2nd National Energy Efficiency Action Plan

Malta

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1. OVERALL CONTEXT OF THE SECOND NEEAP

The Proposal for an Energy Policy for Malta is undergoing SEA and will be published by September 2011. The policy is based on three overriding and horizontal objectives; security of supply, competitively priced energy services and environmental responsibility. The policy addresses these objectives in six policy areas:

- Energy efficiency
- Reducing reliance on imported fuels
- Stability in energy supply
- Reducing the emissions from the energy sector
- Delivering energy efficiently and effectively
- Ensuring that the energy sector can deliver

In addressing the country's energy challenge, Malta's energy policy is significantly influenced by a number of EU energy and environmental policies. The targets set by the relevant EU Directives for Malta are as follows:

- Energy End Use Efficiency: 9% by 2016;
- Renewable Energy Target: 10% of final energy consumption by 2020;
- Bio-fuel contribution in the fuel mix: 10% of final energy consumption of fuels by 2020;
- Reduction in GHG emissions under Effort Sharing Decision: +5% over 2005 levels by 2020.

The interim target for energy end use efficiency was 3% by 2010 and this was achieved in 2010.

Energy efficiency is a key policy area outlined in the Government's energy policy for Malta. It can have a significant impact on the demand for energy, and so can reduce the country's energy consumption and the release of GHG emissions. The draft national energy policy commits to co-ordinate all initiatives set out within NEEAP and to propose new initiatives.

This action plan generally follows the template put forward by the Commission. Some familiarity with Directive 2006/32/EC is required in its reading. It is meant to be read in conjunction with the first NEEAP, as well as the NEEAP update of 2008.

1.1. Highlights of the second NEEAP

The measures proposed in the first NEEAP were, or are in the process of being, implemented in the majority of cases. Additionally, new measures not envisaged in the first NEEAP were implemented successfully. One such case is the CFL scheme whereby all households were given free energy saving lamps in a bid to promote energy efficient lighting. The aim was to create a culture of buying energy saving lamps since once the lamp comes to end of life the user will replace it with the same type of lamp.

The process for drafting the second NEEAP involved the assessment of the achievements of what is attained during the 2008-2010 period and also identified areas where further action could be profitable. NEEAP2 aims to document the progress achieved by end 2010 and outline the areas of focus and improvement for the coming years to achieve the 2016 target for Malta.

The second NEEAP also includes a list of measures to be implemented at the energy generation and distribution side.

1.2. National context of energy savings

The Maltese population are generally frugal in resource use. This has been consistently demonstrated in Eurobarometer surveys carried out since 2004. The latest survey published in 2011 showed 75% of Maltese indicating that they are cutting down on electricity use, well above the EU average of 53%. Recent increases in electricity prices have reinforced this culture.

The Government grants for energy efficiency and renewable energy sources were greeted due to the trends in electricity prices and the economic crisis. More people were realising the benefits of investing in these technologies and the rate of take up was successful in most cases.

The main tangible efforts during the past three years have been on promoting energy efficiency in the domestic sector, tourism and industry. A number of schemes have been issued targeting these sectors and the uptake was very successful. Measures for the Public sector and Transport sector were also devised but more effort are to be made in these sectors since there is more potential to be realised in both sectors. SMEs were the least focused on and government will make an effort to identify measures even after the second NEEAP is published to promote energy efficiency measures.

1.3. Review of energy saving targets and achievements

The calculations in the following sections indicate that the target of 3% for 2010 has been achieved, and marginally exceeded. Mainly, results have been achieved from the industrial sector (including early actions in the water sector), the domestic sector (due to schemes to replace appliances, change lighting systems and install solar water heaters), as well as in the transport sector (due to changes in the fleet composition brought about changes in the vehicle registration system).

Table 1-1. Overview of targets and achieved/projected energy savings both in respect of primary and final energy

	Primary energy		*Final energy*		
			ESD		*Recast EPBD*
	Target (in absolute terms (e.g. PJ, GWh))[1]	*Projection*	*Final energy savings target as set in the first NEEAP or the latest version if revised (in absolute terms (e.g. GWh))*	*Attained final energy savings (in absolute terms (e.g. GWh))*	*Target for nearly zero energy houses (All new buildings, percentage (%) or tightening of energy performance requirements)*
2010			126 GWh	153 GWh	
2014	145 ktoe	844 ktoe			
2015					These proposals have to be evaluated and may be redefined after a regulatory impact assessment and cost benefit analysis studies are undertaken Tighten existing, i.e. Document F 2007, minimum energy performance requirements for the Building Envelope in New Buildings by 30% to 50%. The potential savings that will be achieved have yet to be assessed and evaluated from expert studies. From preliminary

[1] This target assumes that the power station extension and the interconnector count towards the target, and that, in primary energy, aviation is capped at 4.2%, while marine bunkering is excluded from the calculations.

					calculations it appears that the new tightening of requirements could achieve a range of savings between 10% and 25% depending on the building envelope and category.
2016			252 GWh		
2020	235 ktoe	835 ktoe			100%

2. PRIMARY ENERGY SAVINGS

2.1. Primary energy targets, primary energy consumption projections

The target for 2020 is based on primary energy consumption for Malta, capped for aviation in the same manner as the target for renewable sources of energy. It is based on national models of energy consumption projections, and assumes primarily that the energy end use savings envisaged in the NEEAP are achieved and that the new electricity generation plant in Delimara is commissioned as well as a new interconnector with Sicily. Provisionally,

National target 2020: 22% or 235,254toe

Intermediate target for 2014: 15% or 144,876toe

The basis for this target is that marine bunkering is excluded from primary energy consumption and that aviation is capped at 4.12% in line with Directive 2009/28/EC on the promotion of the use of energy from renewable sources. The business as usual scenario assumes the power station conversion efficiency of 30.31% of 2009 remaining unchanged.

2.2. List of strategies addressing primary energy savings

The main use of fossil fuels in Malta is for the generation of electrical energy for onward distribution and consumption within the Maltese Islands.

Electrical power is generated by two conventional thermal power stations owned by Enemalta Corporation and located in Marsa and in Delimara. These power plants utilise heavy fuel oil for conventional steam plant (boiler/turbo-generation) and gasoil for gas turbines.

The Marsa Power Station houses the older generation plant, some of which is past its expected useful life both from a technical and economic perspective. A large portion of the steam plant at this station was purchased second hand and dates back to the early 1950s. The Delimara Power Station houses plant installed in the early 90's, which was commissioned between 1992 and 1998 mostly using modern and cleaner technologies.

Government has established energy efficiency as an important consideration for the authorisation of any new generation plant by the Malta Resources Authority. Energy efficiency is also one of the environmental criteria stipulated in the IPPC Directive. Use of Best Available Techniques (BAT) is also a criterion for allocation of allowances to new entrants under ETS directive. The IPPC Directive is an important regulatory instrument for large industrial installations. A main requirement is the utilisation of BAT in operation of plants. Current as well as future operators will have to abide by the provisions in this directive – it would be useful to present the implications both on current and any future operators within the sector and the possible impacts on final consumers.

Key actions envisaged are the:

- Interconnector with Sicily, that will raise the conversion efficiency to an average of 40%;
- extension of the power station at Delimara, with an investment of €165million that is expected to be completed by 2012. In addition, the boilers at the existing plant in Delimara have been modified in-house to reduce emissions.

2.2.1. Measures for primary energy savings

As provided for in the energy services directive, and as described in the first NEEAP, there are a number of supply side measures-

Plant load and fuel switching

The Marsa Power Station (MPS) provides almost half of the national installed electricity generating capacity, for this installation, Enemalta has availed itself of the derogation available under the LCPD, wherein the plant will continue to be operated for a limited time only.

Since 2008, plant dispatch and load management has changed, with a larger proportion of the load being met by the CCGT plant in DPS. Due to the higher efficiency of the CCGT plant at DPS, less fuel is used to generate each MWh. In addition the gas oil used in the DPS plant as opposed to heavy fuel oil emits less CO2 per TJ leading to a reduction in emissions.

Installation of new efficient generating capacity

Enemalta Corporation will install 144 MW of generating capacity at the Delimara plant by mid 2012. This will take place due to the increasing electrical demand and in order to reduce the output from the less efficient plant at Marsa Power Station.

The plant will have a net capacity of 144MW and consists of eight diesel engines of 17 MW each, plus a 12MW Steam Turbine in combined cycle mode. The total efficiency is 46.8% at maximum continuous rating and CO2 emissions will be less than 0.63kg/kWh. Construction works commenced in mid-2010 and the plant is expected to be put into commercial operation by mid 2012.

Although the plant will be continuously operating on liquid fossil fuels as the main energy source, it can be converted to natural gas firing, to allow for fuel switching in the future should this become necessary and feasible; the use of natural gas is currently not possible due to the lack of infrastructure – i.e. natural gas pipelines or storage infrastructure for LNG/CNG.

Submarine electrical interconnection to European network

The first electrical interconnection to the European energy grid, of capacity 200MW, will be commissioned by 2013. This cable will further reduce the output from inefficient generating capacity at Marsa Power Station. Since electricity acquired via the interconnection will not be generated locally this will considerable reduce national CO2 emissions and other pollutants.

The contract for the turnkey design and build of the 1X200MW 220kV HVAC interconnector was awarded in December 2010. It is expected that the cable interconnection will be commissioned by October 2013.

For the purposes of this exercise, it is assumed that the conversion efficiency of the electricity imported using the interconnector is generated at an average energy efficiency of 40% in line with directive 2006/32/EC.

Additional supply side measures

Additional actions that will have an impact on primary energy include:

- Onshore wind farms – installation of a 4.25MW wind farm at Hal Far and a 10.2MW wind farm at Wied Rini.
- Offshore wind farms – installation of a 95MW wind farm at Sikka l-Bajda
- Second interconnector between Malta and Sicily/ natural gas pipeline, under investigation.
- NER300 projects

Micro PV installations and solar water heaters

Micro-generation of electricity from renewable energy sources in the domestic sector and combined heat and power applications in industry and the tertiary sector is included as part of eligible actions under this directive.

3. FINAL ENERGY SAVINGS IN THE END-USE SECTORS

3.1. Review of final energy saving targets and final energy saving achievements

3.1.1. National overall end-use energy savings targets and progress towards them

Top down Approach (excluding industry)

The top down approach was carried out in accordance with Recommendations on Measurement and Verification Methods in the Framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services, with the adaption of the methodology specifically for water production. Detailed 2010 data is not available for all NACE sectors, which in turn does not allow for detailed measurement of all sectors.

Transport

Method M5 - Energy consumption of road vehicles in toe per car equivalent

Indicators	Units	2007	2010
Total consumption of road transport[2]	ktoe	159	155
Number of road vehicles expressed in car equivalent[3]	M	0.437	0.456
Energy consumption of road vehicles per car equivalent	toe/eq car	0.382	0.373

Methodology gives a result of 11 GWh savings in 2010.

Households

Method M2 - Electricity consumption of households in kWh per dwelling

Indicators	Units	2007	2010
Electricity consumption of domestic sector[4]	GWh	645	575
Number of occupied households[5]	k	133	141

Methodology gives a result of 108 GWh savings in 2010.

Industry

Data for the production index for industrial sectors as detailed in method P14 is not available for Malta. The indicator M8, based on value added, is a poor substitute as it is influenced by "non technical factors that are not linked to energy efficiency measures (e.g. change in profit, in product mix and quality)."

As such, the top down method for this sector was calculated for the water sector[6] only, using, as the production index, the actual production in cubic meters of water. Potable water production in Malta accounts for around 30% of the electricity consumed by industry.

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2 Calculated data based on Enemalta reports

3 Based on National statistics office published data

4 Calculated data based on Enemalta reports for consumption of domestic sector (includes garages)

5 Based on number of electricity accounts with number of residents > 0.

Equation 1 Top-Down approach for the water sector:

$$Energy\ Efficiency = \left(\frac{E_{2000}}{O_{2000}} - \frac{E_{2010}}{O_{2010}} \right) \times O_{2010}$$

Where:

E_{2000} = Energy use in 2000 = 121,042,000 MWh

E_{2010} = Energy use in 2010 = 74739800 MWh

O_{2000} = Output in 2000 = 16,610,074 m^3

O_{2010} = Output in 2010 = 16109456 m^3

Source of data – WSC

The savings in the water industry are 42 GWh calculated using a top down approach.

Summary of top-down analysis results

Table 3-2 Top down analysis

Sector	**Method used**	**Energy saving achieved 2010 (GWh)**
Transport	M5	11
Households	M5	108
Industry	National method for NACE 41 - including early actions	42
Total		161

Bottom-up Approach (industry)

The savings that could be quantified are shown in Table 3-4. The total that could be quantified as savings is 108GWh.

[6] This sector is not included in the ETS.

Total

The total savings obtained from the top down approach in **Table 3-2** is outlined in **Table 3-3**. The bottom up calculations confirm, at least, these results. However, the bottom up assessment is not utilised to avoid double counting.

Table 3-3. Overview of final energy savings from measures under the ESD.

	Final energy saving target		*Final energy savings achieved or projected*	
	in absolute terms	*Percentage (%)(compared to ESD reference consumption)*	*in absolute terms*	*Percentage (%)(compared to ESD reference consumption)*
2010 (interim period)	*126GWh*	*3%*	*161GWh*	*3.8%*
2016 (overall period)	*378GWh*	*9%*		

Expected savings in relation to the 2016 overall energy end-use target

The national target of 9% by 2016 is retained. There is no reason to believe that this target will not be achieved.

3.1.2. National targets for nearly zero energy buildings

These proposals have to be evaluated and may be redefined after a regulatory impact assessment and cost benefit analysis studies are undertaken. Refer to Section 3.8 of this document for more information.

The carbon footprint of all building categories still has to be established by means of expert studies and analyses of data collected from energy performance certificates and other sources. This will allow us to re-define targets more precisely to achieve real energy savings by means of the cost optimal methodology.

The strategies for achieving the national targets for zero energy buildings are twofold:

1. Tighten existing minimum requirements for the Building Envelope in new buildings and buildings undergoing major renovation by 30% to 50% as from 2013. These minimum requirements will be upgraded by a further tightening of 20% to 30% as from 2017. The percentage tightening depends on the building category.

2. Increase the energy harvest from renewable energy sources to decrease the use and dependency on fossil fuels by regulating the allocation of use of 50% of the roof space in new buildings for these renewable energy sources or imposing obligatory use of the latter as from 2013. As from 2017, the use of renewable energy sources providing between 70% and 90% of the energy needs for cooling and heating of spaces and hot water will be imposed. If such requirements cannot be met because of site conditions the owners will have to financially contribute to the setting up of communal renewable energy source facilities.

Both of these strategies will reduce the carbon dioxide emissions from energy use in buildings.

It is envisaged that by the end of 2018 all new buildings being constructed for the use of public authorities will qualify as nearly-zero energy buildings.

The refurbishment and transformation of existing buildings into nearly zero-energy building stock will be encouraged. The feasibility of adopting market-based instruments such as grants, tax deductions and others to achieve such objective will also be assessed. Such instruments may be applied for those owners who will enter into a commitment that clearly shows that their building will have higher energy efficiency and nearly-zero net energy use. The Energy Performance Certificate will be the main document displaying this improvement.

3.2. List of strategies with an impact on final energy demand

The NEEAP is an action plan that fits in, as well as reports on, specific energy efficiency actions proposed in, various Government policies. Synergy with action undertaken at various levels of government is essential.

The following national policies have an impact on energy efficiency:

Policy/Strategy

- National energy policy (SEA in progress)
- National strategy for policy and abatement measures relating to the reduction of green house gas emissions
- Operational programme 1 – Investing in competitiveness for a better quality of life 2007 –– 2013
- National budgets
- Vision 2015 for the Maltese Islands – OPM
- Structure plan (spatial policy)
- National Environmental Policy draft (phase I issues paper)
- Policy guidelines on micro-wind turbines – MEPA
- Draft National Environment Policy
- Draft National Action Plan for Green Public Procurement

3.3. End-use measures and final energy savings

3.3.1. Calculation methodology

The methodology in the "Recommendations on Measurement and Verification Methods in the Framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services") has generally been used for the calculations of the savings. Where, for example, an action is not covered in the recommendations, a description of the procedure has been used.

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.

3.3.2. All individual measures

Table 3-4 Summary of final energy savings

Sector/ subsector	Title of measure	Implementing agency	Duration	Energy savings expected in 2010 (GWh)	Energy savings expected in 2016 (GWh)
Buildings sector					
B.1.	Rebates on energy efficient domestic appliances	MRA	2006 - 2008	2.4	2.4
B.2.	Distribution of Energy Saving Lamps in the Domestic Sector	MRA	2009 – 2010	40.8	40.8
B.3.	Promotion of Solar Water Heaters in the Domestic Sector	MRA	2005 – ongoing	11.5	28
B.4	Incentives for the uptake of PV systems and micro-wind	MRA	2005 – ongoing	5.6	36
B.5	Subsidy Schemes for Building Envelope Improvement	MRA	2006 -2010	0.95	1
B.6	Requirements on the energy performance of buildings regulations	Buildings Regulations office	2008 – ongoing		
B.7	Energy Management Plans for Major Projects	Malta Environment and Planning Authority	2006 - ongoing		
B.8	Energy audits for households	Enemalta / MRRA	2012		
Public sector					
P.1.	Green Leaders in the Public Sector	Ministry for Resources and Rural Affairs	2004 - ongoing	0.2	1
P.2.	National Green Public Procurement Action Plan	TSDU – OPM	2011 - 2013		

Sector/ subsector	Title of measure	Implementing agency	Duration	Energy savings expected in 2010 (GWh)	Energy savings expected in 2016 (GWh)
P.3.	Improving Energy Performance of Public Buildings	Ministry for Resources and Rural Affairs	2008-2014		3.5
P.4.	Energy Performance Contracting	Ministry for Finance, the Economy and Investments	2011 +		
P.5.	Improving Energy Efficiency in Public Sector Transport	Ministry for Finance, the Economy and Investments	2007 – ongoing		
P.6.	Energy Saving Measures in Social Housing	Housing Authority	2004 -2013	.05	.2
P.7.	Energy Saving and RES measures in state schools	Foundation for Tomorrow's Schools	2005 - ongoing	.24	0.63
P.8	Eco-Gozo	Ministry for Gozo	2010 - 2020		
P.9	Participation by Local councils in Covenant of Mayors	Local councils	2009 - ongoing		
P.10	Government incentives for local councils to reduce energy use	Local councils department	2008 – ongoing	.44	.84
Industry & SMEs					
I.1	Malta Enterprise Energy Grant Scheme	Malta Enterprise	2009 - 2013	4	27.5
I.2	Energy Saving Measures in Government Owned Industry	Water Services Corporation	1995 - ongoing	42	42
I.3	Energy Efficiency Measures for the Hospitality Sector	Malta Tourism Authority	2011 +		
I.4	Energy Audits for the commercial sector	Malta Tourism Authority	2010 +		
I.5	Promotion of Groundwater Heating/Cooling	MRA	2009 - ongoing		

Sector/ subsector	Title of measure	Implementing agency	Duration	Energy savings expected in 2010 (GWh)	Energy savings expected in 2016 (GWh)
I.6	Support Scheme for SME's	Malta Enterprise	2011 +		
1.7	Promotion of CHP for Industry and Large Tourist Complexes	MRA	2009 - ongoing		
Energy sector					
E.1	Smart Metering	Enemalta	2008-2013		25
Mobility					
T.1.	Promotion of transport modal shift towards public transport	Malta Transport	2011 - 2012		45
T.2	Promotion of e-work or tele-working	Public Administration HR office	2008 - ongoing	0.2	1
T.3	Vehicle Registration Tax Reform	Ministry for Finance, the Economy and Investments	2007 +		
T.4	Promotion of more efficient vehicles and electric vehicles	Ministry for Resources and Rural Affairs	2005 - ongoing		
T.5	Passenger vehicle scrappage schemes	Ministry for Finance, the Economy and Investments	2010- 2011		
T.6	Traffic Congestion Reduction in Capital City	Malta Transport	2006 - ongoing		
T.7	Green Travel Plans in University and Colleges	MCAST	2009 +		
T.8	Provision of advisory services on energy efficient driving	Transport Malta	2009 +		
Agricultural and Fisheries sector					

Sector/ subsector	Title of measure	Implementing agency	Duration	Energy savings expected in 2010 (GWh)	Energy savings expected in 2016 (GWh)
A.1.	Modernisation of Agricultural Holdings	Ministry for Resources and Rural Affairs	2008 +	0.09	0.24
A.2.	Fisheries Fund	Ministry for Resources and Rural Affairs	2010 +		
Horizontal / cross sectoral measures					
H.1	Creation of an Energy Efficiency Fund	Ministry for Finance, the Economy and Investments	2009 +		
H.2	Information Campaigns	Ministry for Resources and Rural Affairs	2008 +		
H.3	Revision of Administrative Arrangements	Ministry for Resources and Rural Affairs	2009 +		
H.4	Participation and Research regarding Energy Saving Measures	Malta Council for Science and Technology	2007 +		
SUM				**!E54 Is Not In Table** GWh	**!F54 Is Not In Table** GWh

All of the measures proposed in this section have a national scope and all qualify under the ESD. The estimates of savings for 2016 assume that the measures ongoing in 2011 are retained till 2016.

3.3.3. Measures in the buildings sector

Table B.1. Rebates on energy efficient domestic appliances

Title of the energy saving measure		REBATES ON ENERGY EFFICIENT DOMESTIC APPLIANCES
Index of the measure		B1
	Category	3.1 Subsidies (Grants)

<table>
<tr><td></td><td>Timeframe</td><td>Start: 2006
End: 2008</td></tr>
<tr><td></td><td>Aim/brief description</td><td>In order to achieve a market transformation, the local Government in 2006 announced a scheme whereby the purchase of energy efficient appliances had to be incentivised through payment of a rebate on the purchase price of the appliance. The scheme was terminated in July 2008.

The scheme required available technical documentation to demonstrate the eligibility of the registered appliances to be submitted and vetted for the rebate to be processed. Appliances that were 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.

The scheme provided financial incentives as detailed below:</td></tr>
<tr><td></td><td>Target end-use</td><td>Domestic appliances</td></tr>
<tr><td></td><td>Target group</td><td>Households</td></tr>
<tr><td>Information on implementation</td><td>List and description of energy saving actions substantiating the measure</td><td>The scheme has led to a market transformation process resulting in a larger share of appliances with a better energy classification. The weighted average sales of each category of appliances increased in the A class sector.</td></tr>
<tr><td></td><td>Budget and financial source</td><td></td></tr>
<tr><td></td><td>Implementing body</td><td>Malta Resources Authority</td></tr>
<tr><td>Energy savings</td><td>Method for monitoring/measuring the resulting savings</td><td>Bottom up approach method was used for calculating energy savings.</td></tr>
<tr><td></td><td>Savings achieved in 2010</td><td>2.4GWh
<table>
<tr><td>Appliance</td><td>Savings (kWh/year/ unit)</td><td>2007/kWh</td><td>2008/kWh</td><td>2009/kWh</td><td>Total/kWh</td></tr>
<tr><td>Fridge freezer</td><td>69</td><td>374532</td><td>391989</td><td>18699</td><td>785220</td></tr>
<tr><td>Washing machine</td><td>13</td><td>138463</td><td>124800</td><td>1677</td><td>264940</td></tr>
<tr><td>Dishwashe r</td><td>44</td><td>35596</td><td>41272</td><td>2684</td><td>79552</td></tr>
<tr><td>Tumble dryers</td><td>150</td><td>1950</td><td>2400</td><td>150</td><td>4500</td></tr>
<tr><td>Air conditioner</td><td>189</td><td>562086</td><td>690228</td><td>11151</td><td>1263465</td></tr>
<tr><td>Total</td><td></td><td></td><td></td><td></td><td>2,397,677</td></tr>
</table></td></tr>
</table>

	Assumptions	The savings per appliance per year are based on the European default values. More information on consumption in the domestic sector taking into account climate effects will be required. Improvements in technology and / or changes to legislation (minimum standards) may change the situation significantly for energy savings in 2016 and 2020.
	Overlaps, multiplication effect, synergy	These schemes were also being promoted by the energy efficiency campaign.

Table B.2. Distribution of energy saving lamps in the domestic sector

Title of the energy saving measure		DISTRIBUTION OF ENERGY SAVING LAMPS IN THE DOMESTIC SECTOR
Index of the measure		B2
Description	**Category**	3.1 Subsidies (Grants)
	Timeframe	Start: 2009 End: mid-2010
	Aim/brief description	It was recorded that during 2007 more than four million incandescent bulbs and older type inefficient fluorescent tubes were imported despite the fact that energy saving bulbs and tubes were available on the market. In the budget speech for 2009, Government announced a scheme whereby a number of energy saving lamps (CFLs) would be made available free of charge to every household. This scheme was administered during 2009 and was terminated by mid 2010.
	Target end-use	Lighting
	Target group	Households
Information on implementation	**List and description of energy saving actions substantiating the measure**	Request for tenders were issued for the distribution of cfl's. A number of distributors/retailers and their approved cfl bulbs were chosen. Households were given a voucher in order to redeem their light bulbs. The aim of the distribution of the free energy saving bulbs was to foster a stronger mentality in favour of energy efficiency measures. This scheme served as a marketing tool to promote energy saving lamps. Although the scheme has terminated, it is highly probable that households will opt for energy saving lamps in their decision to replace domestic bulbs.

	Budget and financial source	National funds € 4,000,000
	Implementing body	Malta Resources Authority
Energy savings	**Method for monitoring/measuring the resulting savings**	Bottom up approach method was used for calculating energy savings.
	Savings achieved in 2010	40.8 GWh
	Expected energy savings in 2016	40.8 GWh
	Assumptions	Number of bulbs distributed through cfl scheme: 867,164 ESD default value for savings of lamp is 47kWh/year over the lifetime of the lamp
	Overlaps, multiplication effect, synergy	In addition to this scheme an eco-contribution of 25c on incandescent bulbs and of 50c on inefficient fluorescent tubes was introduced in January 2009 to help promote further the use of energy saving lamps and discourage the use of energy wasting bulbs and tubes.

Table B.3. Promotion of solar water heaters in the domestic sector

Title of the energy saving measure		PROMOTION OF SOLAR WATER HEATERS IN THE DOMESTIC SECTOR
Index of the measure		B3
Description	**Category**	3.1 Subsidies (Grants)
	Timeframe	Start:2005 Modified / improved in 2008, 2009, 2010 and 2011 End: ongoing

	Aim/brief description	One of the major barriers related to uptake of RES and energy efficient equipment is related to the high cost to purchase such equipment. A number of schemes were introduced by government to encourage households to invest in solar water heating technology through the provision of various grant schemes. The schemes were envisaged to assist in the long term development of the solar water heater industry, to reduce household expenditure on energy and increase accessibility to sustainable technology. The schemes were also aimed at increasing public awareness about sustainable energy technology.
	Target end-use	
	Target group	Households

Information on implementation	**List and description of energy saving actions substantiating the measure**	The first grant by Government on solar water heaters for households was launched in 2005. The rebate of 20% on the purchase price was capped at a maximum of €116.48 and uptake was rather low. This was superseded with a new scheme in 2006, where the maximum rebate was doubled to €232.94 in 2006, and consequently the uptake tripled. The scheme was open till 15 February 2009. The penetration rate for this scheme was stable at an average of 1,700 per year. In order to increase the penetration rate to 3000 per year, in 2009 government increased the rebate further to 66% of eligible costs up to a maximum of €460. This yielded a penetration of 3500 solar water heaters per year. An increase in retailers was seen in this grant scheme. The 2009 scheme was a two-fold success in that not only did the market share of solar water heaters increase but this scheme also introduced standards which the products bought through the scheme had to conform to, namely, EN-12976 for solar water heaters an EN-12975 for solar collectors. The introduction of conformance of the products to these EU standards to be eligible for grants helped to eliminate lower quality products from the market and made consumers demand higher quality products. In 2010, a scheme (GN 52 of 2010) for the registration of solar technologies was launched to ensure that high quality products are promoted through the support scheme. In 2010, a fourth grant scheme for solar water heaters was launched, through which a 40% grant to a maximum of €560 on eligible costs was given on approved systems and installations. This scheme saw the sales of solar water heaters decrease since eligibility was restricted. Two new schemes were launched in 2011. One of the schemes is EU funded and the other is nationally funded. The EU funded scheme is governed by similar criteria and investment aid as the 2010 scheme. The national funded scheme is open for all domestic users and the grant is 40% up to a maximum of €400.
	Budget and financial source	€134,400 in 2010 (85% ERDF funds, 15% national funds) National funding €1.6 million in 2009; €800,000 allocated for 2011
	Implementing body	Malta Resources Authority

<table>
<tr><td rowspan="5">Energy savings</td><td>Method for monitoring/measuring the resulting savings</td><td>Bottom up</td></tr>
<tr><td>Savings achieved in 2010</td><td>
<table>
<tr><td>year</td><td>Number of installations</td><td>Energy savings in MWh</td></tr>
<tr><td>2007</td><td>1651</td><td>2641</td></tr>
<tr><td>2008</td><td>1603</td><td>2565</td></tr>
<tr><td>2009</td><td>3399</td><td>5438</td></tr>
<tr><td>2010</td><td>595</td><td>952</td></tr>
<tr><td>Total</td><td></td><td>11596</td></tr>
</table>
11.5GWh</td></tr>
<tr><td>Expected energy savings in 2016</td><td>28GWh</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Assumptions</td><td>Assuming average solar water heater area = 2.5m^2 and each solar water heater saves 1600kWh/year.</td></tr>
<tr><td>Overlaps, multiplication effect, synergy</td><td>The ERDF solar water heater scheme and the national solar water heater scheme are being operated in parallel during 2011.</td></tr>
</table>

Table B.4. Incentives for the uptake of micro-RES systems

Title of the energy saving measure		INCENTIVES FOR THE UPTAKE OF MICRO-RES SYSTEMS
Index of the measure		B4
Description	**Category**	3.1 Subsidies (Grants) 3.2 Tax rebates and other taxes (also increase) that stimulate reduction of energy end-use consumption
	Timeframe	Start: 2005 Improved in 2009, 2010 End: Ongoing
	Aim/brief description	In order to encourage electricity generation through technologies other than conventional generating plants, the government has launched schemes to promote the installation of renewable energy generation equipment in the domestic sector and has introduced a feed in tariff (FIT) regulation. Under the FIT Regulation electricity generated by domestic PV installations and exported to the distribution system shall be paid by Enemalta at the following rates: • Malta 25c/kWh for each unit exported (residential & domestic) • Gozo 28c/kWh for each unit exported (residential & domestic) The FIT is guaranteed for 8 years and is net of VAT and excise duty. Any electricity exported in excess of this threshold is paid at the marginal cost of electricity provider.
	Target end-use	Savings
	Target group	Households

Information on implementation	**List and description of energy saving actions substantiating the measure**	In 2005, a grant scheme for the purchase of small photovoltaic (PV) systems for domestic residences was introduced. Eligible applicants could 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, and subject to a maximum grant of €1165. Applicants were also eligible to an additional grant of €582 for every additional installed kilowatt peak, 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) were treated pro rata. The systems purchased under these schemes had to be installed in a domestic residence and had to be connected to the national grid. This scheme was not very successful and was terminated and substituted with a revised scheme aimed at increasing uptake. The scheme launched in 2009 increased the grant for PV systems to 50% of eligible costs up to a maximum of €3,000 and the sum allocated was of €500,000. The scheme was so popular all the grants were exhausted on the first day the scheme opened. A similar scheme was launched in 2010 which drew a further 2086 applications. The popularity of these schemes was also due to the decrease in market price of PV systems from previous years and the two substantial increases in conventional electricity tariffs experienced in 2009 and in 2010. Another PV scheme will be launched in the second half of 2011. The criteria and level of grant will be similar to the 2010 scheme. A scheme for the promotion of micro wind turbines installed on domestic premise was launched in 2006 and is still on going. A grant of 25% of the purchase price up to a maximum of €232.94 is given for micro-wind turbines systems not exceeding a generation capacity of 3.7 kW. The uptake of this grant scheme was not very successful. This is mainly attributed to the fact that the installation of a micro wind turbine requires a permit as opposed to that for a PV system and policy concerning micro wind was unavailable until recently. In 2010 the MEPA Board approved new planning guidance for micro wind turbines,
	Budget and financial source	A total of €11.7 million (85% ERDF funds, 15% national funds) have been allocated on the PV schemes. The period covers 2009-2013.
	Implementing body	Malta Resources Authority

<table>
<tr><td rowspan="4">Energy savings</td><td>Method for monitoring/measuring the resulting savings</td><td>Bottom up approach method was used for calculating energy savings.</td></tr>
<tr><td>Savings achieved in 2010</td><td>
<table>
<tr><td>Year</td><td>PV take up</td><td>Average kWp/installation</td><td>Total Savings in kWh</td></tr>
<tr><td>2007</td><td>0</td><td></td><td></td></tr>
<tr><td>2008</td><td>2</td><td>2.8</td><td>4200</td></tr>
<tr><td>2009</td><td>160</td><td>224</td><td>336000</td></tr>
<tr><td>2010</td><td>404</td><td>3514</td><td>5271000</td></tr>
<tr><td>Total</td><td></td><td></td><td>5,611,200</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>
5.6GWh
</td></tr>
<tr><td>Expected energy savings in 2016</td><td>36.5GWh assuming PVs continue to be promoted at the rate of 2000kWp per year</td></tr>
<tr><td>Assumptions</td><td>The basic assumption is that each kWp of photovoltaic installed generates 1,500 kWh per year. The methodology adopted was based on studies carried out by the European Commission Joint Research Centre. The yearly sum of solar electricity generated by 1 kW peak system optimally inclined photovoltaic modules and system performance ratio of 0.75 has been estimated by JRC. The solar electricity potential for Malta is given at 1500 kWh /annum /kWp[7]. The average kWp for 2008 and 2009 was calculated at 1.4kWp/ installation. For the year 2010 each installation was calculated at 1.8kWp/installation as a result of cheaper prices.</td></tr>
<tr><td>Overlaps, multiplication effect, synergy</td><td>Government is planning to launch a scheme during 2011 to give a full subsidy up to maximum of 5000 Euros for the installation of photovoltaic systems in households up for individuals that purchase electric cars.</td></tr>
</table>

[7] European Communities, 2007 : http://re.jrc.ec.europa.eu/pvgis/)

Table B.5. Subsidy schemes for building envelope

Title of the energy saving measure		SUBSIDY SCHEMES FOR BUILDING ENVELOPE IMPROVEMENT
Index of the measure		B5
Description	**Category**	3.1 Subsidies (Grants)
	Timeframe	Start:2006 End:2010
	Aim/brief description	In order to reduce the energy consumed in households and to educate citizens on energy saving measures in building, government launched a scheme in 2006 to subsidise roof insulation on domestic buildings. In 2006 eligible applicants had to apply for a once-only grant of 20%, up to a maximum of Euro 232.94 on the investment price for the purchase and installation of roof insulation. In 2009 the investment aid was increased to 33.3 % up to a maximum of € 300. This was done to attract more domestic users to invest in roof insulation. To complement the subsidy scheme for roof insulation in households, a similar scheme promoting double glazed energy efficient windows and doors was launched. This grant was aimed at all home owners who were interested in installing new double glazed windows and doors. In 2006 eligible applicants availed of 20% of the cost of double glazing, up to a maximum of Euro 232.94.In 2009 the investment aid was increased to 33.3 % up to a maximum of € 300.
	Target end-use	Domestic buildings
	Target group	Households
Information on implementation	**List and description of energy saving actions substantiating the measure**	Eligible systems were roof insulation on domestic households. The roof insulation eligible under this scheme had to meet the requirements of the technical guidance conservation of fuel, energy & natural resources (minimum requirements on energy performance of building regulations, 2006).
	Budget and financial source	Nationally funded. Budget for 2009 €300,000 for double glazing and roof insulation.
	Implementing body	Malta Resources Authority

<table>
<tr><td rowspan="4">Energy savings</td><td>Method for monitoring/measuring the resulting savings</td><td>Bottom up</td></tr>
<tr><td>Savings achieved in 2010</td><td>
<table>
<tr><td>Year</td><td>2008</td><td>2009</td><td>2010</td><td>Total</td></tr>
<tr><td>installations</td><td>145</td><td>194</td><td>28</td><td>367</td></tr>
<tr><td>Savings kWh/yr</td><td>260</td><td>260</td><td>260</td><td>260</td></tr>
<tr><td></td><td>37700</td><td>50440</td><td>7280</td><td>95420</td></tr>
</table>
0.95GWh</td></tr>
<tr><td>Expected energy savings in 2016</td><td>Not available</td></tr>
<tr><td>Assumptions</td><td>Calculations were based on the assumption that the average roof area of a typical dwelling would be 55m^2.
The actual energy savings were calculated on the local EPRDM software. This considered a U value of 2.4W/m^2K before the roof insulation was installed and 0.59W/m^2K after roof insulation was installed. The typical U values were also obtained from EPRDM typical cases.</td></tr>
<tr><td>Overlaps, multiplication effect, synergy</td><td>Possible interaction with buildings measures</td></tr>
</table>

Table B.6. Requirements on the energy performance of buildings regulations

Title of the energy saving measure		REQUIREMENTS ON THE ENERGY PERFORMANCE OF BUILDINGS REGULATIONS
Index of the measure		B6
Description	**Category**	1.2 Minimum Equipment Energy Performance Standards
	Timeframe	Start: January 2008 End: Ongoing

	Aim/brief description	Publication of Technical Guidance Document on Minimum Requirements on the Energy Performance of Buildings Regulations 2006. The Energy Performance Rating for Dwellings in Malta (EPRDM) software which is the official method for rating the energy performance of dwellings in Malta was launched in 2009.
	Target end-use	New building regulations to minimise energy consumption in newly built buildings and others that undergo major renovations.
	Target group	The target groups are: Architects, Services Engineers in public or private practice ; Building's services managers; Building Contractors, estate agents and the general public
Information on implementation	**List and description of energy saving actions substantiating the measure**	Technical Guidance F 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 EPRDM can be used for the following applications: a) judging compliance with regulations expressed in terms of energy targets b) comparing the energy performance of various design alternatives for a planned residential building c) displaying a standardized level of energy performance of existing residential buildings d) assessing the effect of possible energy conservation measures on an existing residential building by calculation of the energy use with and without the energy conservation measures e) predicting future energy resource needs on a national or scale by calculating the energy use of typical residential buildings representative of the building stock.

	Budget and financial source	National budget
	Implementing body	Buildings Regulation Office
Energy savings	**Method for monitoring/measuring the resulting savings**	
	Savings achieved in 2010	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
	Overlaps, multiplication effect, synergy	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.

Table B.7. Energy management plans for major projects

Title of the energy saving measure		ENERGY MANAGEMENT PLANS FOR MAJOR PROJECTS
Index of the measure		B7
Description	**Category**	1.1 Building Codes and Enforcement
	Timeframe	Start: January 2006 End: Ongoing

	Aim/brief description	Large scale residential and commercial projects are required to submit energy and water management plans as part of the application procedure for a development planning permit. 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). The measure has initially been imposed on major projects within the 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.
	Target end-use	Energy use in buildings
	Target group	Large Developments both for Residential or Commercial Use

Information on implementation	**List and description of energy saving actions substantiating the measure**	Energy Management plans 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. 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 will 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.
	Implementing body	MEPA
Energy savings	**Method for monitoring/measuring the resulting savings**	Included with top down.

	Savings achieved in 2010	Quantitative savings are not available. 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.

Table B.8. Energy audits for households

Title of the energy saving measure		ENERGY AUDITS FOR HOUSEHOLDS
Index of the measure		B8
Description	**Category**	2.1 Focused Information Campaigns 2.5 Training and Education
	Timeframe	Start: 2012
	Aim/brief description	The local electricity supplier, Enemalta, will be providing energy audits for households (and SMEs) in conjunction with the Ministry for Resources and Infrastructure.
	Target end-use	Energy use in buildings
	Target group	Households
Information on implementation	**List and description of energy saving actions substantiating the measure**	Energy audits
	Implementing body	Enemalta / MRRA
Energy savings	**Method for monitoring/measuring the resulting savings**	Included with top down.
	Savings achieved in 2010	Not applicable

3.3.4. Measures in the public sector

Table P.1. Green leaders in the public sector

Title of the energy saving measure	GREEN LEADERS IN THE PUBLIC SECTOR
Index of the measure	P1

Description	**Category**	2.1 Focused Information Campaigns 2.5 Training and Education 2.7 Exemplary Role of the Public Sector
	Timeframe	Start: 2004 End: ongoing
	Aim/brief description	In 2004, government appointed Green Leaders, one in each Line Ministry, in an initiative aimed towards meeting Government's corporate responsibilities with regards 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 amongst which are energy efficiency measures and renewable energy. The Green Leaders were coordinated by the Government Environmental Corporate Responsibility Office set up for the purpose within the Office of the Prime Minister. Green focal points were then appointed in departments and sections to be closer to staff and create a green network. Within each Ministry, each Green focal point will report to the Director responsible for Program Implementation, who has been designated as the main focal point for environmental issues. The co-ordination of the green leader initiative was moved to Ministry for Resources and Rural Affairs in 2008.
	Target end-use	Energy use in public buildings
	Target group	Public Sector
Information on implementation	**List and description of energy saving actions substantiating the measure**	The green leader system has driven each ministry, department and entity to take steps to reduce energy consumption and waste of resources. Energy audits have been carried out in all administrative buildings as well as in residential homes for the elderly and health centres and measures have been actuated to reduce energy. The green leaders have also led an educational campaign to eliminate waste, with stickers attached to light switches and above water taps to serve as a constant reminder against waste. All these measures are intended to complement the government's public environmental awareness campaign and propulsion towards sustainable lifestyles.
	Budget and financial source	National funds – approximately €800,000
	Implementing body	Ministry of Resources and Rural Affairs

Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	At least 200,000kWh
	Expected energy savings in 2016	Not available
	Assumptions	Not applicable
	Overlaps, multiplication effect, synergy	This can be considered to be a crossectoral action within the public sector that overlaps with other actions taken in the public sector

Table P.2. National green public procurement action plan

Title of the energy saving measure		NATIONAL GREEN PUBLIC PROCUREMENT ACTION PLAN
Index of the measure		P2
Description	**Category**	4.3 Energy efficiency in public procurement
	Timeframe	Start: third quarter 2011 End: review is planned by the end of 2013

	Aim/brief description	The Tourism and Sustainable Development Unit within OPM is currently drafting and will coordinate the implementation of the National Green Public Procurement Action Plan. This National Action Plan sets out GPP targets for eighteen product and service groups for which common GPP criteria have been agreed at EU level. Its main thrust builds on five strategic objectives, namely the need to: • Establish and maintain a strategic framework and structure within which green public procurement can take place in Malta • Integrate the environmental dimension within the national public procurement process • Establish clear and measurable targets and objectives for green procurement in a range of sectors and ensure their achievement • Ensure that the implementation of the GPP is continuously monitored and any corrective actions are taken as may be appropriate • Engage procurers, suppliers and markets in the GPP process, provide guidance, and facilitate capacity building in this area 12 out of 18 product groups, for which GPP targets have been set, involve, to a varying degree, criteria and technical standards related to energy efficiency. These product groups include office IT equipment, construction, transport, combined heat & power plants, electricity, street lighting and traffic signals, windows, glazed doors, thermal insulation, gardening products and services, catering products and services, mobile phones, and hard floor coverings.
	Target end-use	Re-orientation of public procurement towards more environment friendly and energy efficient supplies, works and services would have a major impact on both the Government environmental and energy footprint, and the footprint of private industries participating in public procurement process as contractors.
	Target group	Government and private sectors

Information on implementation	**List and description of energy saving actions substantiating the measure**	The table below lists priority product and service groups (i.e. those that must be compliant with the GPP core standards[8]).Targets are expressed in terms of the percentage of the total public expenditure and the number of public contracts on the below product / service groups to be greened. Thus a 100% target for office IT equipment implies that 100% of public expenditure and 100% of public contracts involving such equipment will be administered through tenders compliant with the EU Common GPP Criteria for this product group. Table 15 – Priority product and service groups The ultimate aim is to 'move the market' towards the competitive provision of sustainable products and services.
	Budget and financial source	Not available
	Implementing body	Tourism and Sustainable Development Unit (OPM) in close coordination with the National GPP Task force consisting of the representatives of MRRA, MEPA, NSO, MCCAA, MCST, ME, DLG and DoC.
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not available

[8] The core GPP standards for the above product and service groups are available for download from http://ec.europa.eu/environment/gpp/first_set_en.htm and from http://ec.europa.eu/environment/gpp/second_set_en.htm

	Overlaps, multiplication effect, synergy	Measures taken by green leaders (P1) may be further reinforced through GPP and vice versa – Green Leaders may facilitate GPP within their respective entities. The promotion of energy performance contracting (P4) would be further facilitated through adherence to GPP common criteria for construction and related product groups. The same applies to measures for promoting energy efficiency in buildings (P3), social housing (P6), schools (P7), etc. Improvement of energy efficiency in public transport (P5) will be further aided through adherence to GPP common criteria for transport. Furthermore, the procurement of clean and energy efficient vehicles is also a legal commitment. Measures for local councils (10) would also benefit from introduction of GPP targets for all public procurement including for procurement by local councils.

Table P.3. Improving energy performance of public buildings

Title of the energy saving measure		IMPROVING ENERGY PERFORMANCE OF PUBLIC BUILDINGS
Index of the measure		P3
Description	**Category**	1.1 Building Codes and Enforcement
	Timeframe	Start: 2008 End: 2014
	Aim/brief description	The Government had set up a program for energy audits targeting buildings used by the public service, such facilities included, but were not limited to: offices, courtrooms, town halls, police and fire stations, schools and community centers. Analysis of the historic utility use and costs of the building was carried out. Auditors then carried out a walk through audit of the building and talked with the personnel to identify opportunities for energy savings.
	Target end-use	Energy use in public buildings
	Target group	Public Sector

Information on implementation	**List and description of energy saving actions substantiating the measure**	Once the audit is complete, a report is drawn up outlining the issues that need more attention and a list of recommended, cost-effective energy efficiency measures and facility upgrades that will reduce operating expenses and, in many cases, improve the health and productivity of the buildings' occupants. Such measures include: • Changing lighting • Roof Insulation • Switching to more energy efficient equipment/ appliances • Installing PVS or SWH Green Leaders mapped out the energy management opportunities that were indicated in the reports for each Ministry in a four-year action plan, starting from 2011 ending 2014. The action plan, drawn up in consultation with Permanent Secretaries and Directors Financial Management will serve as guidance for the recommendations to be implemented by each Ministry in each of their audited buildings. This action plan will be presented to Cabinet for approval. 150 administrative buildings and 24 Day Centres and Residential Homes for the Elderly were energy audited. The energy audit reports included the financial investment that needs to be made to reach the potential energy savings as well as the financial savings that will eventually be attained, where these can be calculated.
	Budget and financial source	national funds - €4.1m assuming capital expenditure in reports is implemented
	Implementing body	Ministry of Resources and Rural Affairs
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	Data for 2010 not yet available
	Expected energy savings in 2016	3.5GWh
	Assumptions	Data still to be verified
	Overlaps, multiplication effect, synergy	Major synergies with the Green Public Procurement Action Plan, particularly targets for construction, windows, glazed doors and skylights, wall panels and other GPP product groups related to buildings. This also may overlap with action P4

Table P.4. Energy performance contracting

Title of the energy saving measure		REDUCING GOVERNMENT'S CARBON FOOTPRINT
Index of the measure		P4
Description	**Category**	1.1 Building Codes and Enforcement
	Timeframe	Start - 2011
	Aim/brief description	In budget 2010, Government announced the intent to calculate the carbon footprint of the departments and government entities and introduce a system of incentives to reduce it. Major efforts in this area in the public administration currently focus on data collection and the establishment of suitable ways to keep data, including that relating to energy efficiency. In this regard, the Financial Policy and Management Division within the Ministry of Finance, the Economy and Investment is currently undertaking a research exercise aiming to establish a database of government property, carbon footprint and incentives for its reduction, as per 2010 Budget.
	Target end-use	Energy use in public buildings
	Target group	Public Sector
Information on implementation	**List and description of energy saving actions substantiating the measure**	Work is ongoing to establish a footprint for energy and water consumption within government buildings. A framework to set benchmarks and targets for reduction will be developed in the coming years.
	Budget and financial source	To be finalised
	Implementing body	Ministry of Resources and Rural Affairs
Energy savings	**Method for monitoring/measuring the resulting savings**	To be established
	Savings achieved in 2010	Not applicable
	Expected energy savings in 2016	Not established
	Assumptions	To be established

	Overlaps, multiplication effect, synergy	This initiative is directly linked and complements the aims of Renovation of Public Buildings. The promotion of energy performance contracting would be further facilitated through adherence to GPP common criteria for construction and related product groups.

Table P.5. Improving energy efficiency in public sector transport

Title of the energy saving measure		IMPROVING ENERGY EFFICIENCY IN PUBLIC SECTOR TRANSPORT
Index of the measure		P5
Description	**Category**	6.1. Modal shift
	Timeframe	Start: 2007 End: ongoing

	Aim/brief description	**Fleet management system** A Fleet Management System was set up in 2007 to monitor the fuel consumption of government owned cars. The system was set up to monitor the performance of the vehicles in terms of fuel efficiency, avoid excess consumption and to control the procurement of new vehicles. The system will help with the proposed reform of the government transportation system which is aimed at improving efficiency of internal government transportation used both for the carriage of officials as well as internal mail courier service. **Green Travel Plan** A pilot study for a green travel plan (GTP) at the Office of the Prime Minister commenced during the final quarter of 2010. The fuel consumption, financial savings, distance covered, vehicle emissions, number of trips made and the number of GTP users were recorded for a 12 week period. The GTP was then started in 2011 and data regarding main indicators will continue to be collected for comparison. The results obtained will show a more accurate picture as time goes by and this will influence any decisions that need to be made for expanding or fine tuning the system. THE GTP will be gradual expanded to include more departments and entities.
	Target end-use	Transport
	Target group	Public Sector

Information on implementation	**List and description of energy saving actions substantiating the measure**	The Fleet Management system will help to develop and maintain a more efficient fleet of government vehicles, by: • Checking the fuel efficiency (km per litre) of vehicles • Checking excessive consumption of vehicles • Encouraging maintenance of vehicles to ensure maximum fuel efficiency • Enforcing that an older inefficient vehicle is scrapped in order for a government department to purchase a new vehicle • Incentivize government departments to purchase greener vehicles
	Budget and financial source	Not available
	Implementing body	Ministry of Finance, the Economy and Investment
Energy savings	**Method for monitoring/ measuring the resulting savings**	Not available
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated
	Assumptions	Not applicable
	Overlaps, multiplication effect, synergy	Improvement of energy efficiency in public transport will be further aided through adherence to GPP common criteria for transport. Furthermore, the procurement of clean and energy efficient vehicles is also a legal commitment.

Table P.6. Energy saving measures in social housing

Title of the energy saving measure		ENERGY SAVINGS MEASURES IN SOCIAL HOUSING
Index of the measure		P6
Description	**Category**	2.6 Demonstration 2.7 Exemplary role of the public sector

	Timeframe	Start: 2004 End: 2013, possibly extended
	Aim/brief description	The Housing Authority, the National Agency for Housing in Malta, aims to achieve better energy performance in residential buildings whilst promoting innovative measures that make the best possible use of natural resources. The Authority had carried out a pilot energy saving project consisting of 10 units at Birkirkara Tal-Ftieh. This pilot project was successful and thus, following this project, the Housing Authority began to incorporate energy saving features, where possible, in its new housing projects. Typically, measures implemented by the Housing Authority in newly built social housing include double glazing, louvers and external shading devices for apertures, roof insulation, installation of solar water heaters, and rainwater runoff collection for use as second class water. The objective of the policy, adopted since 2004 by the Housing Authority, is to reduce the direct and indirect electrical power demand of social housing from the national grid. The Housing Authority has a five year plan commencing 2009 providing for the building of additional social housing residential units that will, apart from complying with the minimum requirements that have since come into force, incorporate energy saving measures within the building structure.
	Target end-use	Reduction in energy (and water) demand
	Target group	Social Housing

Information on implementation	**List and description of energy saving actions substantiating the measure**	Since the pilot project, the measures indicated below have been included on an additional 149 units. The combination of measures implemented varies by project. These will include a mixture of the following: • Passive design • Shading Devices • Double Glazing • Wall Insulation • Roof Insulation • Roof damp proof membrane • Solar water heater • Photovoltaic panels • Efficient cooling/heating systems • Runoff collection and use
	Budget and financial source	Estimated cost of implementation per dwelling unit is 4,700 euro
	Implementing body	Housing Authority (national government)
Energy savings	**Method for monitoring/measuring the resulting savings**	F. technical Guidance (conservation of fuel, Energy & natural resources – Minimum requirements on the energy performance of buildings, 2006). Bottom up approach method was used for calculating energy savings.
	Savings achieved in 2010	51.8MWh
	Expected energy savings in 2016	200MWh
	Assumptions	Methodology in http://www.buildup.eu/cases/4803. Target for 2016 assumes housing will implement another 4 similar projects.
	Overlaps, multiplication effect, synergy	Major synergies with the Green Public Procurement Action Plan, particularly targets for construction, windows, glazed doors and skylights, wall panels and other GPP product groups related to buildings.

Table P.7. Energy savings and RES measures in state schools

Title of the energy saving measure		ENERGY SAVINGS AND RES MEASURES IN STATE SCHOOLS
Index of the measure		P7
Description	**Category**	2.6 Demonstration 2.7 Exemplary role of the public sector
	Timeframe	Start: 2005 End: ongoing Two schools per year are being implemented
	Aim/brief description	The Foundation for Tomorrow's Schools was set up by the Government of Malta in 2001 and has among its objectives the management and financing of the development, building, upgrading and refurbishment of State schools. Energy conservation and inclusion of renewable energy sources is a core principle that has been adopted by the Foundation in the design and construction of new schools. Since the implementation of this policy, the Energy Performance in Buildings Regulations have come into effect, which will also have an effect on the energy savings of new schools. Moreover, most of the measures being implemented in the schools go beyond the minimum requirements associated with these regulations. Additional benefits of the policy include practical education on energy and water conservation and integration of micro RES in buildings, water conservation (collection of surface runoff), and improved building properties (sound insulation, waterproofing through use of polyurethane foam in roof insulation, and increased control of thermal comfort given that the schools will not make use of air-conditioning for space cooling/heating).
	Target end-use	Energy use in schools
	Target group	Schools

Information on implementation	**List and description of energy saving actions substantiating the measure**	The measures that have been taken so far in new schools include: • Sun pipes for maximising the use of natural day lighting; • Double glazing and polyurethane roof insulation for increased thermal comfort; • Efficient lighting systems, in terms of the light fittings technologies and controls, e.g. T5 and PL technology, automated dimmer lights, etc.; • Solar water heaters for the heating of water; • Photovoltaic systems to meet part of the buildings' electricity demand; • Water conservation systems: collection and reuse of rainwater for cleaning, flushing and irrigation, and installation of temporised water sets. • Micro wind systems Most of the above measures started to be implemented in 2005, apart from the double glazing (2002), and sun pipes (2007).
	Budget and financial source	Mainly national funds
	Implementing body	Foundation for Tomorrow's Schools
Energy savings	**Method for monitoring/measuring the resulting savings**	Included with top down
	Savings achieved in 2010	.24
	Expected energy savings in 2016	.63

	Assumptions	The savings from the above measures have been calculated on the basis of direct and indirect reduction in electricity demand. These estimates are based on the number of new schools planned to be in operation during. The savings take into account the demand met by solar PV and the savings on electricity from the grid from the use of solar water heaters, sun pipes, and efficient lighting systems; the estimates are based on actual measurements (PV) and calculations compared to conventional lighting and heating technologies. the said year, based on one additional school (allowing for 1,000 students) each year starting October 2005. Data is not available to date to estimate energy savings from elements of the building envelope, such as double glazing and roof insulation, as well as from other aspects of the design that are now subject to compliance with the minimum requirements. In particular, in the case of the introduction of polyurethane foam on roofs and the use of double glazing, the measures are difficult to quantify since they contribute to thermal comfort and the actual energy consumption is user dependent. Furthermore, in the case of the use of double glazing in the upgrading of existing schools, a number of variables made it difficult to quantify the effects of the measure.
	Overlaps, multiplication effect, synergy	Major synergies with the Green Public Procurement Action Plan, particularly targets for construction, windows, glazed doors and skylights, wall panels and other GPP product groups related to buildings.

Table P.8. Eco-Gozo

Title of the energy saving measure		ECO-GOZO
Index of the measure		P8
Description	**Category**	2.6 Demonstration 2.7 Exemplary role of the public sector
	Timeframe	Start: 2010 End: 2020

	Aim/brief description	Transformation of Gozo into an eco-island by 2020.
	Target end-use	Public sector, transport
	Target group	Various
Information on implementation	**List and description of energy saving actions substantiating the measure**	The following eligible actions are proposed for 2010 – 2012: • Install additional photovoltaic panels at the Ministry for Gozo funded from savings in electricity bills arising from replacement of the existing energy supply. • Carry out energy audits on all public buildings including the Gozo Administration Centre. • Convert all lighting systems in offices and public places to energy-saving lighting. • Provide free consultation to people on how to convert their houses to be energy efficient. • Award companies, households, villages and streets committed to energy-saving with a 'Green Award'. Set up an electric cab system for Victoria. • Introduce hybrid and electric cars in its fleet and also promote the use bio fuels as a commitment towards using alternative sources of energy for transport purposes.
	Budget and financial source	€25 million for all measures in Eco-Gozo for 2010-2012. Not all actions are eligible for the NEEAP or concern energy.
	Implementing body	Ministry for Gozo
Energy savings	**Method for monitoring/measuring the resulting savings**	TD
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not available
	Assumptions	
	Overlaps, multiplication effect, synergy	This measure overlaps to some extent with other measures undertaken in the public sector.

Table P.9. Participation by local councils in Covenant of Mayors

Title of the energy saving measure		PARTICIPATION BY LOCAL COUNCILS IN COVENANT OF MAYORS
Index of the measure		P.9.
Description	**Category**	7 Energy saving mechanisms and other combinations 2.6 Demonstration 2.7 Exemplary role of the public sector
	Timeframe	Start 2009 Status – ongoing – plans being submitted to Covenant
	Aim/brief description	Participation by Local councils in the Covenant of Mayors
	Target end-use	Various – particularly RES and lighting
	Target group	Various – including local councils as well as enterprises and households in the councils
Information on implementation	**List and description of energy saving actions substantiating the measure**	Around half of the local councils have signed to the Covenant of Mayors[9], and of these, around half have already submitted an action plan. The signatories are: Balzan, Birkirkara, Fgura, Gharb, Għajnsielem, Għaxaq, Ħad-Dingli, Ħal Għargħur, Ħal Tarxien, Ħaż-Żebbuġ, Iklin, Isla, Kalkara, Kirkop, Marsaskala, Mdina, Mellieha, Mġarr, Mosta, Naxxar, Pembroke, Qala, Qormi, Qrendi, Rabat (Citta' Vittoria), San Ġiljan, San Lawrenz, San Pawl il-Baħar, Santa Luċija, Santa Venera, Sliema, Swieqi, Ta 'Kercem, Ta' Xbiex, Xagħra, Xewkija
	Budget and financial source	Not available yet
	Implementing body	Local councils, Local councils association
Energy savings	**Method for monitoring/measuring the resulting savings**	Included with top down
	Savings achieved in 2010	Not available
	Assumptions	None
	Overlaps, multiplication effect, synergy	None

[9] http://www.eumayors.eu/

Table P.10. Government incentives for local councils to improve reduce energy use

Title of the energy saving measure		GOVERNMENT INCENTIVES FOR LOCAL COUNCILS TO REDUCEREDUCE ENERGY USE
Index of the measure		P10
Description	**Category**	2.6 Demonstration 2.7 Exemplary role of the public sector
	Timeframe	Start: 2008 Status: on going
	Aim/brief description	The Department of Local Government launched two energy aid schemes with the intention of encouraging Local Councils to invest in energy efficient measures or renewable energy. Grants of 80% up to €10,000 were provided to local councils for investment in energy savings. Examples of energy efficiency projects that were put into practice are changing lighting to energy saving and LEDs and installing double glazing on windows, although the majority of projects involve the installation of renewable energy equipment.
	Target end-use	
	Target group	Local councils
Information on implementation	**List and description of energy saving actions substantiating the measure**	The table below lists the progress achieved by local councils who have reported.
	Budget and financial source	1st Call - €662k of which €314k national funds 2nd Call – €328k of which €190k national funds
	Implementing body	Local council department
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	First Call: 0.25GWh Second Call: 0.19GWh
	Expected energy savings in 2016	Not estimated
	Assumptions	All local councils implement projects proposed

	Overlaps, multiplication effect, synergy	Major synergies with the Green Public Procurement Action Plan which stipulates GPP targets for all public procurement including procurement by local councils.

Local Council	Aim Description	Budget	Savings 2010	Savings 2016
Floriana, Ghajnsielem, Ghargur, Mgarr, Mellieha, Mosta, Mtarfa, Nadur, Naxxar, Qala, Sannat, Xaghra, Zebbug Għawdex	Implementation of renewable energy systems consisting of a number of PV systems with an aggregate generating capacity of 24.8kWp within a network of 13 Local Councils in Malta and Gozo and dissemination of information about the benefits of the project. Aims: To enhance collaboration between a group of 15 local Councils in Malta and Gozo. To create awareness amongst and set an example to fellow citizens especially in the communities concerned. To disseminate information about the benefits arising from the project to the general public by readily accessible means.	EUR 89,921.62 financed in part by the Scheme and in part by each respective council	Approximately 12,230 kWh, (project execution started in 2010 and completion is planned for April 2011).	Approximately 37,300 kWh
Birkirkara	SWH - Cost savings in electricity consumption PV - Cost savings in electricity consumption		€400	
Dingli	Installation of PV System on Local Council Offices Premises	Total cost €9,370.00c : Govt. Grant €6,600.00c , Council Funding €2,770.00c	4270 kWh	4270 kWh
Fontana	Implementation of renewable energy systems consisting of a PV system with a generating capacity of 2.1kWp in a public garden above the local council premises in the locality of Fontana, Gozo and dissemination of information about the benefits of the project.	EUR 10,294.41 financed in part by the Scheme (EUR 9,800.00) and in part by the council (EUR 494.41)	Approximately 1,530kWh, (project execution started in April 2010 and installation completed in July 2010).	Approximately 1,511 kWh
Għarb	Reduction in energy use and	10,000.00	NIL	4241kW in one

	reduction of the Council carbon footprint. Aim towards assisting the primary school with available data for education. Educating the community in general on alternative sources of energy, by supplying real time date of production figures of the system. Data will also be freely available to the community on the internet. Dissemination of information will also be done via verbal, printed and electronic methods. Trained school officials to educated primary school children. The project will also reduce the recurrent energy expenditure. The project is for the installation and commissioning of a 1.26kWp photovoltaic system, on the roof top of Għarb Primary School (Karmni Grima Primary School in Għarb). The project will also include communication equipment that will be networked throughout the class rooms in order to educate students on the subject.			year. Therefore a total of 21205kW in 5 years.
Għaxaq	Installation of PV System on Public Convenience in Għaxaq Housing Estate	€6700 Grant from Scheme 38 of 2008.	3590 kWh	3590 kWh
Munxar	Implementation of renewable energy systems consisting of a PV system with a generating capacity of 3.0kWp on the public building managed by the Local Council in the locality of Munxar and dissemination of information about the benefits of the project.	Euro 8,639.29 financed in full by the Scheme.	Approximately 1,656 kWh, (project execution started in March 2010 and installation completed in August 2010).	Approximately 4,533 kWh
Pembroke	To promote green measures in the locality and reduce the energy consumption of the Local Council's office.	Skema dwar Proġetti Energy Saving – Central Government	1600kWh	3500kWh
Qormi	Implementation of renewable energy systems consisting of a number PV systems with an	EUR 19,941 financed in part by the Scheme and by the Qormi Local Council.	Approximately 6,080Kwh, (project execution started	Approximately 48,800Kwh

	aggregate generating capacity of 6Kwp.		in March 2010.	
Qrendi	The principal aim is that by this energy saving means the Local Council would be taking the initiative towards a cleaner environment.	€5,537.40	1458Kwh (units)	18,500Kwh (units)
Safi	Implementation of renewable energy systems consisting of a PV system with a generating capacity of 1.62kWp on the local council's premises in the locality of Safi and dissemination of information about the benefits of the project.	EUR 6,608.85 financed in full by the Scheme	Approximately 1,565kWh, (project execution started in January 2010 and installation completed in May 2010).	Approximately 2,448 kWh
San Pawl il-Baħar	Implementation of renewable energy system for street lighting system.	EUR 6,400.00 full financed by the Scheme.	Approximately 409kWh, (project execution started in August 2009 and installation completed in October 2010).	Approximately 1,122 kWh
Sliema	Implementation of a 3.3Kwp Photovoltaic system consisting of 16 panels.	Eur9975 – DLG scheme	Part of 2010 savings: 2,400Kwh.	Energy saved 25,300Kwh.
Swieqi	Implementation of renewable energy systems consisting of a PV system with a generating capacity of 2.1kWp in a public garden above the local council premises in the locality of Swieqi and dissemination of information about the benefits of the project.	EUR 8,340.55 full financed by the Scheme.	Approximately 552kWh, (project execution started in August 2009 and installation completed in October 2010).	Approximately 1,511 kWh
Ta Xbiex	PV System to produce power for public garden facility.	€ 8,000		15,540kWh
Tarxien	The aim of this project is to generate clean renewable energy for the energy utilization of Hal-Tarxien's public conveniences and the nearby public garden lighting.	European Regional Development Funds (ERDF)	Nil	12435kWhrs corresponding to €2,113.95 (based on present tariff of €0.170/kWhr)
Zurrieq	Implementation of renewable energy systems consisting of a PV system with a generating capacity of 2.035 kWp installed on the roof of the local council premises in the locality of Zurrieq, Malta, and dissemination of information about the benefits of the project.	EUR 7,669.00 full financed by the Scheme.	Approximately 1,123.32 kWh, (project execution started in August 2009 and installation completed in November 2010).	Approximately 3,075.08 kWh

3.3.5. Measures in industry and SMEs

Table I.1. Malta Enterprise Energy grant scheme

Title of the energy saving measure		MALTA ENTERPRISE ENERGY GRANT SCHEME
Index of the measure		I1
Description	**Category**	3.1 Subsidies (Grants)
	Timeframe	Start: 2009 End: 2013
	Aim/brief description	The Malta Enterprise, the Government entity dealing with industrial promotion, launched a scheme in 2009, under the European Regional Development Fund 2007-2013 programme. Proactive businesses were able to invest in implementing solutions to reduce the impact of energy costs on their business. The funds available amounted to €15m and participants in this scheme could benefit from a 50% grant up to a maximum of €100,000. For an application to be considered for co-funding, the minimum project value (based on eligible expenses) had to be at least € 25,000 and not exceed € 200,000. The resultant minimum grant value per project is € 12,500. The incentive was administered through a series of competitive calls. Malta Enterprise issued public calls for interested enterprises to submit applications under the incentive. Applications were reviewed and eligible applications were evaluated and ranked. Grants were awarded to the top ranking applicants in accordance to the available budgets. Three calls for proposals of projects were issued.
	Target end-use	Industrial processes, use in commercial sector
	Target group	Industry, tertiary

Information on implementation	**List and description of energy saving actions substantiating the measure**	Eligible projects included investments in energy efficient equipment (such as the installation of intelligent lighting systems, solar heating, thermal insulation, building management systems and energy-saving lighting) and electricity generation from renewable sources such as solar and wind. This scheme was run in parallel with a scheme funded by the Maltese Government, aimed at assisting companies to carry out energy audits. Energy audits identified measures which could then be funded through the energy grant scheme. It is estimated that a total of 3 MWp (4.5GWh/annum) PV capacity were installed by end 2010 as a result of the first two calls, in addition to energy efficiency measures
	Budget and financial source	€15m from ERDF funds, plus at least another €15m from private funds
	Implementing body	Malta Enterprise
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Data not yet available
	Expected energy savings in 2016	It is expected that the schemes will result in an annual saving of 22,000MWhr and an annual 5,500MWhr generated from renewable sources
	Assumptions	The energy savings from energy efficiency measures calculated for the ERDF energy grant scheme are based on the energy savings claimed by applicants for in the project proposals for the first two calls.
	Overlaps, multiplication effect, synergy	None

Table I.2. Energy saving measures in government owned industry

Title of the energy saving measure		ENERGY SAVING MEASURES IN GOVERNMENT OWNED INDUSTRY
Index of the measure		I2
	Category	4.1 Industrial Companies voluntary agreements

	Timeframe	Start: 1995 Ongoing
	Aim/brief description	The Maltese islands have a limited availability of groundwater sources and it is also difficult to control the quality of this groundwater. To meet EU and local standards groundwater is blended with high quality water produced from the three main RO plants at Pembroke, Lapsi and Cirkewwa. This has necessitated the extensive use of seawater desalination by reverse osmosis (RO), which accounts for almost 60% of the potable water demand of 31 million cubic metres per annum. In 2007, the Ministry responsible for investments published a corporate environmental Policy which sets targets for energy efficiency in Government owned industry falling under its responsibility, some of which are major energy consumers in the country. The Water Services Corporation, in particular, consumes nearly 5% of the national electricity demand and thus a number of measures have also been implemented to make the production and distribution of water more energy efficient.
	Target end-use	Water production
	Target group	Government owned Industry

Information on implementation	**List and description of energy saving actions substantiating the measure**	The measures implemented to make the production and distribution of water more energy efficient include: Optimisation of Reverse Osmosis process Desalination is energy intensive and the electricity consumption for water production was about 7% of total demand in 1999/2000, a significant share[10]. Since 2000, the WSC has utilised the experience gained in the operation of desalination plants to optimise plant operation of existing plants and ensure production of potable water at minimum resource cost. A number of initiatives were taken to accomplish these targets, including the reduction of energy utilised for production through regular energy audits to ensure optimal operational efficiency at all times, the installation of highly efficient equipment, and careful membrane management. Technical measures implemented include the installation of pressure exchanger technology at the Lapsi RO plant (2002) and replacement of energy recovery systems at the Pembroke RO plant (2000-2002). These measures, together with other initiatives taken to address inefficiencies identified during routine energy audits, reduced the specific energy consumption of the RO plants from 6.37kWh/m3 (produced & distributed) in 2000 to 5.89kWh/m3 in 2005, resulting in estimated savings in 2005 of 8.2GWh. In 2007, WSC started an upgrading project to further reduce the energy utilised in the desalination process, through technical design modifications. The upgrading was completed in 2009 and was estimated to result in a reduction of 20% in the energy consumption. Additional benefits from this measure include an increase in the nominal capacity of the plants (38.6%) and an improvement in the water quality (decrease of 40% in chloride levels).

[10] Based on WSC's 1999/2000 electricity consumption in WSC (2000)

		Energy Reduction in Water Transfer and Distribution Network Energy is also expended in the production and distribution of groundwater; furthermore, leakage control is a primary concern in the management and operation of the water distribution network, both in view of the need to conserve groundwater, as well as the need to control energy demand of producing and distributing the water. Since 2000, measures have also been taken to reduce the energy demand associated with the water distribution network. Measures include the installation of efficiency-enhancing devices in water pumping and transfer systems and the use of a dedicated software system to determine the best combination of water production and transfer so as to minimise energy consumption of these activities. Additional benefits of these measures include a better utilisation of resources and sustainable aquifer abstraction. The energy generated from treating sewage effluent will also be used in-house to reduce energy demand by WSC.
	Budget and financial source	
	Implementing body	Water Services Corporation
Energy savings	**Method for monitoring/measuring the resulting savings**	TD
	Savings achieved in 2010	42GWh
	Expected energy savings in 2016	42GWh

	Assumptions	Energy Savings from the above measures since have been based on the reduced electricity demand per cubic meter of water produced from desalination and distributed reported in WSC Annual Reports . Energy savings for the years 2010, 2015 and 2020 have been based on an expected further reduction of 20% in the specific energy consumption of the desalination process due to the measures implemented in 2009, and an increase in water demand based on 2007 demand levels per capita and forecasted population growth.
	Overlaps, multiplication effect, synergy	None

Table I.3. Energy efficiency measures for hospitality sector

Title of the energy saving measure		ENERGY EFFICIENCY MEASURES FOR THE HOSPITALITY SECTOR
Index of the measure		I3
Description	**Category**	3.1 Subsidies (Grants)
	Timeframe	Start: 2011
	Aim/brief description	Enterprises in the hospitality sector such as licensed hotels, guesthouses, hostels, snack bars and restaurants may all benefit from a loan financed by Malta Enterprise. Loans approved under this incentive may not exceed €400,000 or 80% of the total investment, as approved by the Corporation. The loan has to be repaid within 5 years and will have an interest rate of 1.5% over the discount rate charged by local commercial banks. Enterprises in the hospitality sector can achieve significant savings through the support available on these investments, which can be redirected to investing in developing new markets, products, services and other core business requirements.
	Target end-use	Energy use by hotels and restaurants
	Target group	Hospitality Sector

Information on implementation	**List and description of energy saving actions substantiating the measure**	Projects supported under this incentive must result in a reduction of the dependency on fossil fuels and a reduction of the carbon footprint arising from the operation of a licensed hotel, guesthouse, hostel, farmhouse, snack bar or restaurant. This must be achieved through the implementation of a holistic investment programme for the conservation of energy and the generation of energy from renewable energy sources as determined by an Energy Review Audit by an Energy Business Advisor appointed by Malta Enterprise.
		The following are conservation and generation equipment costs that are eligible for this scheme: • Energy saving lighting systems (including energy saving lighting which such lighting is required as part of a holistic plan); • Thermal insulation; • Combined Heat and Power (CHP)2 solutions; • Double-glazed windows and doors; • More energy efficient electrical equipment and air-conditioning systems; • Building Management Systems (BMS) and similar solutions that monitor and record energy usage and tie in air handling units, heat, ventilation, air conditioning and lighting to prevent conditioning space when it is not necessary. • Energy generating equipment which uses bio-fuels • Energy generating equipment which uses cleaner and more efficient fuels than those used in existing solutions at the supported premises • Solar Heating/cooling solutions • Geothermal Heating/cooling solutions • Wind Energy equipment • Solar energy equipment
		Investments in energy saving solutions and renewable energy sources are no longer a commodity but a necessity, these investments will help hospitality businesses reduce their dependency on fossil fuels, reduce costs and attract more environmentally conscious customers.
	Budget and financial source	
	Implementing body	Malta Enterprise

Energy savings	**Method for monitoring/measuring the resulting savings**	TD
	Savings achieved in 2010	Not applicable
	Expected energy savings in 2016	Not available
	Assumptions	None
	Overlaps, multiplication effect, synergy	None

Table I.4. Energy audits for the commercial sector

Title of the energy saving measure		ENERGY AUDITS FOR THE COMMERCIAL SECTOR
Index of the measure		I4
Description	**Category**	
	Timeframe	Start: 2010

	Aim/brief description	The Malta Tourism Authority (MTA), a number of years back, had identified the need for accommodation and other tourism establishments to become more competitive by cutting down on their energy bills and effectively introduce wider use of energy saving measures in this important sector of the Maltese economy. The MTA had asked MIEMA to carry out energy audits in tourism establishments in Malta and Gozo to identify the requirements of such tourism establishments. In carrying out the energy audits MIEMA joined forces with Malta Enterprise, which was already running the Energy Audit Scheme. Tourism establishments are encouraged to participate in this scheme. To harmonise the audits, MIEMA prepared a comprehensive audit survey for use by the appointed advisors. The survey was vetted and accepted by ME, and the two entities organised seminars to present and explain the survey to ME's approved advisors, with reference to the specific requirements of accommodation establishments. This was the first step towards standardisation and the establishment of an approved training course and certification system for energy auditors. The direct outcome of the activity is to address a specific need felt by the most important industry in the Maltese economy and better environmental conservation. In addition to the overall contribution to Malta's energy performance and towards the nation's energy targets, the work package will primarily help local hotel establishments to reduce costs and become more competitive by adopting energy efficient systems and practices. A positive side effect presented by the exercise can be the eco-marketing possibilities of individual establishments and, possibly, the whole tourism product.
	Target end-use	
	Target group	Hospitality Sector

Information on implementation	**List and description of energy saving actions substantiating the measure**	MIEMA worked closely with the Malta Hotels and Restaurants Association (MHRA), and held Eco-Information sessions and campaigns to increase awareness on energy issue within this sector. Hotels in Malta and Gozo were encouraged to apply for ME's Energy Audit Scheme. For this purpose, ME, MIEMA and the MTA organised joint info sessions for stakeholders. ME's pool of advisors used the survey developed by MIEMA during the site visits. Besides the audits themselves, the deliverables of the work package consisted of a series of dissemination initiatives (conferences, in-depth workshops).
	Budget and financial source	Not available
	Implementing body	Malta Tourism Authority (MTA), Malta Intelligent Energy Management Agency (MIEMA) & Malta Enterprise (ME)
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated
	Assumptions	Not applicable
	Overlaps, multiplication effect, synergy	None

Table I.5. Promotion of groundwater heating and cooling

Title of the energy saving measure		PROMOTION OF GROUNDWATER HEATING AND COOLING
Index of the measure		I5
Description	**Category**	1. Regulation
	Timeframe	Start: 2009 End: ongoing

	Aim/brief description	The efficiency of any thermodynamic process depends in part on the availability of a heat sink at a sufficiently low temperature. Generally the lower the temperature, the greater is the process efficiency. Hence it is perceived as a useful heat sink during summer and conversely a heat source in winter when ambient temperature is cooler. This characteristic may be exploited for the reduction of energy consumption required for the cooling or heating of building structures.
	Target end-use	Heating & Cooling in Buildings
	Target group	Industry
Information on implementation	**List and description of energy saving actions substantiating the measure**	There is growing interest in Malta on the use of groundwater for heating and cooling buildings, by means of heat exchange through a borehole system. This will contribute to the reduction of energy consumption required for the cooling or heating of building structures. Using such a technology poses high risks to groundwater. The Malta Resources Authority issued a consultation paper in 2009 outlining the required information and the studies necessary for the application of such an installation to be considered by the Authority.
	Budget and financial source	Not available
	Implementing body	Malta Resources Authority
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not yet available
	Expected energy savings in 2016	Not yet available
	Assumptions	Not applicable
	Overlaps, multiplication effect, synergy	Overlaps with measures taken in buildings, as well as support schemes for industry and other commercial sector.

Table I.6. Support schemes for SME's

Title of the energy saving measure		SUPPORT SCHEME FOR SME'S
Index of the measure		I6
Description	**Category**	3. Financial Instruments
	Timeframe	Planned
	Aim/brief description	The Malta Enterprise Energy Grant Scheme was planned to target industry and SME's but since for an application to be considered for co-funding, the minimum project value had to be at least € 25,000 this made SME's (particularly small enterprises) unable to qualify for the grants since their energy efficiency investments and/or renewable energy investments did not amount to such high values. Requests for energy audits were also very low as a result of the criteria for minimum investment. In view of this scenario, it is being proposed for the Malta Enterprise scheme to be amended to include SME's by lowering the minimum limit for investment. This increase in the minimum limit was aimed at stimulating Malta-based SME's including micro-enterprises to achieve competitive advantage by providing financial assistance for adopting sustainable 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 due to limitations on the size of their operations. 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.
	Target end-use	Electricity use in SME's
	Target group	SME's

Information on implementation	**List and description of energy saving actions substantiating the measure**	A variety of means were employed to inform SMEs on energy efficiency including workshops, seminars, and other targeted campaigns. • Subsidised energy audits were provided. • Support mechanisms were developed to fund measures including power factor improvement, CHP, high efficiency motors and variable speed drives, RES, space heating and cooling, office equipment including pc's, standby losses, and other issues identified during audits.
	Budget and financial source	Not available
	Implementing body	Malta Enterprise
Energy savings	**Method for monitoring/measuring the resulting savings**	Not applicable
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated
	Assumptions	None
	Overlaps, multiplication effect, synergy	None

Table I.7. Promotion of CHP for Industry and Large Tourist Complexes

Title of the energy saving measure		PROMOTION OF CHP FOR INDUSTRY AND LARGE TOURIST COMPLEXES
Index of the measure		I7
Description	**Category**	2.5 Training and education
	Timeframe	2009 - ongoing
	Aim/brief description	Promotion of CHP for large users who use heat in their processes
	Target end-use	Heat use in industry
	Target group	Industry, large complexes

Information on implementation	**List and description of energy saving actions substantiating the measure**	The Cogeneration Regulations, Legal Notice 2 of 2007, as amended by Legal Notice 196 of 2008, completely transposes (i) Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC and the Commission Decision 2007/74/EC of 21 December 2006 establishing harmonised efficiency reference values for separate production of electricity and heat in application of Directive 2004/8/EC of the European Parliament and of the Council. The Regulation to issue Guarantees of Origin certificates for Electricity from High Efficiency Cogeneration and Renewable Energy Sources was done through, Legal Notice 92 of 2010. Amendments to this legal notice, following the coming into for of the RES Directive have been done through Legal Notice 126 of 2011. During the past year the Malta Resources Authority received the application for authorisation for 6 small scale cogeneration units, all using diesel engines, for trigeneration units in the industrial/commercial sector. The Authority is still in discussion with the applicants. The applications/projects mentioned above are still at an early stage however a project at a waste treatment plant using the biogas generated in a cogeneration unit is at an advanced stage. The application is for two units with a total capacity less that 2MWe
	Budget and financial source	Not available
	Implementing body	MRA
Energy savings	**Method for monitoring/measuring the resulting savings**	Not available
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated
	Assumptions	None
	Overlaps, multiplication effect, synergy	Could have overlap and / or synergy with measures listed as support for industry

3.3.6. Measures in the energy sector

Table C.1. Smart metering

Title of the energy saving measure		SMART METERING
Index of the measure		C.1.
Description	**Category**	2.8 Metering and informative billing
	Timeframe	Start: 2009 End: 2013
	Aim/brief description	In 2008, Enemalta Corporation awarded a contract for an automated meter reading system. AMM enables restructuring of the billing process, improved customer relationship management and the introduction of e-services that further empower clients to serve their own customers. If consumers can see how much energy they are using and what it is costing them, they can make informed choices. The smart meters roll out started in 2009 and the system is expected to be fully operational by 2013. A total of 60,000 meters are currently installed from a total of 250,000 meters.
	Target end-use	Reduction in energy consumption by changing consumer behaviour
	Target group	All electricity consumers in Malta and Gozo

Information on implementation	**List and description of energy saving actions substantiating the measure**	The amount of energy that can be saved by giving customers better feedback is uncertain. **The European Commission**[11] has estimated that household energy bills could drop by a tenth owing to smart metering devices. Savings vary depending on the smart-meter system installed. The key distinction between smart-meter types is determined by their communication, that is, whether there is any with the energy supplier, whether this is one-way or two-way and the data-storage capability of the meter. The combination of these features determines the extent to which the metering system can help customers reduce their energy usage. The eventual implementation of pre-payment and time-of-use tariffs are believed to contribute to reduction in energy demand (i.e. reduction in CO_2 emissions) and also may contribute to maximize use of efficient base-load generation and reduce the need for spinning reserves.
	Budget and financial source	Estimated Capital Expenditure – €30 million
	Implementing body	Enemalta Corporation
Energy savings	**Method for monitoring/measuring the resulting savings**	BU, TD, or other method. Please provide details if appropriate (consider Annexes)
	Savings achieved in 2010	None
	Expected energy savings in 2016	The expected annual savings will be approx. 25-50GWh from 2013
	Assumptions	Estimates of savings
	Overlaps, multiplication effect, synergy	Could interact with all other measures that have an impact on electricity use

3.3.7. Measures in mobility

[11] http://www.euractiv.com/en/energy-efficiency/smart-meters-controlling-your-energy-bill-linksdossier-257199

Table T.1. Promotion of transport modal shift towards public transport

Title of the energy saving measure		PROMOTION OF TRANSPORT MODAL SHIFT TOWARDS PUBLIC TRANSPORT
Index of the measure		T.1.
Description	**Category**	6.1. Modal shift
	Timeframe	Start: Third quarter of 2011 End: First quarter 2012
	Aim/brief description	Government is implementing measures to reform the public transport system as part of the new transport policy. It is envisaged that these measures will lead to improved energy efficiency in transport. A modal shift of 8% from the use of private cars to use of public transport is being targeted. In an effort to increase the usage of the public transport service, as from July 3rd 2011 all the 508 current public transport scheduled buses will be decommissioned to be replaced by 264 Euro V buses. Despite the fact that the number of buses on the road will decrease there will be an increase in the seating capacity from 13,900 to 20,500. The new network will offer more routes and more frequent service. A night service has also been introduced. Through the IT system to be set up, government will be able monitor in real time the bus position, arrival time on each bus stop, alert for all delays and record the number of persons boarding at each bus stop. The passengers will be able to receive full timetables for each route by SMS, as well as able to view real time information at bus stops and online. These changes are aimed at making the service much more efficient and hence it will attract a larger number of users.
	Target end-use	Reduction of fuel use in road transport
	Target group	General Public

Information on implementation	**List and description of energy saving actions substantiating the measure**	It is expected that through this measure, a modal shift of 8% from the use of private cars to public transport and other non car modes will be achieved. This means that an 8% reduction in fuel used for road transport will be achieved. If the desired results are achieved, more of these measures will be put in place to achieve a modal shift of at least 20%. As part of the public transport reform, the current bus fleet which has models dating to the 1950s will be changed to less polluting and more energy efficient Euro V engines. Additionally, Government policy envisages the following measures that will have an impact on modal shift: • 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; • Commission feasibility studies on alternative mass transit systems for Malta including a study for the introduction of other mass transit modes besides the bus system
	Budget and financial source	The new public bus transport operations will be operated by a private operator. Total investment is that of around 39 million Euros to replace the bus fleet
	Implementing body	Transport Malta
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	None
	Expected energy savings in 2016	Not estimated
	Assumptions	None
	Overlaps, multiplication effect, synergy	This measure is linked to the information campaign being implemented to advise consumers about energy efficiency in general.

Table T.2. Promotion of e-working or tele-working

Title of the energy saving measure		PROMOTION OF E-WORKING OR TELE-WORKING
Index of the measure		T.2.
Description	**Category**	2.7 Exemplary role of the public sector 6.1. Modal shift
	Timeframe	Start: 2008 End: Ongoing
	Aim/brief description	In 2008 a tele working policy was published by government which took into consideration feedback received from a research project carried out together with the National Commission for the Promotion of Equality (NCPE). The purpose of this policy was to set up a formal framework for the administration of tele work in the public administration of Malta and the policy document outlines the general principles on which tele work should be administered in the Public Administration of Malta. Tele working guidelines were also issued to complement the policy, with the intention to facilitate the implementation of tele work as a flexible working arrangement. Several employees within the Public Administration entities are undertaking the opportunity to tele-work. . In January 2011, the number of tele workers in the Public Administration amounted to 453. It is evident that tele working is on the increase when compared to the 306 tele workers in November 2009.[12]
	Target end-use	Reduction of fuel use in road transport
	Target group	General public commuting to work using their own car
Information on implementation	**List and description of energy saving actions substantiating the measure**	This measure could potentially have a significant impact to reduce fuel used in vehicles from daily journeys to work which in Malta are currently mainly dependant on usage of own vehicle.

[12] Family-friendly measures report as on 1st November 2009 accessible at http://www.mpo.gov.mt/downloads/FFM2009.pdf

	Budget and financial source	Per year and/or total, indicating EU contribution and/or other sources
	Implementing body	Public Administration HR Office
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	180MWh
	Expected energy savings in 2016	Not estimated
	Assumptions	The calculation was based on the assumption that 100 employees per year take up the scheme for one day a week and resulting in fuel savings of 100lt/year, the savings for 2010 would be 180MWh. Maximum savings are based on 200 employees resulting in 200lt/year
	Overlaps, multiplication effect, synergy	Could interact with other measures to promote a modal shift

Table T.3. Vehicle Registration Tax System Reform

Title of the energy saving measure		VEHICLE REGISTRATION TAX SYSTEM REFORM
Index of the measure		T.3.
Description	**Category**	3.2 Tax rebates and other taxes (also tax increase) that stimulate reduction of energy end-use consumption
	Timeframe	Start: 2007 End: ongoing
	Aim/brief description	Re-structuring of the motor tax system to incentivise the purchase of more energy-efficient vehicles.
	Target end-use	Fuels for transport
	Target group	General public

Information on implementation	**List and description of energy saving actions substantiating the measure**	A range of taxation measures supporting energy efficiency and renewable energy are already in place or will shortly be introduced: • In the past few years, government started a reform with the aim of having cleaner smaller and new cars on the Maltese roads. In 2009, the registration tax and licensing of vehicles was reformed and is known as M1. Through this reform registration tax and licensing of vehicles are now calculated on emissions, the length of the vehicle and its value. • In 2010 the tax for commercial vehicles, was changed to one based on the concept that who pollutes the least pays the least. This will be amended in 2011 where the concept of depreciation will be introduced, according to the year and the mileage of the vehicle to continue rendering our system more transparent and fair. • To encourage more hybrid cars the law will be amended so that for the computation of registration tax the amount of carbon dioxide will be reduced by 30 per cent instead of the current 20 per cent. • The annual circulation licenses will be reduced from 75 to 10 euro for all electric vehicles.
	Budget and financial source	None
	Implementing body	Ministry for Finance, the Economy and investment
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated
	Assumptions	None
	Overlaps, multiplication effect, synergy	Synergy and possible overlaps with all other transport measures

Table T.4. Promotion of electric vehicles

Title of the energy saving measure		PROMOTION ELECTRIC VEHICLES
Index of the measure		T.4.
Description	**Category**	3.1 Subsidies (Grants) 3.2 Tax rebates and other taxes (also tax increase) that stimulate reduction of energy end-use consumption
	Timeframe	Start: 2005 End: ongoing:
	Aim/brief description	In 2005, government launched a scheme for a grant of 15.25% on the purchase price of electric passenger cars with the aim to increase the use of electric-powered cars, This grant was subject to a maximum of €1165 per vehicle. The uptake of this scheme was not very successful. In 2008, in order to further encourage the use of electric-powered cars for personal use, the grant was increased to 20% of the purchase price of the car, subject to a maximum of €2,329. In 2011, a new scheme will be launched where a person buying an electric car for private use will benefit from a subsidy of up to €5,000 for the installation of grid connection renewable energy source at his home. Government is planning to install charging points nationwide to further promote the inclusion of electrical vehicles, The charging stations will start to be installed in strategic sites during 2011.
	Target end-use	Reduction of fuel use in road transport Use of renewable energy sources
	Target group	General public

Information on implementation	**List and description of energy saving actions substantiating the measure**	To compliment this measure registration fees on electric cars and electric motor bikes have been removed. Additionally annual circulation licenses will be reduced from 75 to 10 for all electric vehicles A reduction on company tax equivalent to 125% on the amount spent on electric cars, is also being given to companies . It is envisaged that 1.5% of our passenger car fleet will be electrically powered by 2020.
	Budget and financial source	The initial amount allocated is €400,000 It is estimated that the cost per charging point will be around €4,000.
	Implementing body	Ministry for Resources and Rural Affairs
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available separately
	Expected energy savings in 2016	Not estimated
	Assumptions	None
	Overlaps, multiplication effect, synergy	Reduction in registration tax measures.

Table T.5. Passenger vehicle scrappage schemes

Title of the energy saving measure		PASSENGER VEHICLE SCRAPPAGE SCHEMES
Index of the measure		T.5.
Description	**Category**	3.1 Subsidies (Grants)
	Timeframe	Start: November 2010 End: November 2011

	Aim/brief description	The Government has introduced the car scrappage scheme to incentivise the removal of some of the most energy guzzling and polluting private passenger vehicles from the national vehicle fleet . The first call was issued in 2010 and is aimed at replacing not more than 2,000 vehicles. The grant is capped to a maximum of 15.25% on the vehicle CIF price capped to a maximum grant of 2000 Euro. Cars eligible to be scrapped as part of the scheme are required to be older than 10 years. The car purchased needs to be of Euro IV or higher, have CO2 emissions which do not exceed 150g/km and does not exceed a length of 4460mm. Additionally the new car has to have never been registered in any country. The scheme only applies to passenger vehicles for private use. The scheme will also be open to those who buy a new car but do not have an old car to scrap. In that case, only a €1,000 rebate will be given with the other €1,000 being paid into a government fund which will be used to scrap other cars.
	Target end-use	Reduction of fuel used in private vehicle road transport
	Target group	General public
Information on implementation	**List and description of energy saving actions substantiating the measure**	Tighter Euro Emission standards will obviously mean that less fuel is used per km travelled even without the introduction of such a scheme. Hence, emissions in Malta will decrease over time. The scheme will help to removing older type vehicles from the national fleet and promote the uptake of more efficient vehicle types. This implies that less fuel will be used in road transport as a result of this scheme.
	Budget and financial source	Allocated budget for first scheme 4 million Euro
	Implementing body	Ministry for Finance, the economy and investment

Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated
	Assumptions	None
	Overlaps, multiplication effect, synergy	Possible overlaps with all other transport measures

Table T.6. Traffic congestion reduction in capital city

Title of the energy saving measure		TRAFFIC CONGESTION REDUCTION IN CAPITAL CITY
Index of the measure		T.6.
Description	**Category**	6.1 Modal Shift
	Timeframe	Start: 2006 End: ongoing
	Aim/brief description	The Maltese Government is taking measures to improve accessibility into the capital city, Valletta, reduce traffic congestion and improve the environment. Such measures include the introduction of CVA and the park and ride scheme. These efforts have resulted in a substantial drop in traffic in and around Valetta in normal peak hours. A 22% drop in the total number of individual cars visiting Valetta everyday for any length of time has been recorded. There has also been a 60% drop in car stays by non-residents of more than eight hours, but there has been a marked increase of 34% in non-residential cars visiting the city for an hour or less [http://www.eltis.org/index.php?id=13&study_id=1610].
	Target end-use	Fuel use in transport
	Target group	General public

Information on implementation	**List and description of energy saving actions substantiating the measure**	The Controlled Vehicular Access scheme in Valletta involves the use of cameras at different entrance and exit points in Valletta which use number plate recognition software and other software to calculate the duration of the visit and the bill. Charges vary on the duration of the trip into the city. The scheme is in operation from Monday to Friday (08.00 - 18.00 hrs) and Saturday (08.00 - 13.00 hrs), all other times are free. Electric vehicles are exempt from the scheme. The government introduced a park and ride scheme aimed at reducing traffic in Valletta whereby drivers are encouraged to leave their cars in a massive car park situated just outside Valletta and enter the city via an efficient mini-van service
	Budget and financial source	Not available
	Implementing body	Transport Malta
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated
	Assumptions	None
	Overlaps, multiplication effect, synergy	Interacts (positively) with other transport measures

Table T.7. Green travel plans in university and colleges

Title of the energy saving measure		GREEN TRAVEL PLANS IN UNIVERSITY AND COLLEGES
Index of the measure		T.7.
Description	**Category**	6.1 Modal Shift
	Timeframe	Start: 2009 End: 2020 Foreseen major changes, amendments, improvements:

	Aim/brief description	The Malta College of Arts, Science and Technology campus is set to undergo a major redevelopment and expansion in capacity both in terms of students and staff. The Green Travel Plan aims to phase in a series of measures to ensure that when the campus is fully redeveloped by 2015, the travel needs of staff and students are met in a way that promotes greener, cleaner travel choices. The intention is that by 2015 (when the new Campus is expected to be completed), there will be substantial reductions in the number of students and staff who arrive at campus as single occupants of cars. It is envisaged that there will be a modal shift of 17% of staff and 64% of students by 2015 over 2008 levels. Progress will be checked annually and assessed by review after five years and at the end of plan in 2020. The Sustainable Travel Steering Group within MCAST will be responsible for this review to assess the progress made towards achieving the modal shift. The steering Group will also monitor the successful implementation of specific measures outlined in the Green Travel Plan.
	Target end-use	Reduction of fuel used in private vehicle road transport
	Target group	Malta College of Arts, Science and Technology staff and students

Information on implementation	**List and description of energy saving actions substantiating the measure**	The objectives of the Green Travel Plan are: ➢ **improve the choice of transport options available to staff and students** • Dedicated transport • Park and ride • Water borne transport ➢ **reduce the local, national and global environmental impact of the College's travel demands** • Through awareness and education ➢ **promote more sustainable means of transport** • Cycling • Walking • Car sharing / Pooling ➢ **promote more sustainable ways of working** • Tele-working • Flexitime / Staggered times
	Budget and financial source	
	Implementing body	MCAST
Energy savings	**Method for monitoring/measuring the resulting savings**	
	Savings achieved in 2010	
	Expected energy savings in 2016	
	Assumptions	
	Overlaps, multiplication effect, synergy	

Table T.8. Provision of advisory services on energy efficient driving

Title of the energy saving measure		PROVISION OF ADVISORY SERVICES ON ENERGY EFFICIENT DRIVING
Index of the measure		T.8.
Description	**Category**	2.1 Focused Information Campaigns
	Timeframe	Start: 2009 End: Not established
	Aim/brief description	This action is intended to change the attitude and influence behaviour in transport use. It will be combined with the information campaign that will be aimed to educate the general public on energy efficiency measures in general. The action will take advantage of existing energy efficiency directives (for example: labelling of vehicles, labelling of tyres). Consultation with all stakeholders will be required.
	Target end-use	Provision of information regarding energy efficient driving
	Target group	General public and industry/commercial users
Information on implementation	**List and description of energy saving actions substantiating the measure**	Driver Certificate of Professional Competence (Driver CPC) is a new qualification for professional bus, coach and lorry drivers. It has been introduced with the aim of improving road safety and helping to maintain high standards of driving. Optimization of fuel consumption is part of the material taught to trainee drivers to obtain the CPC and fuel consumption varies depending on different ways of driving. The aim is to teach amongst other things proper use of gearbox and brakes and identifying bad habits and the effect these have on fuel efficiency and passenger comfort. (Ref: Guidelines to become an approved driver CPC training provider) Eco-driving seminars and workshops will be conducted especially targeting driving instructors. Information to the public on eco-driving will be provided at driving schools, vehicle repairers, car retailers and vehicle roadworthiness test sites.
	Budget and financial source	Per year and/or total, indicating EU contribution and/or other sources

	Implementing body	MRA
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available separately
	Expected energy savings in 2016	Not estimated
	Assumptions	None
	Overlaps, multiplication effect, synergy	Has synergy with most other actions

3.3.8. Measures in other sectors

Table A.1. Modernisation of agricultural holdings

Title of the energy saving measure		MODERNISATION OF AGRICULTURAL HOLDINGS
Index of the measure		A.1.
Description	**Category**	3.1 Subsidies (Grants)
	Timeframe	Start: 2008 End: 2012

	Aim/brief description	The Ministry for Resources and Rural Affairs Paying Agency launched a project call for the agricultural sector under the European Agricultural funds for Rural Development (EARDF) – Measure 121 – Modernization of Agricultural Holdings. Farmers and enterprises engaged in agricultural production were eligible to apply for the funds allocated and the project grant was 50% of eligible costs. One of the sub-measures (sub-measure 2) eligible for funding within this call was environmental investments. This measure had the highest weighting attached to it, and required 20% of the project costs to be allocated to environmental investment in order for the project to get full points awarded.
	Target end-use	
	Target group	Farmers and enterprises engaged in agricultural production.
Information on implementation	**List and description of energy saving actions substantiating the measure**	Eligible actions included the procurement and installation of new equipment, including installation of systems that make use of alternative sources of energy and water, training related to the operation of new equipment and new systems, and the development of on-farm systems and processes that are designed to achieve a well-defined environmental benefit. The main actions that were opted for and implemented as a consequence of sub- measure 2 included an investment in photovoltaic systems, solar water heaters, insulation boards and tractors running on biodiesel. The capacity of PV systems installed through this call is estimated to be approximately 264kWp with systems ranging from 0.065 to 15.12 kWp. Around 15 of the applicants opted to install solar water heating systems as part of their project; the savings from all the systems installed is estimated to be 84, 884 kWh. Insulation was also installed on farms which will help to further reduce energy consumption.
	Budget and financial source	The funds allocated under this call amounted to €14.8 million.

	Implementing body	Ministry for Resources and Rural Affairs Paying Agency
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated
	Assumptions	None
	Overlaps, multiplication effect, synergy	None

Table A.2. Fisheries Fund

Title of the energy saving measure		FISHERIES FUND
Index of the measure		A.2.
Description	**Category**	3.1 Subsidies (Grants)
	Timeframe	2010
	Aim/brief description	The Malta Fisheries operational programme 2007 -13 included a component relating to modernisation of fishing vessels with the objective of lowering emissions and improving engine efficiency.
	Target end-use	Reducing fuel consumption of fishing vessel engines
	Target group	Fishermen
Information on implementation	**List and description of energy saving actions substantiating the measure**	The target was 7 vessels (876kW) improved by 2015.
	Budget and financial source	€500,000
	Implementing body	Ministry for Resources and Rural Affairs Paying Agency
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Call in progress in 2010
	Expected energy savings in 2016	Not available

	Assumptions	None
	Overlaps, multiplication effect, synergy	None

3.3.9. Horizontal measures

Table H.1. Creation of an energy efficiency fund

Title of the energy saving measure		CREATION OF AN ENERGY EFFICIENCY FUND
Index of the measure		H1
Description	**Category**	7.3 Energy efficiency funds and trusts
	Timeframe	2009
	Aim/brief description	Establishment on a sound basis energy efficiency support schemes
	Target end-use	Support measure
	Target group	All sectors.

Information on implementation	**List and description of energy saving actions substantiating the measure**	Government will ensure energy efficiency funding 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. However sustainability of aid schemes needs to be ensured. Directive 2006/32/EC envisages that energy suppliers either provide energy (efficiency) services OR contribute to funds "having an equivalent effect". In 2009, 3.5c per litre of petrol and 2.0c per litre of diesel were collected to be able to fund alternative energy generation measures. The amount gathered in excise duty in 2009 was c. €5,580,000. Approximately €8,300,000 was spent on energy efficiency measures in 2009. These measures are listed below: * The distribution to families of security vouchers to purchase energy saving light fittings - cost €4million; * Solar Water Heaters: families refunded 2/3rds of expenses up to a maximum of €460 - cost €2 million; * Photovoltaic cell systems: 50% refund up to a maximum of €3000 - cost €0.5million; * Roof insulation/ double glazing: 33% refund up to a maximum of €300 - cost €0.3million; * Scheme to invest in renewable energy generation/ alternative sources of energy granted aid of up to 60%; Already in existence- 243% investment tax credit for PV cells - cost €10milion,15% of which Mt funds - €1.5 million.
	Budget and financial source	€5.5 million
	Implementing body	Ministry for finance

Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not applicable
	Expected energy savings in 2016	Not applicable
	Assumptions	None
	Overlaps, multiplication effect, synergy	No direct overlaps

Table H.2. Information Campaigns

Title of the energy saving measure		INFORMATION CAMPAIGNS
Index of the measure		H2
Description	**Category**	2.1 Focused Information Campaigns 2.5 Training and Education
	Timeframe	Start: 2008 End: ongoing
	Aim/brief description	
	Target end-use	Energy efficiency
	Target group	General Public and School Children

Information on implementation	**List and description of energy saving actions substantiating the measure**	**2011 CAMPAIGN** An ERDF funded campaign will be launched shortly and will have a three pronged approach: • To promote energy efficiency in transport • To promote energy efficiency at home and at the office • To promote energy efficiency in buildings The campaign aims to target energy saving practices than previous campaigns. It aims to inform people about the options available and thus empower them to be able to take actions to reduce their energy consumption by purchasing or installing energy efficient products in their homes or offices and by choosing more sustainable modes of transport. Other specifically target actions to disseminate information: • Information conservation tips by Enemalta Corporation; • Information talks on energy efficiency provided by Enemalta to various social groups and also including members of the local councils in order to raise awareness and provide tips on how to use energy in households. • Informative activities - World energy saving day, Car free day, Mobility week; • Development of teacher support material to promote energy efficiency; • 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;

		MA TRIDX WISQ (IT DOES NOT TAKE MUCH) In 2008 a campaign on energy efficiency, “Ma tridx wisq" (It doesn’t require much) was promoted by the Malta Resources Authority on television channels, in the press and on the Internet. The aim of the campaign was to promote a wiser and better use of energy. The message the campaign wanted to bring across was that all residential and service buildings have the potential for real energy savings and will eventually become “green” and environmentally friendly provided there is a concerted effort. **SWITCH** Switch, a campaign for the better use of energy, was launched in February 2009. Switch was so called because a change towards better use of energy required a change in mentality. The campaign’s message addressed three crucial points - the what, why and with what. The aim was to inform and empowers energy users on how best to use energy efficiently at home and at work. The public was invited to join the government in doing their part for the environment. As part of the campaign, the government distributed a booklet to Maltese households with a number of initiatives in favour of efficient energy use. In this booklet, seven Maltese personalities were depicted saying what changes they have made in their home, car or office to save energy. Promotional spots on television on the same lines were shown.

		FLICK THE SWITCH Flick the Switch was a European-wide initiative supported by the Intelligent Energy Europe programme (IEE). This campaign ran from October 2009 to May 2010 and it aimed to instigate simple energy efficient behavioural practices in schools. The campaign focused on teaching children to think about how we use energy every day and to take ownership and responsibility for their energy consumption by motivating them to switch off unused lights and devices when they are not in use. "Flick" provided assistance to teachers in teaching their students about the importance of saving energy and empowering them to make a real difference via simple changes in their behaviour, starting in the school with the aim of rolling out to the home, where they would influence their families to adopt the same practices. 12, 000 students from 65 schools in Malta took part in this EU-wide campaign.
	Budget and financial source	
	Implementing body	
Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated separately
	Assumptions	None
	Overlaps, multiplication effect, synergy	None directly

Table H.3. Revision of administrative arrangements

Title of the energy saving measure		REVISION OF ADMISTRATIVE ARRANGEMENTS
Index of the measure		H3
Description	**Category**	Horizontal - regulation
	Timeframe	2009

	Aim/brief description	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.
	Target end-use	Energy efficiency and renewables
	Target group	Government Administration
Information on implementation	**List and description of energy saving actions substantiating the measure**	Action has already been taken in this field through 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, as well as the imminent transposition of the energy services directives. The Authority will also set up a structure with the following objectives: - To act as an objective and reliable focal point for information on resource efficiency and micro RES - To monitor and report to Government on the impact and implementation of resource efficiency and micro RES policies and action plans - To propose new resource efficiency and micro RES measures as necessary - To implement schemes to promote resource efficiency and micro RES Support initiatives arising from EU legislation and international fora - Contribute towards national position on RE/EE EU legislation - Participate in Commission working groups and other international fora as required by Government - Prepare monitoring reports in line with directives - Participate in Energy Charter Treaty initiatives - Administer national and structural funded schemes

		The above objectives recognise 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 The structure implemented will: - Act as a focal point for information on resource efficiency - Provide advisory services / information dissemination: - Ensure the registration of products / professionals (where required by EU legislation): Undertake systematic collection and analysis of energy demand, efficiency and RES information in Malta (to support policy making and meet EU legislation); - 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; - Coordinate stakeholder-specific plans and programs to achieve this energy efficiency with the participation of stakeholders especially those with responsibility to achieve it; - Monitor and review the plan on a three year basis to refine and update as a deeper understanding develops. - Provide advice to Government on areas within its competence
	Budget and financial source	
	Implementing body	

Energy savings	**Method for monitoring/measuring the resulting savings**	Included in top down
	Savings achieved in 2010	Not available
	Expected energy savings in 2016	Not estimated separately
	Assumptions	None
	Overlaps, multiplication effect, synergy	None directly

Table H.4. Participation in research regarding energy savings

Title of the energy saving measure		*PARTICIPATION IN RESEARCH REGARDING ENERGY SAVINGS*
Index of the measure		*H4*
Description	**Category**	*2.5 Training and education* *2.6 Demonstration*
	Timeframe	*Ongoing*
	Aim/brief description	*Participate in and promote research relevant to the islands – such as new solar technology, marine RES.*
	Target end-use	*Energy efficiency and renewables*
	Target group	*Horizontal*

Information on implementation	**List and description of energy saving actions substantiating the measure**	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. Both ICT and energy have been identified as topics for research in the National Strategic Plan for Research and Innovation (2007-2010). Also, the national funded programme for Research and Innovation has focused on 4 main areas, two of which are ICT and energy priorities. This strategy is being revised but it is expected that energy will continue to be one of the main pillars in the national strategy. The University of Malta will be setting up an electrical energy and efficiency laboratory at the University's Faculty of Engineering. The laboratory will be used for teaching and research in the area of electrical energy generation (especially from RES) and the efficient use of energy. The facility will enable research in the field of energy conversion from alternative energy sources such as solar and wind, the design, construction and control of power electronic converters for grid connection, the simulation and analysis of the interaction of RES with the Maltese Electrical network, the improved usage of traditional energy sources, the increase of electrical energy efficiency in domestic and industrial applications and improving of power quality.
	Budget and financial source	*Not available*
	Implementing body	*MCST, UoM*
Energy savings	**Method for monitoring/measuring the resulting savings**	*Included in top down*
	Savings achieved in 2010	*Not available*

	Expected energy savings in 2016	*Not available*
	Assumptions	*None*
	Overlaps, multiplication effect, synergy	*None directly*

3.4. Public sector

3.4.1. Exemplary role of public sector

The measures listed in section 3.3.4 are in line with the ESD and primarily ensure:

- that the public sector engages cost-effective measures;
- that the exchange of best practices among public sector bodies is facilitated and enabled.

Additional measures are being envisaged – egg green public procurement – to implement additional measures as listed in the ESD.

Government has published a list of energy efficiency (and waste) actions taken across its departments and ministries.

3.4.2. Public sector leading role in EPBD

It is envisaged that by the end of 2018 all new buildings being constructed for the use of public authorities will qualify as nearly-zero energy buildings.

Measure 1 - Energy Certification and Display of Certificates **– Ensure that all buildings occupied by public authorities and buildings frequently visited by the public are subject to energy certification and energy audits on a regular basis. The results of these certificates and audits are to be displayed in a prominent place of these buildings.**

Measure 2 – Upgrade Minimum Performance Requirements of New Buildings constructed for use by the Public Sector **– Ensure that the minimum Requirements set for new buildings are reached by all buildings that are constructed for use by Public Sector Entities/Authorities.**

Measure 3- Impose Minimum Energy Performance Requirements on all new lease or purchase agreements of buildings that Entities/Authorities in the Public Sector enter into as from 2015.- Studies have to be carried out before prescribing details of this measure

Measure 4 – implement a programme of energy efficiency upgrading of buildings belonging to Entities/Authorities in the Public Sector – This measure has to be carefully studied to ensure it is effectively implemented. A special unit could be set up for this purpose and staff already in public service will be identified and trained by this unit to introduce energy efficient refurbishment measures in buildings owned and used by the respective entities where they are already deployed in service.

Measure 5 – Implement a programme of installing RES in buildings owned by Entities/Authorities in the Public Sector - This measure has to be carefully studied to ensure it is effectively implemented. A pilot project has already been carried out on a small scale.

3.4.3. Specific measures for public procurement

Several initiatives were undertaken over the past few years in order to promote greener purchasing practices.

Since 2007, tenders that formed part of projects supported by EU and national funds under Cohesion Policy programmes were required to include a consideration of environmental impacts as part of the funding requirement. Furthermore, these tenders were also subjected to a mandatory screening process operated by the Ministry for Resources and Rural Affairs, whereby impact on climate change including carbon footprint were systematically considered.

Environmental guidance to procurers was also provided by the Malta Environment and Planning Authority. Furthermore, the new national procurement documentation templates that were made mandatory in June 2010 included optional references to environmental criteria as part of the environment plan which bidders may be required to submit in response to tenders.

In line with the government policy drive, whereby Government budget for 2010 referred to "the concept of purchasing which will be sensitive to environmental protection in all the public sector", several GPP-related initiatives were also undertaken. For example the construction of a new public school at Pembroke has followed principles of energy efficiency and use of environmentally friendly construction materials and techniques. Local Enterprise and Green challenge awards recognised local authorities which excelled in green procurement practices.

Despite the success of the above initiatives, studies carried out by the Malta Environment and Planning Authority, the Office of the Prime Minister and the Department of Contracts in preparation of the 2010 draft NAP revealed a very low level of GPP uptake in the 2007 – 2009 periods. It was found that whilst many tenders have indeed contained environmental consideration, none of the tenders were actually found to be fully compliant with GPP common criteria. This is largely due to lack of information on EU GPP common criteria at the level of purchasing officers, lack of practical guidance on GPP, lack of specific and measurable GPP targets owned by all government ministries, and lack of appropriate structures to oversee GPP implementation.

This situation is being addressed through the revision of the National GPP Action Plan and establishment of a practical system for ensuring adherence to GPP targets. The revised Action Plan, due to be presented for Cabinet's approval in July 2011, has the following key objectives:

- Establish and maintain a strategic framework and structure within which green public procurement can take place in Malta
- Integrate the environmental dimension within the national public procurement process
- Establish clear and measurable targets and objectives for green procurement in a range of sectors and ensure their achievement
- Ensure that the implementation of the GPP is continuously monitored and any corrective actions are taken as may be appropriate
- Engage procurers, suppliers and markets in the GPP process, provide guidance, and facilitate capacity building in this area

These objectives are, in turn, translated into a series of practical measures that are necessary for the implementation of GPP. Amongst other measures, the Plan stipulates incremental GPP targets for the

following product groups:

Product / service group	TARGETS		
	YEAR 1	YEAR 2	YEAR 3
Copying and graphic paper	**100%**	**100%**	**100%**
Gardening products and services	**100%**	**100%**	**100%**
Cleaning products and services	**80%**	**90%**	**100%**
Textiles	**100%**	**100%**	**100%**
Office IT equipment	**100%**	**100%**	**100%**
Transport	**10%**	**20%**	**30%**
Furniture	**10%**	**20%**	**30%**
Food and catering services	**10%**	**20%**	**30%**
Electricity	**10%**	**20%**	**30%**
Construction	**10%**	**20%**	**30%**
Mobile Phones	**10%**	**20%**	**30%**
Combined Heat and Power	**10%**	**20%**	**30%**
Thermal insulation	**80%**	**90%**	**100%**
Wall panels	**80%**	**90%**	**100%**
Hard floor coverings	**10%**	**20%**	**30%**
Windows, glazed doors and skylights	**10%**	**20%**	**30%**
Street lighting and traffic signals	**10%**	**20%**	**30%**
Road construction and traffic signs	**10%**	**20%**	**30%**

These targets are expressed in terms of the percentage of the total public expenditure and the number of public contracts on the above product / service groups to be greened. Thus a 100% target for office IT equipment implies that 100% of public expenditure and 100% of public contracts involving such equipment will be administered through tenders compliant with the EU Common GPP Criteria for this product group.

Importantly, within the context of NEEAP, 12 of the above product groups involve requirements related to energy efficiency. It must be noted that Malta's political indicative targets on GPP at EU level require compliance with the core criteria and not comprehensive criteria. The table below summarises key energy-related criteria for these product groups:

Product / service group	Criteria Sets	Energy Efficiency Considerations
Copying and graphic paper	Paper based on recovered paper fibres, recycled paper.	N/A
	Paper based on virgin fibre.	
Gardening products and services	Soil improvers	N/A
	Ornamental Plants	
	Irrigation System	
	Gardening Machinery	Comprehensive criteria on efficiency of fuel combustion engines
	Lubrication Oils	N/A
	Gardening Services	Core criteria require vehicles used to be Euro 4
Cleaning products and services	Cleaning products	N/A
	Cleaning services	
Textiles	Textiles	N/A
Office IT equipment	PCs, notebooks and monitors	Core criteria require the use of latest Energy Star standards.
	Imaging equipment/Devices	

Transport	Passenger cars and light-duty vehicles	Core criteria set the upper limit for CO2 emissions. Comprehensive criteria on vehicles used to be Euro 5
	Bus procurement	Core criteria require vehicles used to be Euro 4
	Public transport services	
	Waste collection trucks	
	Waste collection services	
Furniture	Furniture	N/A
Food and catering services	Food	N/A
	Catering Services	Comprehensive criteria on energy efficiency of equipment and vehicles used to be Euro 5.
Construction	Subject matter & selection criteria	Core criteria require explicit reference to the construction of energy efficient buildings. Core criteria require bidding architect to demonstrate experience with environmental building design.
	Energy performance requirements	Core criteria setting the energy performance of buildings and requiring that energy efficiency training is provided to building manager. Core award criteria are set on bids providing additional energy efficiency or for energy sourced from renewable sources. Comprehensive award criteria promote the use of innovative energy efficiency services.
	Building materials	N/A
	Water saving installations	N/A
	Contract performance clauses	Comprehensive criteria on the use of Lifecycle cost in the design of the building.
Mobile Phones	Mobile Phones	N/A
	Mobile Phone Chargers (External Power Supplies)	Core criteria set requirements on power consumption and energy efficiency. Comprehensive award criteria promote the use of higher power consumption and energy efficiency level.
Combined Heat and Power	Combined Heat and Power	Core criteria set the minimum level of energy efficiency of the products. Comprehensive award criteria promote the use of higher energy efficiency level.
Thermal insulation	Thermal Insulation	Core criteria set the thermal conductivity level of material used to be in line with the Energy Performance Building Directive.
Wall panels	Gypsum Plasterboard Wall Panels	N/A
	Wood-Based Wall Panels	N/A
Hard floor coverings	Hard Floor Coverings	Core criteria require set the minimum energy consumption in the production of materials based on the products respective Ecolabel.
Windows	Windows	Core criteria requiring the attainment of higher thermal efficiency than the minimum set by national regulations.

Street lighting & Traffic Signals	Street Lighting	Core criteria set the minimum level of Lumen and energy efficiency for different types of street lighting.
	Traffic Signals	Core criteria require light to be 100% LED.
Road construction and traffic signs	Road Construction	Core award criteria on the energy consumption of materials throughout their lifecycle. Comprehensive award criteria on the use of materials which reduce the fuel consumption of vehicles travelling over their surface.
	Traffic Signs	Comprehensive award criteria on the energy consumption and CO2 emissions in the manufacture phase.
Electricity	Electricity	Core criteria on the procurement of electricity to be 50% from renewable energy sources or high efficiency co-generation. Award criteria on additional percentage above the technical criteria Comprehensive criteria demands 100% of procured energy to come from renewable energy sources.

3.5. Ensuring availability of advice and information

Malta has carried out two energy efficiency campaigns at a national level between 2007 and 2010. The first education campaign in 2007/2008 was entitled “Ma tridx wisq” (loosely translated as “It does not take much”). A second campaign was conducted in 2008/2009, titled Switch[13].

Currently staff from the Ministry for Resources and Rural Affairs or the MRA take part practically on a weekly basis in various talk shows on national radio or TV explaining on various aspects of energy efficiency or answering questions from the public.

Presentations were given at local councils and various NGOs, as well as teachers.

Information on energy efficiency measures is available on the websites of the electricity supplier and on that of the regulator. The website of the electricity supplier includes FAQs on Home Energy Saving and Renewable Energy at Home, energy saving tips, information on alternative energy products and hourly electricity generation data from PV installations. An interactive energy calculator, which can provide personalized advice on how to cut down on energy wastage and restrain consumption, has also been made available by the electricity supplier on its website. The climate change division will be providing advice.

3.6. Obligations of energy companies to promote energy savings in end-use consumption

In line with directive 2006/32/EC, Legal Notice 289 of 2008 defines the following obligations of energy companies:

Regulation 6 (1)

(1) Energy distributors, distribution system operators and, or retail energy sales companies shall:

[13] https://opm.gov.mt/switch

(a) provide on request, yearly, aggregated statistical information on their final consumers to the Authority:

Provided that such information must be sufficient to properly design and implement energy efficiency improvement programmes and to promote and monitor energy services and other improvement measures;

(b) refrain from activities that might impede the demand for and delivery of energy services and other energy efficiency improvement measures, or hinder the development of markets for energy services and other energy efficiency improvement measures. The Authority shall take the necessary measures to bring such activities to an end where they occur.

Enemalta, the electricity supplier provides the requested yearly aggregated statistical information on its final consumers to the Malta Resources Authority. In carrying out its activities, Enemalta has also ensured that they do not impede the demand for and delivery of energy services and other energy efficiency improvement measures, or hinder the development of markets for energy services and other energy efficiency improvement measures. If Enemalta had to provide free energy audits to its consumers it would make redundant the number of private consultants and companies who provide these services commercially and at competitive prices. The energy services market would be monopolized if this was the case. Hence Enemalta only provided energy audits to charitable organizations.

Regulation 6 (2)

(2) Energy distributors, distribution system operators and, or retail energy sales companies, directly and, or indirectly through other providers of energy services or energy efficiency improvement measures shall:

(a) ensure the offer to their final consumers, and the promotion of competitively priced energy services; or

(b) ensure the availability to their final consumers, and the promotion of competitively-priced energy audits conducted in an independent manner and, or energy efficiency improvement measures, in accordance with regulations 9 and 11; or

(c) contribute to the funds and funding mechanisms referred to in regulation 10. The level of such contributions shall as a minimum correspond to the estimated costs of offering any of the activities referred to in this sub-regulation and shall be agreed with the Authority.

In fulfilment of regulation 6(2), Enemalta has provided talks on energy saving tips to social groups including members of local councils. The presentations outlined ways that improved energy efficiency in households and basic information on RE schemes provided by MRA. In conjunction with these presentations, Enemalta has published on its website FAQs on Home Energy Saving and Renewable Energy at Home. Information on 'Alternative Energy Products' and hourly electricity generation data from PV installations at three district offices are also available to the general public.

Furthermore Enemalta has incorporated an Eco Calculator on its website. The Eco Calculator can be used to calculate how much you are currently consuming by inputting the household stock of appliances. It identifies the appliances which are consuming most electricity and suggests alternatives to improve energy efficiency thus saving money on electricity bills.

At EU-level, Enemalta has also contributed to the EU-funded HENCE project which aimed to share good practices in energy use amongst European local councils and municipalities.

In addition, Enemalta has also provided energy audits to charitable and not-for-profit organisations.

In conjunction with the contribution to the funds and funding mechanisms, the Government had announced in the 2009 budget speech that this fund would be financed by an increase in excise duty. Enemalta is contributing by paying the corresponding increase in excise duty.

As from 2012, Enemalta in conjunction with the Ministry for Resources and Infrastructure will be providing energy audits for households and SME's.

Regulation 11(2)

(2) Energy audits shall be made available for market segments where they are not sold commercially, taking into account regulation 10(1).

Energy audits are provided by independent consultants, companies and are available for all market segments.

Regulation 12

(1) Energy distributors, distribution system operators and, or retail energy sales companies shall, in so far as it is technically possible, financially reasonable and proportionate in relation to the potential energy savings, provide final consumers making use of electricity, heating and, or cooling and domestic hot water with competitively priced individual meters that accurately reflect the final consumer's actual energy consumption and which provide information on actual time of use:

Provided that when an existing meter is replaced, such competitively priced individual meters shall always be provided, unless this is technically impossible or not cost-effective in relation to the estimated potential savings in the long term:

Provided also that when a new connection is made in a new building or when a building undergoes major renovations, as set out in regulation 11(3), such competitively priced individual meters shall always be provided.

(2) Energy billing performed by energy distributors, distribution system operators and retail energy sales companies shall, where appropriate, be based on actual energy consumption and whosoever is responsible for the issuing of such billing shall ensure that this is presented in clear and understandable terms:

Provided that appropriate information shall be made available with the bill in order to provide final consumers with a comprehensive account of current energy costs.

(3) Energy distributors, distribution system operators or retail sale companies shall, where appropriate and in clear and understandable terms, make available to final consumers in or with their bills, contracts, transactions and, or receipts at distribution stations, the following information:

(a) current actual prices and actual consumption of energy;

(b) comparisons of the final consumer's current energy consumption with consumption for the same period in the previous year;

(c) contact information for consumers' organizations, energy agencies or similar bodies, including website addresses from which information may be obtained on available energy efficiency improvement measures, comparative end user profiles and, or objective technical specifications for energy-using equipment.

In 2008, Enemalta Corporation awarded a contract for an automated meter reading system. AMM enables restructuring of the billing process, improved customer relationship management and the introduction of e-services that further empower clients to serve their own customers. If consumers can see how much energy they are using and what it is costing them, they can make informed choices. The smart meters roll out started in 2009 and the system is expected to be fully operational by 2013. Enemalta is providing and installing the smart meters free of charge to all consumers. Enemalta has also updated the electricity bills in order to include the information specified in regulation 12 (3) above.

In the 2009 budget speech, the Government has also obliged Enemalta to establish a service whereby families are provided with personalised advice on how they can cut down on energy wastage and restrain consumption. This obligation is being fulfilled by the provision of an interactive energy calculator on the electricity supplier's website. It identifies the appliances which are consuming most electricity and suggests alternatives to improve energy efficiency thus saving money on electricity bills.

3.7. Market for energy services

Due to the national electricity market being a small isolated system, Malta has a nominative derogation from the requirement to open up the electricity market – thus there is only one electricity supplier in Malta (Enemalta). In addition, Article 6(5) of the energy services directive states that "the implementation of this Article shall be without prejudice to derogations or exemptions granted under Directives 2003/54/EC and 2003/55/EC."

With the exception of this restriction, there are no impediments to market actors other than Enemalta, such as installers, energy advisors and energy consultants, to independently offer and implement energy audits and energy efficiency improvement measures.

3.8. Strategy for the increase of nearly-zero energy buildings

These are proposals that have to be evaluated and maybe redefined after a regulatory impact assessment and cost benefit analysis studies are undertaken.

New Buildings & Buildings that undergo major renovation.

Measure 1 - *Minimum energy performance requirements of U-values for the Building Envelope to be improved over 2 phases as follows:*

Residential Buildings (dwellings) - as from 2013 upgrade existing requirements by 30%. As from 2017 further upgrade minimum requirements by another 20%.

Office Buildings (Including banks, Post Offices, Commuter Terminals and similar Public Serving Buildings), Shopping Complexes, Showrooms, Hospitals and Hotels (including Old People Residential Complexes) – as from 2013 upgrade existing requirements by 50% and as from 2017 further upgrade minimum requirements by another 25%.

Schools (Primary & Secondary level Education) – as from 2013 upgrade existing requirements by 30% and as from 2017 further upgrade minimum requirements by another 30%.

Educational Post Secondary Buildings – as from 2013 upgrade existing requirements by 50% and as from 2017 further upgrade minimum requirements by another 25%.

Leisure and Entertainment Buildings – as from 2013 upgrade existing requirements by 30% and as from 2017 by a further upgrade of minimum requirements by another 30%.

Measure 2. - *Imposing the use of Renewable Energy Sources*

Residential Detached Buildings including Semi Detached Buildings – As from 2013, to regulate that at least 50% of the roof area is to be left unencumbered for the installation of Renewable Energy Sources (RES) and to have an installation of RES that provides a minimum of 50% of the energy needs p.a. for cooling and heating of spaces and hot water per dwelling Unit.

As from 2017, in addition to the 50% roof space for RES, to have an RES that provides a minimum of 70% of the energy needs p.a. for cooling and heating of spaces and hot water per dwelling Unit..

Residential Terraced Buildings – As from 2013, to regulate that at least 50 % of the roof area is to be left unencumbered for the installation of Renewable Energy Sources (RES) and to have an installation of RES that provides a minimum of 50% of the energy needs p.a. for cooling and heating of spaces and hot water per dwelling Unit.. As from 2017, in addition to the 50% roof space for RES, to have an RES that provides a minimum of 70% of the energy needs p.a. for cooling and heating of spaces and hot water per dwelling Unit. If such requirements cannot be met because of site conditions owners have to financially contribute to the setting up of communal RES facilities.

All other non-Residential Buildings – As from 2013, to have an installation of RES that provides a minimum of 50% of the energy needs p.a. for cooling and heating of spaces and hot water of the building or each different category of use in the building, and as from 2017 to have an installation of RES that provides a minimum of 90% of the energy needs p.a. for cooling and heating of spaces and hot water of the building or each different category of use in the building.

Measure 3 – *Imposing the use of Intelligent Control & Energy Management Systems*

All non-Residential Buildings - Issue regulations that as from 2017 impose the use of the above mentioned systems to control artificial lighting, and space heating and space cooling systems according to changes in the ambient conditions. As from 2020 impose the use of such systems also for the control of the movement of curtains and shading screens on external windows and doors in all non-Residential buildings

3.9. Alternative measures for heating and air conditioning systems

Malta will not be adopting alternative procedures but will follow on the measures referred to in paragraphs 1, 2 and 3 of Articles 14 and 15, on the inspections of boilers and air conditioning systems in the recast EPBD.

The methodology, reporting and recommendation formats on how to carry out these inspections will be issued during 2011. The report will include the running condition, efficiency and design adequacy of the installations and accompanying recommendations will include practical details on how to improve the overall system efficiency.

The inspection reports will be centrally registered on the EPC Web Portal which will allocate a unique authentication number for each inspection report. Audits will be carried out on the reports to check their quality and effectiveness.

3.10. Measures to support EPBD implementation

The impact of applying energy performance requirements in new and renovated buildings is limited at the moment. Significant reductions in energy consumption will probably be achieved when nearly-zero energy buildings are promoted and constructed on a wider scale by the building sector. Currently, less than 6,000 new buildings are built each year in Malta and, despite the recent growth in the rehabilitation market, major renovations still do not have a significant impact. Therefore, the recast EPBD requirements for new buildings and major renovations will certainly bring important energy savings in the near future, although new and renovated buildings only represent a small share of the entire building stock in Malta.

To achieve real energy savings in the building sector, significant incentives to the improvement of existing buildings are needed and certification can play its part. The recommendations made by the experts in the certificate are important guidelines that the owner of the building can make good use of, either in the context of a renovation, or an individual cost-effective measure. Financial concerns about the investment cost and applying the payback period for energy efficient technologies is still a major barrier, though.

Therefore, the refurbishment and transformation of existing buildings into nearly zero-energy building stock will be encouraged by means of positive fiscal measures and financial benefits such as rebates, tax credits and advantageous bank loans for those owners who will enter into a commitment that clearly shows that their building will have a higher energy efficiency and lower nearly-zero net energy use. The Energy Performance Certificate will be the main document displaying this improvement.

Additional training has to be offered to architects, engineers and qualified experts, to improve their skills in energy audits and share best practices in economic and technological building improvement solutions.

Although there is considerable interest on the EPBD and certification from the building professions such as architects, engineers and estate agents, buyers seem to prefer not to enforce their right to ask property sellers to provide EPCs because the perception is that the cost of the certificate will be added to the value of the property. The Government had drawn up the legislation on a Self Regulatory basis hoping that buyers would want to impose their right to have information on the quality of buildings they were buying or renting, however it seems that this pretext is not providing the desired results and the Government is therefore looking for ways to better enforce the certification system.

Malta is acquiring experience through the EPBD implementation and will use it to achieve the final goal of new nearly zero-energy buildings by 2020. The main challenges and future developments of the certification system for the short and medium term are, thus:

1. Introduce new legislation to enforce the certification system;

2. Continued improvement of the EPC Web Portal, including online audit reports, data entry validation and automation of the QA process;

3. Reinforce the QA Scheme, increasing the number of light checks on input;

4. Provide additional training for qualified experts on HVAC, DHW and renewable energy systems, as well as more effective auditing techniques;

5. Take immediate steps to prepare new building regulations in line with the requirements of the new recast EPBD;

6. Change from elemental requirements to maximum allowable energy footprints for the different building categories;

7. Carry out more studies and gather more data on EPBD implementation in order to make the general public more aware of the benefits that can be derived out of the EPC schemes.

8. Create positive fiscal measures and financial benefits such as rebates, tax credits and advantageous bank loans for those owners who wish to upgrade their buildings to reach nearly-zero energy use standards.

9. Increase awareness by continuing to deliver information sessions and programmes on radio and television broadcasts, seminars and presentations targeted towards different audiences such as the general public, architects and engineers, building contractors, estate agents, research bodies and students. Intensify the awareness campaigns by using media advertising so as to increase public awareness and information available on EPCs.

It is envisaged that there will be a shift from elemental requirements to maximum allowable energy footprints for the different building categories. However these proposals have to be evaluated and may be redefined after a regulatory impact assessment and cost benefit analysis studies are undertaken.

4. ESTABLISHMENT OF COMPETENT BODIES AND ASSIGNED ORGANIZATIONS

The Energy End-use Efficiency and Energy Services Regulations transpose Directive 2006/32/EC for Malta.

Regulation 4(5) of these regulations stipulate that "the [Malta Resources] Authority shall also have the overall control and responsibility for overseeing the framework set up in relation to the target... The Authority shall thereafter verify the energy savings as a result of energy services and other energy efficiency improvement measures including existing national energy efficiency improvement measures, and report the result."

Furthermore, Regulation 5 stipulates that "the Authority shall have the administrative and managerial responsibility to monitor the implementation for the integration of energy efficiency improvement measures by:

(a) publishing guidelines on energy efficiency and energy savings as a possible assessment criterion in competitive tendering for public contracts;
(b) facilitating and enabling the exchange of best practices between public sector bodies for example on energy efficient public procurement practices, both at the national and international level;
(c) monitoring the implementation by the Government of at least two measures from the list set out in the Sixth Schedule;
(d) monitoring that energy efficiency improvement measures are taken by the public sector, focusing on cost-effective measures which generate the largest energy savings in the shortest time span in the public sector provided that such measures shall be taken at the appropriate national and, or local level and may consist of legislative initiatives and, or voluntary agreements, or other schemes with an equivalent effect.

The National Audit Office has carried out an own initiative performance report on renewable energy sources and energy efficiency. This audit sought to:

- evaluate the process adopted in the development of Malta's energy policy;
- determine Malta's progress with regards to the renewable energy program, the energy efficiency action plan and the implementation of biofuel; and
- assess the effectiveness of the energy efficiency incentives provided by the Government.

The conclusions included, as regards energy efficiency:

- The monitoring of progress in the implementation of measures relating to energy efficiency is to be intensified. For this purpose, however, the MRA needs to be appropriately resourced.
- Financial incentives and other forms of encouraging consumer investment in renewable energy technologies are to be revised and inclined towards technologies necessitating a relatively high initial capital outlay.

A high powered Inter-Ministerial Committee chaired by the Prime Minister and constituted of the respective Ministers for Resources and Rural Affairs; Infrastructure, Transport and Communications (MITC), Finance, Economy and Investment (MFEI) and the Parliamentary Secretariat for Public Dialogue and Information is set up with the following terms of reference:

- To ensure that all public entities, having a direct or indirect role in matters related to Climate Change and energy related issues provide unconditional support and co-operation to the Ministry for Resources and Rural Affairs – the Ministry responsible for Climate Change - and to the Climate Change Division.
- To act as a co-ordinating body (at Inter-Ministerial level) to ensure that other programmes and initiatives to be approved by Cabinet are consistent with the principles of the national goals and priorities on Climate Change and energy related issues.

A Climate Change Division was also established within MRA, with specific duties, inter alia:

- Design and manage a national education campaign on an ongoing basis;
- Proliferate further application and take-up of greener technologies;
- Setting up and managing an Efficient energy one stop shop portal;
- Liaising with education authorities, local government, social society and other stakeholders as appropriate.

Other entities in Malta that have a specific function to promote or implement energy efficiency measures include:

- The Malta Intelligent Energy Management Agency (MIEMA) which is Malta's first energy agency, set up in June 2007, with the support of the IEE Programme and a number of public institutions. Its aims are to be a protagonist of the European effort towards a more intelligent use of energy resources; promoting awareness initiatives and contributing to define incisive and targeted proposals and policies of intervention, in order to optimize the use of conventional energy resources and to develop renewable sources. [14]

- Institute for Sustainable Energy - Its aims are to assist in the development of national energy plans through studies in the use of new and renewable energy sources and methods of energy conservation. It is also intended that the Institute should organise and participate in teaching programmes and research projects in the field of energy technology. Other objectives include the dissemination of appropriate methods and techniques relevant to the Institute's areas of interest and to design equipment adapted to local conditions. This is carried out mainly by: analysis studies on the use of energy; determination of feasible measures to conserve energy; applications of renewable sources of energy; originating and participating in teaching and research projects; collaborating with other universities, industries and international bodies.[15]

- Enemalta Corporation, which, by virtue of Article 3(2) of the Enemalta Act, has the functions of: the delivery of energy services, energy efficiency improvement programmes and other energy efficiency improvement measures to the final customer; and (d) the promotion of efficiency in the use of energy. [16]

- The Tourism and Sustainable Development Unit within the Parliamentary Secretariat for Tourism, the Environment and Culture of the Office of the Prime Minister is responsible for coordination of the green public procurement programme.[17]

- The Government Environmental Corporate Responsibility Office coordinating the green leader network. In energy, aims to reduce the consumption of energy in the Government facilities, and increase the use of renewable energy.

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[14] http://www.miema.org/site/ on 20 May 2011

[15] http://www.um.edu.mt/iet on 20 May 2011

[16] http://www.mjha.gov.mt/DownloadDocument.aspx?app=lom&itemid=8762

[17] https://secure2.gov.mt/tsdu/gpp?l=1

4.1. Entities consulted in drawing up the NEEAP

- Agriculture Department
- Building and Construction Industry Department / Buildings regulations office
- Enemalta
- Foundation for Tomorrow's Schools
- Institute of Energy Technology
- Office of the Prime Minister (Tourism and sustainable development unit)
- Ministry for Finance and Economic Affairs
- Ministry for Infrastructure, Transport and Communications
- Ministry for Resources and Rural Affairs
- Ministry for Health
- Ministry for Education
- Ministry for Gozo
- Malta College for Arts, Science and Technology
- Malta Council for Science and Technology
- Malta Enterprise
- Malta Environment and Planning Authority
- Malta Tourism Authority
- Transport Malta
- MITA
- University of Malta
- Enemalta Corporation
- Water Services Corporation

In addition, the comments made and suggestions proposed by the participants to the pre-budget consultation seminars, where energy efficiency was mentioned, were taken into account.

ANNEX 1. LIST OF ENERGY EFFICIENCY PRACTICAL MEASURES TAKEN IN GOVERNMENT DEPARTMENTS[18].

Government has published the following list of energy efficiency measures implemented:

OPM - Auberge` de Castille
• Neon tube audit carried out at the Auberge de Castille.
• Installation of new energy saving lighting in offices occupied by the Registry, EU Secretariat, the reception area and all the common areas of the Auberge de Castille; lighting elements being gradually replaced by energy saving lighting in other areas.
• Replacement of 1000 Watt halogen floodlighting by 250 Watt Metal Halide on Castille façade.
• Installation of energy efficient fittings in the Auberge's basement.
• Replacing existing neon tubes/light fixtures with energy-saving alternatives (Girgenti – PM's Office).
• Employees are encouraged and advised to switch off electrical apparatus (lights, air-conditioners, fans, monitors, computers etc) when they are absent from their place of work for some time, and similarly with respect to lighting and water taps in kitchen areas and toilets. Water heaters are also being kept switched off to cut down on the use of hot water in kitchens and toilets.
• Installation of sensor lights in toilets.
• Greater use of electronic facilities to cut down on paper distribution:

Planning and Priorities Co-ordination Division, EU Affairs Directorate
• Installation of energy saving light fittings, and the reduction of light fittings.

Operations & Programme Implementation Directorate
• Installation of sensor lights in toilets.
• The offices make use of 100% energy saving lightings.
• Reduced amount of lighting to a minimum in offices and corridors.
• Water heaters are left switched off.

OPM - Auberge d'Italie
• 16 photovoltaic panels were installed on the roof, generating 5,280 kW hours per year and saving 4.6 tons of CO2 emissions annually.
• Internal campaign to save water and electricity.
• Light in corridors is switched off permanently and used only on special occasions.
• Lighting and air conditioners switched off when not in use.
• Computers are switched off in the evenings and weekends.

Internal Audit and Investigations Directorate
• Installed energy saving bulbs in corridors and reception areas.
• Staff encouraged to switch off monitors/PCs when not in use.
• Environment awareness stickers attached to every tap and switch.

Department of Information
• Energy audit of offices.
• Use of energy saving lamps in reception area.
• Switching off half the electrical tubes in corridors/offices.
• Use of electric car.

Centre for Policy Research & Training
• Waste separation.
• Switching on of water heater only when needed.
• During the preparation of the CPRT premises at Msida we opted for energy saving light bulbs.
• Switch on the lights at the office when needed only.

Staff Development Organisation
• Energy audit of offices.

Charter Support Unit
• Energy/Water Conservation Stickers.

Management Efficiency Unit
• Raising awareness among staff re energy-saving and respect for the environment through posters in every office.
• Stickers on every light switch and explanatory posters on every waste separation bin.
• Initiated collection of data on energy consumption.

Government Printing Press
• Installation of 1.2kWp Photovoltaic System at the Government Printing Press.
• Issued a quotation and purchased 700 T8 to T5 adapter kits. All fluorescent tubes are being replaced by this kit.

Armed Forces of Malta
• Installation of 2.1kWp and 1.2kWp Photovoltaic System at the Armed Forces of Malta.

Broadcasting Authority
• Carried out an energy audit.
• Installed a Power Factor equipment to reduce electrical losses.
• Installed a timer for central air-conditioning system.
• Reduced amount of lighting to a minimum in offices and corridors.
• Replaced all halogen lamps with energy-saving lighting.
• Changed neons from warm white to cool daylight, thus reducing the number of neons used.
• Carrying out a study at the Għargħur site in order to install alternative energy turbines or photovoltaic panels.

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18 https://opm.gov.mt/green_initiatives?l=1

Malta Environment and Planning Authority
• Installation of 7.6kWp Photovoltaic System at the Malta Environment and Planning Authority.
• Installation of sensor lights in toilets.
• Use of an electric car.

Ministry for Foreign Affairs
• Installed energy saving bulbs in most offices;
• Installed photovoltaic panels on the roof which have been connected to the electrical system.

Ministry for Gozo
• Installation of photovoltaic cells at the Ministry for Gozo's Administrative Centre for the generation of alternative energy;
• Installation of a Power Factor Corrector at the Gozo General Hospital which reduces consumption and makes more efficient use of electrical energy.
• A study is being carried out to see if it is feasible to install a power factor corrector at the Ministry for Gozo Administrative Centre.
• Officers are encouraged to switch off lights and air-conditioning when offices are not in use.
• Printer sharing and installation of network printers where possible;
• Making use of multifunction printer/photocopier for printing/copying/scanning purposes where applicable;
• Replacement of light bulbs with energy saving bulbs; It has become a policy to replace any burnt out bulbs with energy saving ones. In the cases where refurbishment works are undertaken the replacement of light fittings takes this in consideration.

Ministry for Infrastructure, Transport and Communications
•Painting of the roof white, to cool the building;
•The current ongoing activity is the wind monitoring station which has been installed at Palazzo Verdelin - with the collaboration with the University of Malta;
•Energy Audit at Palazzo Verdelin in collaboration with an American University and UOM.

ENEMALTA
•Efficient Lighting Initiative - Retrofitting existing T8 fluorescent tubes with energy saving T5 System
One of Enemalta's first initiative for energy conservation was to carry out a light audit in its premises. This audit was carried out, in July'06, for the Main Administration Building, Workshops, Marsa and Delimara Power Station Buildings. The scope of this exercise was to identify those luminaries which have a potential cost benefit if they had to be changed to new energy saving tubes (T5 instead of conventional T8 tubes). These new T5 tubes can save around 20-30% than the conventional with the same light intensity. Based on results from light audit and on a pilot test to measure savings from T8 tubes, a contract was awarded and the following savings have been made after completion of this project in June 2007.
- Electricity Savings per Annum averaged to €20,000.
- Average % reduction in Electricity Consumption of 42%.
- Annual Saving in CO2 Emissions estimated to be 160MT.
- Average Payback is of 1.3 years.
•Energy Saving in Air-conditioning Cooling by Retrofitting Solar Film to Windows
Another passive energy conservation measure that was studied and implemented was the retrofitting of a solar film to window panes at the main administration blocks at Marsa and Delimara Power Stations. These solar films claim to reject 75% of the total solar energy (i.e. the ability of the film to reject solar energy in the form of visible light, infrared radiation and ultraviolet light) and 98% UV. This will reflect in kWh energy saving in air conditioning cooling. It is estimated that a potential saving of €5,300 annually in electricity costs and a reduction in 43MT of CO2 emissions will be made when all windows of the Marsa Main Administration Block and Delimara Power Station Administration Block, with direct sunlight (total of 350 windows), are retrofitted with the solar film. The solar film material, which was purchased through a tender procedure, was retrofitted as planned and the project was completed in August'08.
•Investment in higher efficiency generation plant
Enemalta is currently installing a new 144MW combined cycle diesel engine plant having an efficiency of 46.8% at maximum continuous rating which will replace the less efficient plant at Marsa Power Station resulting in an overall increase in efficiency of electricity generation.
•Installation of photovoltaic panels on the roofs of three district offices
•Installation of a micro-wind turbine

MITTS Ltd
Energy
•Introduction of three shuttle passenger vans that reduced the number of pool cars bringing the number of vehicles down form 40 to 14;
•Introduced teleworking to employees and promoted this on a national basis. The main eco-benefit here is the reduction in travelling;
•Introduction of lighting cut-off sensors in restrooms / bathrooms;
•The introduction of common multi-purpose network printers / copiers that are more energy efficient, centrally controlled (therefore monitored) and the enforcement of duplex-printing (printing on both sides)
•Introduced energy saver bulbs where-ever possible;
•Disconnected all the water heaters from bathrooms / restrooms;
•Created bicycle holders in the car-park and we encourage employees to this mode of transport. In this regards MITTS has also installed showers for employees that have solar water heaters;
•Installed double glazing doors and windows;
•All purchasing of hardware equipment is being requested to comply to green measures;
•Thermal insulation in the canteen area;
•Installed micro-filming filters on all sun facing office windows that reduce the heat and ultra-violet rays by 70% resulting energy saving.

ADT
•The use of efflorescent tubes (not yellow light or spot lights) within offices as efflorescent light is more environmentally friendly
•The checking of all offices to ensure that all lights and A/C's are "off" before the premises are vacated every evening.

MCA
•Last person to leave the building ensures that all lights, PCs, air conditioners etc are switched off.

WSC
•Upgrading of reverse osmosis plants which reduced electricity consumption from 7 kW/h per cubic metre in 1998 to just 4.9 kW/h per cubic metre today;
•Installation of energy-saving controls on pumps that transfer water;
•The replacement of incandescent bulbs with energy-saving bulbs;
•Pilot study for the installation of PV panels on WSC roofs;
•The advocacy of wise water use measures for customers.

MMA
Mġarr Ferry Terminal:
•Double glazing to all external windows;
•UV protected glass to the tower office;
•cement replacement material to the pile foundation system;
•energy saving light fittings;
•energy saving programmable lighting system;
•escalators with stand-by function (as against continual operation).

Maritime Trade Centre
•Electronic low consumption light fittings;
•Intelligent light fittings that adapt to the quantity of light in the offices;
•Office lighting that turns off automatically when no one is in the office;
•Heat recovery units to maximise the use of hot/cold air generated by air conditioner units.

DCA
•Awareness: Section Heads are required to undergo a campaign within their Units as to the importance of improving on energy efficiency;
•Lights: Office lighting is maintained at the minimum levels possible;
•Departmental transport: Rationalisation of the daily Department transport needs through proper planning and use of electronic communication.

MRRA
•All neon tubes were installed with a T5 luminaries conversion, and those that are replaced are changed to T5;
•Common areas lighting changed to energy-saving;
•CRT computer screens were replaced by TFT screens in all offices;
•Energy audit to subsequently take up recommendations proposed;
•Encouragement of staff to e.g. close doors when AC is on etc;
•Stickers affixed to lighting switches and electronic equipment as reminders to switch off when not in use.

VETERINARY AFFAIRS AND FISHERIES DIVISION
•Water pump changed to variable drive with installed timer.

GHAMMIERI
•Neon tubes are gradually being changed to T5, and bulk heads are being changed to PL lamps;
•Security lighting was changed from 1kW halogen to 150W/250W metal halide lighting.

EU AFFAIRS DIRECTORATE
•Common areas lighting changed to energy savers;
•Networked multi-function printers used.

PLANT HEALTH DEPARTMENT
•Bulk head lighting changed to PL lamps

TA'QALI NATIONAL PARK
•1 wind turbine was installed to light part of a building;
•Bollards and lighting are energy saving;
•Flood lighting changed to metal halides.

SALINA NATIONAL PARK
•Flood lighting changed to metal halides;
•Bollards and lamp post lighting are energy saving;
•Lighting in parking area are energy saving.

CLEASNING SERVICES DEPARTMENT
•Ceiling lighting changed to energy saving

MANUFACTURING AND SERVICING DEPARTMENT
•PL lamps in administration building

Ministry for education
•An audit of existing neon tubes was carried out to be replaced with energy saving ones;
•In an effort to encourage people to start using the bicycle to go to work, a number of bicycle racks were placed at the entrance of the Division. In addition, free meal vouchers were offered to those who used bicycles;
•A number of solar panels were installed on the roof of St Benedict College;
•Pembroke college will be the first school in Malta not to receive an electricity bill.

MINISTRY FOR SOCIAL POLICY
• Energy saving lighting and fittings are being purchased and installed for newly refurbished areas;
• An educational campaign regarding green awareness was done through a set of General Green Tips and Green Travel Tips which were sent to all staff by email;
• Reminder notices reading 'Save water, close the tap' have been fixed near all water taps at Palazzo Ferreria;
• Posters have been attached to all elevators to encourage the use of stairs;
• A new tender for the hiring of photocopiers has been awarded with due consideration to the eco-friendly feature. With the new tender, old photocopiers are being replaced with more energy efficient ones;
• All CRT monitors are gradually being replaced with TFT monitors.

• Other green leaders have been appointed to implement similar initiatives at Departments and entities falling within the ministry;
• A photovoltaic unit has been installed at Palazzo Ferreria.

DEPARTMENT OF INDUSTRIAL AND EMPLOYMENT RELATIONS
•Use of energy-saving fluorescent tubes;
• Stickers with messages to switch off lighting stuck to switches.

EMPLOYMENT AND TRAINING CENTRE
• Use of energy-saving fluorescent tubes;
• Memos sent to staff to refrain from using lighting when and where not necessary as well as to close doors when air conditioners are being used.

COOPERATIVES BOARD AND CENTRAL OFFICE OF COOPERATIVES
• Where technically possible, lighting was changed to energy saving lighting;
• Lighting is being switched off whenever employees are on their breaks;
• Only two out of the three air-conditioner units are being utilized;
• Air-conditioner units cut-out is set at 26°C;
• Air-conditioner units are being maintained regularly, so that electricity consumption is reduced as much as possible;
• A small de-humidifier unit is being utilized to reduce humidity and therefore air-conditioners will work less, therefore consuming less power;
• Computers are being switched off when employees are on their breaks.

OCCUPATIONAL HEALTH AND SAFETY AUTHORITY
• Equipment left running 24/7 is restricted to a minimum such as server room;
• A timer has been installed in the IT network cabinet to shut down extractor fans during silent hours;
• Water heaters temperature have been set at a lower cut-off and switched off at end of business;
• A room by room exercise was conducted whereby the amount of bulbs have been reduced and replaced by energy-saving ones;
• Stickers have been fixed in landings and lobbies to prompt sparse use of lift;
• A considerable amount of windows have been covered with window film
• Lease of more fuel efficient vehicles;
• General transport is co-ordinated and pooled by corporate services to eliminate unnecessary trips;
• Instructions have been issued to all staff to:
o Switch off air conditioners when out of the office;
o Switch off lights;
o Ensure equipment is switched off before leaving at end of business;
o Close apertures where/when air conditioning is on.

HOUSING AUTHORITY
•Housing Authority Energy Policy
The Housing Authority launched a pilot energy saving project at Tal-Ftieħ, Birkirkara, which aimed at achieving better energy performance in building whilst promoting innovative measures that make the best possible use of natural resources and that do not harm the environment. Energy saving features at Tal-Ftieħ included:
• Double glazing windows;
• Window and door louvers;
• Roof insulation;
• 150 litre solar water heaters for each apartment with pipe insulation;
• Construction of a showroom with photovoltaic cell power supply.
The Tal-Ftieħ pilot project was followed by the 80-apartment project at Site A in Pembroke where solar heaters and other energy saving measures were also installed for all units.
Following these projects the Housing Authority Board has instructed that, when possible, all housing projects from January 2005 are to include the following energy efficient measures:
• Double glazing in apertures;
• Window and door louvers;
• Roof insulation;
• Features for the installation of solar water heaters;
• Wells and a separate water circulation system for flushing toilets with rain water.

BENEFIT FRAUD AND INVESTIGATION DIRECTORATE
• All light bulbs in use are of the energy saving type;
• Spent florescent tubes are replaced with the new Energy Saving T5 florescent tubes;
• Air-conditioners are set at a reasonable cooling temperature and office windows and doors are kept closed;
• All computers, monitors and lighting are switched off before leaving the office at the end of a day's work;
• All Green Tip notices, which are related to energy saving measures, are implemented at this Directorate;
• The Directorate purchased a new fuel efficient vehicle to replace an old fuel guzzler. This vehicle is used daily by the inspectors within this Directorate.

SOCIAL SECURITY DIVISION
• New light systems throughout the Department and District Offices were installed with energy saving light systems;
• Changing old light bulbs and fluorescent tube lights with energy saving light systems;
• Installation of sensors instead switches to certain corridor lightings in order to switch on only when necessary;
• Installation of stickers with valuable green tips near wash hand basins and toilets;
• All appliances purchased (fridges, air conditioners, and so on) are bought as highly energy efficient appliances.

NATIONAL COMMISSION FOR THE PROMOTION OF EQUALITY
• Lighting is switched off whenever possible;
• Artificial light is only used when necessary;
• Only half the lights are switched on in the corridors;
• Computers and other equipment are switched off from the plug to ensure that not even a pilot light is kept on. Equipment is switched off whenever it is not in use;
• When air conditioners are switched on, all office doors are kept closed;
• All bulbs (with the exception of neon tubes) are energy saving.

KUMMISSJONI NAZZJONALI PERSUNI B'DIŻABILITÀ
• 38 of the 86 light fittings have been replaced with energy saving bulbs. All old light bulbs are being replaced with energy saving bulbs.

EU AND INTERNAL AFFAIRS DIRECTORATE
• Switch off lights and air-conditioners when offices are not in use;
• Switch off monitors and other equipment rather than leaving it on stand-by;
• Keep printing and photocopying to the bare minimum possible.

OFFICE OF THE COMMISSIONER FOR CHILDREN
• Switch off lightings, air-conditioning and any electrical equipment or appliances when offices are not in use.

DEPARTMENT FOR SOCIAL WELFARE STANDARDS
• Replacement of conventional lighting units with energy saving fixtures;
• Keeping staff members informed and constantly informed about the necessity to utilize electricity and water supply in the most efficient manner. Practical initiatives include switching off lights when natural lighting is adequate and switching off appliances when their use is not required;
• Constant monitoring of water and electricity consumption through regular water and electricity meter readings. This enables corrective action when irregular consumption is noticed;
• Installation, by mid-August, of a Power Factor Correction Unit at the source of the electricity supply which will enable savings in the region of 7-8%. The new electricity installation unit would enable the replacement of electric heaters with air-conditioning units as the latter consume circa one third of the electrical power of the equivalent electric heater.

PARLIAMENTARY SECRETARY FOR HEALTH, ELDERLY AND COMMUNITY CARE
• Basic educational campaign to instil better awareness and promote best practices in energy conservation and economy at workplace. Distribution of publicity material and stickers to conserve water and electricity;
• Installation of Photovoltaic Generation Units (Solar Panels) at Mosta Health Centre for the provision of alternative energy to generate electricity for lighting purposes.

STRATEGY AND SUSTAINABILITY DIVISION
Head Office
• Air conditioners are controlled at acceptable temperature levels;
• Lights are switched off when offices are vacant.
Health Information and Research
• Green initiative stickers have been applied to most electrical switches and water taps to remind people to switch/turn off when ready to avoid wastage. In addition, as a departmental policy, if any member of staff spots any office that appears to be vacated for a substantial period of time, one proceeds to switch off its lights and air conditioning;
• In addition, no equipment is left on standby apart from PABX and fax machine at the end of business.

MATER DEI HOSPITAL
Environmentally Friendly Features included at Design Stage.
• Use of a fully computerised Building Management System with over 13,000 input/output points and field devices to efficiently manage the Heating, Ventilation and Air-Conditioning (HVAC) system and general lighting;
• Power Factor Correction units are connected to all main low voltage Switchgear;
• Use of double glazed windows to external spaces (thermal insulation);
• Use of energy saving lamps and electronic ballasts for fluorescent tubes;
• Use of motion sensing detectors in many areas to automatically switch on the lighting fixtures;
• Thermal insulation and acoustic attenuation material in the dry-walls;
• The water cooled chillers provide pre-heating to the domestic hot water supply, reducing the load from the boilers leading to a reduction in fuel;
• All the main patient areas are positioned to the North, thereby reducing the effect of higher temperatures in summer;
• Air handling units are equipped with heat recovery units;
• About 270 electronic motor variable speed drives are used to modulate the speed of electric motors (fans and pumps) resulting in increased energy savings.
Current Procedures and Practices
• Switching off unnecessary lighting;
• An exercise was carried out to mark switches that control lights in common corridors and areas that can be left off during the night without compromising on safety and security;
• The procedure to have Natural light sensors to be installed to control the artificial lighting in the main glass corridors and part of the underground car park (level -1). These will ensure that artificial lights are only used when there is no natural light;
• Proper Use of Air Conditioning System;
• Through informative talks and meetings, the users are encouraged to keep the doors of the rooms closed as much as possible to ensure better conditioned air circulation in the rooms without 'letting cold/warm air out of the room'. This will result in a more comfortable environment for the users and less energy used to heat/cool the rooms/areas.

MOUNT CARMEL HOSPITAL
• Energy saving bulbs and tubes when replacing malfunctioned units or replacing any out of service;
• Energy saving electronic equipment such as photocopiers, printers and any other white goods & A/C units for units / wards with the best possible energy saving grading;
• On refurbishing or reconstruction of unit / ward, we try to use the energy saving lighting;
• The ongoing process of insisting that A/C units are to be turned on when all the surrounding doors / windows have been closed.

St. Jean Antide
• Use of double glazing for insulation purposes;
• Installation of large windows to reduce the need for artificial lighting during hours of sunshine;
• Use of energy saving light bulbs to reduce consumption of light to minimum levels.

PUBLIC HEALTH REGULATION DIVISION
• Air-conditioning units, lights and PC monitors are switched off when not in use for a length of time. Staff ensures that these are all switched off at the end of a day's work;
• Water heaters are switched off in weekends. In summer they are totally switched off;
• Printer sharing;
• Staff is encouraged to combine car trips.

DIRECTORATE OF PHARMACEUTICAL POLICY AND MONITORING
• Utilisation of natural light in lieu of artificial lighting;
• Opening of windows for fresh air to reduce need for air-conditioning;
• Where air-conditioning is required, care is taken to switch off A/C and lighting whenever room is not in use.

MEDICINES AUTHORITY

• Installation of energy-saving bulbs and neon tubes where viable.

ZAMMIT CLAPP HOSPITAL
• Installation of energy-saving bulbs and neon tubes where viable.

SAINT VINCENT DE PAUL RESIDENCE
• Reverse heat pumps for heating water;
• Solar panels for heating water;
• Fresh air duct with motor having variable speed to slow down and reduce load of A/C systems during the night;
• Fresh air systems on certain A/C systems to recover heat;
• Using high frequency ballast chokes to reduce current load on lighting appliances;
• Dimmers to reduce energy consumption during the night;
• Using power factor corrector to reduce power.

Block John Paul II
• Use of double glazing for insulation purposes;
• Installation of large windows to reduce the need for artificial lighting during hours of sunshine;
• Installation of a drainage system that uses rainwater for the watering of plants and for extinguishing fire in cases of emergency.
• Use of energy saving light bulbs and a power factor correction system, which aims to reduce electricity consumption to the minimum. These two measures should reduce consumption of energy for lighting by 80%;
• Use of an efficient airconditioning system known as Variable Refrigeration Flow (VRF) and heat recovery units. It is estimated that this system will provide further reductions of circa 25% in consumption of electricity;
• Use of a Building Management System that lowers or switches off lighting automatically in rooms which have satisfactory natural lighting, or rooms which are not being utilized;
It is estimated that these measures will provide a reduction of circa €64,000 in SVPR's energy bill.

HOMES
• Using electricity light at the minimum especially during day time;
• Using energy saving lamps instead the conventional ones.

Ministry of Finance, the Economy and Investment
•Maison Demandols has recently undergone extensive refurbishing and, where possible, timed lighting was introduced in toilets and corridors and there are plans to extend this to other parts of the building;
•Educational stickers were affixed to all light switches and water taps;
•Where possible, centralised networked duplex printers/photocopiers are being introduced and the 'printer on each desk' mentality is being made redundant. Currently this Ministry is exploring available options in connection with using refilled or remanufactured toners in its printers.

CONTRACTS DEPARTMENT
•Replacing conventional neon tubes with more energy efficient fluorescent tubes;
•The staff is also encouraged to switch off electricity, equipment and AC units when they are not in the office.

VAT DEPARTMENT
•PV paneling was installed in May 2008. The system consists of 1.2KW panels that generate 200watts/hour.

TAX COMPLAINCE UNIT
•This unit uses energy saving bulbs and neon tubes.

CUSTOMS DIVISION
•The installation and operation of a 3.2kV photovoltaic(PV) electricity generating system on the roof of the Administrative Block at the Customs Groupage Terminal in Hal Far;
•Fixing of educational adhesive stickers near all water taps and electric switches in all Customs premises;
•The application of reflective paint on roof tops of certain Customs premises, which paint is intended to reduce the load on air-conditioners during the hot summer months.

ECONOMIC POLICY DIVISION
•To reduce energy consumption, officers are encouraged to switch off lights and air-conditioning units during break time;
•Energy saving bulbs are also used.

CONSUMER AND COMPETITION DIVISION
•Neon tubes were replaced by Class A tubes;
•A networking workstation (photocopier) was leased in order to save on power cost and to reduce waste on the environment;
• Photovoltaic system (PV). The PV system consists of 32 x 200 watts of Kyocera Solar panels and a SMA Sunny Boy DC to AC inverters that generates in 5,400 units or kilo watt hours yearly and save over 4860 kgs of harmful CO_2 emissions from the power station. This is equivalent to a total electrical consumption of one house;

COMMERCE DIVISION
•Energy saving bulbs have replaced traditional lighting methods.

NOTARY TO GOVERNMENT
M.A. Vassalli Street Office
•In certain library rooms, corridors, stairways and toilets, timer switches will be installed;
•Lights, fans, air conditioners and heaters are switched off when staff leave their offices.
St. Christopher Street Office
•Some energy saving lamps have been installed in this Office but more are to be installed in all library rooms in replacement of fluorescent lighting units.

MALTA STANDARDS AUTHORITY
•Air-conditions set to work between 0800 and 1630 in order to ensure that no one leaves the unit on when staff leave the premises;
•This year to start replacing/using energy saving light bulbs.

MALTA FINANCIAL SERVICES AUTHORITY
•Most of the electricity lighting is generated from neon tubes;

•Staff are regularly urged to switch off air-conditioners, PCs and lights when offices are not in use.

CENTRAL BANK OF MALTA
•Installation of a Power Factor Unit.

GOVERNMENT PROPERTY DIVISION
•Change light fittings and bulbs with energy saving alternatives

Ministry for justice and home affairs
•Replacement of halogen lighting with energy saving bulbs at the House of Catalunya, Auberge d'Aragon, OMAS, Refugee Commission and Probation Services;
•Redistribution of lighting systems in various offices at the House of Catalunya (HOC);
•Installation of sensor lights in restrooms and passageways at HOC and Probation Services;
•Installation of energy saving lighting at HOC, Auberge d'Aragon, Probation Services and Corradino Correctional Facility;
•Installation of PV panel at Police HQ;
•Installation of PV panel at Civil Protection Department;
•Solar water heaters were installed at the Hal Far and Marsa Open Centres.

Government has published the following list of energy efficiency measures implemented:

`UPGRADING OF U-VALUES	Pre 2007 Before Min requirements	2007 - 2012 As per Min Requirements	2013 - 2016 Improved U values by 30%	2017 - Improved U values by another 20%
	U_{walls} = 1.58, 2.35, 2.7W/m^{2}K U_{roof} = 2.27W/m^{2}K $U_{glazing}$ = 5.7W/m^{2}K	**U_{walls} = 1.57W/m^{2}K U_{roof} = 0.59W/m^{2}K $U_{glazing}$ = 5.7W/m^{2}K**	**U_{walls} = 1.10W/m^{2}K U_{roof} = 0.41W/m^{2}K $U_{glazing}$ = 4.0W/m^{2}K**	**U_{walls} = 0.86W/m^{2}K U_{roof} = 0.295W/m^{2}K $U_{glazing}$ = 2.85W/m^{2}K**
Case reference	*01a*	*01b*	*01c*	*01d*
EPRDM - compact terraced house **w/o** AC (kWh/m^2.yr)	136	103	88	79.9
Percentage EPRDM improvement over the preceding Requirements as per Doc F 2007			15%	26%
Percentage EPRDM improvement over the situation **preceding Doc F 2007**		24%	35%	41%
Case reference	*02a*	*02b*	*02c*	*02d*
EPRDM - compact terraced house Fgura **with** AC (kWh/m^2.yr)	79.6	64.76	60.05	57.7
Percentage EPRDM improvement over the preceding Requirements as per Doc F 2007			7%	12%
Percentage EPRDM improvement over the situation **preceding Doc F 2007**		19%	25%	28%
Case reference	*03a*	*03b*	*03c*	*03d*
EPRDM - compact terraced house Sliema **w/o** AC (kWh/m^2.yr)	185.8	152.26	142.04	135.7
Percentage EPRDM improvement over the preceding Requirements as per Doc F 2007			7%	12%
Percentage EPRDM improvement over the situation **preceding Doc F 2007**		18%	24%	27%
Case reference	*07a*	*07b*	*07c*	*07d*
EPRDM - 3 bedroom flat St Paul's Bay **w/o** AC	232.25	158.21	144.6	136.81

(kWh/m^2.yr)

Percentage EPRDM improvement over the preceding Requirements as per Doc F 2007			9%	15%
Percentage EPRDM improvement over the situation **preceding Doc F 2007**		32%	38%	41%

Case reference	*10a*	*10b*	*10c*	*10d*
EPRDM - fully detached penthouse **w/o** AC (kWh/m^2.yr)	334.49	233.23	209.36	194.7
Percentage EPRDM improvement over the preceding Requirements as per Doc F 2007			10%	18%
Percentage EPRDM improvement over the situation **preceding Doc F 2007**		30%	37%	42%