 that partly transposes Dir. 2002/91/EC on the energy performance in buildings. However, the scope of the management plans requested by MEPA differs from the requirements of this legislation. The energy management plans consider general design principles and must ensure that the feasibility of alternative systems has been assessed in the design process. Furthermore, it is expected that these projects shall go beyond the minimum building requirements imposed by L.N.238/2006.
It was considered timely to implement this measure now, given the number of large projects in the pipeline and the time lag necessary until the energy certification of buildings is implemented and becomes a driving force at design stage.

Historical data

Energy issues were first included in the EIA Terms of Reference in 2001 when it was felt that some major development proposals, because of their size, nature or location, could have significant effects on energy resources. The inclusion of related ToRs varied according to the nature of the project and focused mainly on lighting issues and energy saving measures.
The requirements were expanded in 2006 in view of the number of major projects in the pipeline and the need to rein in the energy demand of the residential and commercial sectors. Hence, the requirement to plan for and include energy and water efficiency measures in a holistic manner at design stage started to be emphasised during the EIA process, on a project by project basis, and terms of reference for detailed energy and water management plans were drawn up for inclusion as permit conditions and submission with the full application.

Expected annual savings in 2011 and 2016

Quantitative savings are not yet available given that the measure is still at the start of its implementation. Furthermore, savings shall be project specific and dependant on the measures proposed (and undertaken) by the developers, and those eventually imposed as permit conditions in the development permit.

Status of implementation

In progress.

Date of start and end of implementation of measure

Start of implementation: Terms of reference for energy and water management plans were formalised and requested for selected major projects (primarily through EIA process) from January 2006.
End of implementation: Not envisaged; ongoing measure.

Title of the measure:	Intelligent metering systems

Category

Informative

Target group

All electricity customers.

End-use action targeted

Reduction in energy demand

Description

Enemalta is currently investigating the feasibility of an automated meter reading system, deploying power line communications technology, to provide the required information for the management of the low voltage networks. This will increase tariff effectiveness, responsiveness and energy market trends and support the dispatching of Malta's generation plant and distributed core electrical infrastructure through an integrated GIS and SCADA systems. Decisions will be taken depending on cost effectiveness

Qualitative assessment – impact level of measure

Not known.

Interaction of measures

None

Expected annual savings in 2011 and 2016

Not available

Status of implementation

New measure

Date of start and end of implementation of measure

Date of start: 2007 (request for information issued)

Title of the measure:	Promotion of CHP for large industry and tourist complexes

Category

Not yet established

Target group

Industry and tourist operators.

End-use action targeted

Reduction in energy demand

Description

The potential for cost-effective CHP in Malta is largely unknown. This measure envisages the identification of this potential, in line with requirements of existing EU directives, and the promotion of CHP in industry and tourism. A study on the potential of CHP for hospitals will be carried out. This measure will be amended as more knowledge is obtained. Combined heat and power solutions for industry may not be feasible for individual companies, but district systems may be feasible for industrial estates.

Qualitative assessment – impact level of measure

Not known.

Interaction of measures

None

Expected annual savings in 2011 and 2016

Not available

Status of implementation

New measure

Date of start and end of implementation of measure

Start: 2008 – study commences.
End: 2009

Title of the measure:	Participation in research in energy saving measures and ICT driven energy efficiency

Category

Generic

Target group

Government.

End-use action targeted

Reduction in energy demand

Description

Certain energy saving measures that are currently not yet cost effective or commercially available may have a higher potential in Malta than in other member states. Such a typical area of interest is solar cooling, given the high demand for air conditioning in residences and offices in summer in Malta. This measure will seek to keep abreast, and promote participation in, research in energy efficiency.

Consistent with the identification of ICT as a niche area of excellence, ICT-driven energy efficiency will be designated as a priority area of research.

Qualitative assessment – impact level of measure

Not known.

Interaction of measures

None

Expected annual savings in 2011 and 2016

Not available

Status of implementation

New measure

Date of start and end of implementation of measure

Start: National policy issued in 2006
End: none envisaged

5 SPECIFIC MEASURES

The template prepared by the Commission requires reporting on Articles 5 and 7 of Directive 2006/32/EC.

These articles require a number of measures to be undertaken within the public sector and to ensure promotion of energy efficiency measures. This section describes current practice. The legislation to enforce these practices and transpose the directive will be enacted within the timeframe envisaged by the directive (i.e. 17 May 2008). The name of the legislation or regulations, its publication and date of entry into force of legislation are still to be established.

5.1 MEASURES IN THE PUBLIC SECTOR

Article 5 of Directive 2006/32/EC requires that the public sector performs an exemplary role and communicates effectively and that public procurement takes into account energy savings and efficiency.

Relevant article in Directive 2006/32/EC	*Article 5.1 Member States shall ensure that the public sector fulfils an exemplary role in the context of this Directive. To this end, they shall communicate effectively the exemplary role and actions of the public sector to citizens and/or companies, as appropriate.* *Article 5.1 (2nd para) Member States shall ensure that energy efficiency improvement measures are taken by the public sector, focussing on cost-effective measures which generate the largest energy savings in the shortest span of time.*
Reference to the description of measures	*The measures listed in Section 3.2, specifically dealing with the public sector, together with the action being undertaken by Government owned industry and listed in Section 3.3, indicate the importance Government is giving to energy efficiency.*

Relevant article in Directive 2006/32/EC	*Article 5.1 (2nd para) Without prejudice to national and Community public procurement legislation:* *— at least two measures shall be used from the list set out in Annex VI;* *— Member States shall facilitate this process by publishing guidelines on energy efficiency and energy savings as a possible assessment criterion in competitive tendering for public contracts.*
Reference to the description of measures	*A green public procurement policy paper has been published and is in the process of public consultation. Guidelines for public procurement, and at least two measures envisaged for public procurement in Annex VI of the directive will be adopted by the date of transposition of the directive.*

Relevant article in Directive 2006/32/EC	*Article 5.2 Member States shall assign to a new or existing organisation or organisations the administrative, management and implementing responsibility for the integration of energy efficiency improvement requirements as set out in paragraph 1.* *Article 5.1 (3rd para) Member States shall facilitate and enable the exchange of best practices between public sector bodies.*
Reference to the description of measures	*Government intends to appoint the Malta Resources Authority to carry out the functions envisaged in this article.*

5.2 AVAILABILITY OF INFORMATION

Relevant article in Directive 2006/32/EC	*Article 7.1 Member States shall ensure that information on energy efficiency mechanisms and financial and legal frameworks adopted with the aim of reaching the national indicative energy savings target is transparent and widely disseminated to the relevant market actors.*
Reference to the description of measures	*This measure will be implemented formally as part of the transposition of Directive 2006/32/EC. Information on energy efficiency mechanisms is, in practice, already widely disseminated on the internet and on the media, and through seminars for stakeholders.*

Relevant article in Directive 2006/32/EC	*Article 7.2 Member States shall ensure that greater efforts are made to promote energy end-use efficiency. They shall establish appropriate conditions and incentives for market operators to provide more information and advice to final customers on energy end-use efficiency.*
Reference to the description of measures	*Measures listed in Section 3.1 aim to achieve this objective.*